Albuquerque International Sunport

Airport Master Plan

ALBUQUERQUE INTERNATIONAL SUNPORT

AIRPORT MASTER PLAN

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CONTENTS

ALBUQUERQUE INTERNATIONAL SUNPORT
Albuquerque, New Mexico

AIRPORT MASTER PLAN

Chapter One
INTRODUCTION

Chapter One (Continued)

Chapter Two
AVIATION DEMAND FORECASTS

Chapter Three
FINANCIAL PLAN

Chapter Four
AIRPORT PLANS

Chapter Five
AIRFIELD FACILITIES

Section One
INVENTORY

Chapter Five, Section One (Continued)

Section Two
DEMAND/CAPACITY

Section Three
REQUIREMENTS

Chapter Five, Section Three (Continued)

Section Four
ALTERNATIVES

Section Five
RECOMMENDED PROGRAM

Chapter Six
AIR CARGO FACILITIES

Section One
FACILITY REQUIREMENTS

Chapter Six (Continued)

Section Two
ALTERNATIVES

Section Three
RECOMMENDED PROGRAM

Chapter Seven
GENERAL AVIATION FACILITIES

Section One
INVENTORY

Section Two
ALTERNATIVES

Chapter Seven, Section Two (Continued)

Section Three
RECOMMENDED PROGRAM

Chapter Eight
PASSENGER TERMINAL FACILITIES

Section One
INVENTORY

Chapter Eight, Section One (Continued)

Section Two
DEMAND/CAPACITY ANALYSIS

Section Three
REQUIREMENTS

Section Four
ALTERNATIVES

Chapter Eight, Section Four (Continued)

Section Five
ALTERNATIVES REFINEMENT

Chapter Eight, Section Five (Continued)

Section Six
RECOMMENDED PROGRAM

Chapter Nine
PARKING, ACCESS, AND SUPPORT FACILITIES

Section One
INVENTORY

Chapter Nine (Continued)

Section Two
DEMAND/CAPACITY

Section Three
REQUIREMENTS

Section Four
RECOMMENDED PROGRAM

APPENDICES

EXHIBITS

EXHIBITS (Continued)

EXHIBITS (Continued)

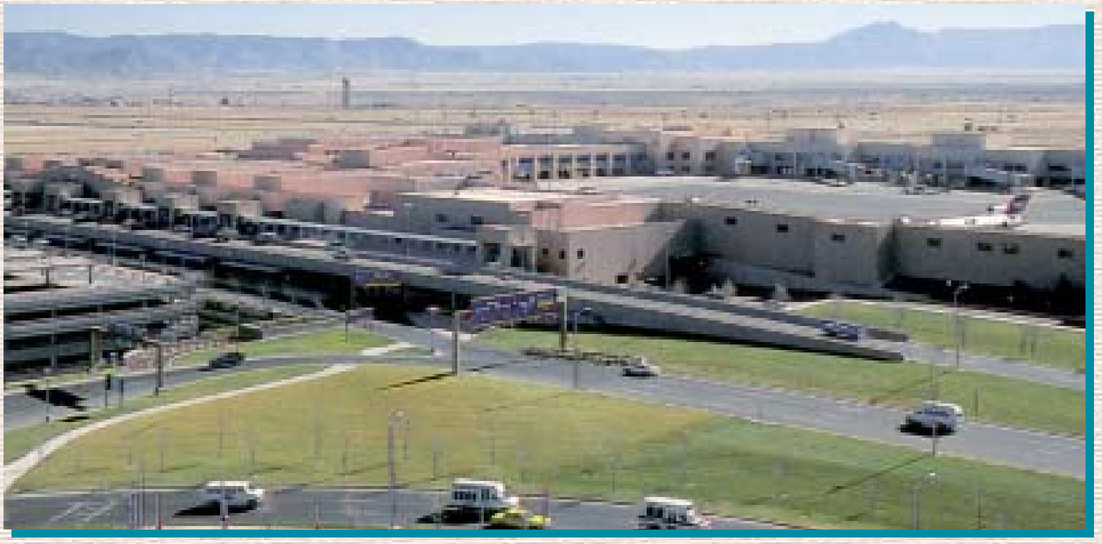
EXHIBITS (Continued)

EXHIBITS (Continued)

Chapter One

Introduction

Chapter One
Introduction



The Albuquerque International Sunport Master Plan Study was undertaken to evaluate the airport's capabilities and role, to forecast future aviation demand and to plan for the timely development of new or expanded facilities that may be required to meet that demand. The ultimate goal of the Master Plan is to provide systematic guidelines for the airport's overall development and operation.

The Master Plan is intended to be a proactive document which identifies and then plans for future facility needs well in advance of the actual need for the facilities. This is done to ensure that the City of Albuquerque can coordinate project approvals, design, financing and construction in a timely manner prior to experiencing the detrimental effects of inadequate facilities.

An important result of the Master Plan analysis is reserving sufficient areas for future facility needs. This protects development areas and ensures they will be readily available when required to meet future needs. The intended result is a detailed land use concept which outlines specific uses for all areas of airport property.

The Albuquerque International Sunport Master Plan was a cooperative effort between the City of Albuquerque and Federal Aviation Administration (FAA). Technical work was prepared by Coffman Associates, Inc., NBBJ, and Molzen-Corbin Associates, Inc.

This Master Plan is evidence that the City of Albuquerque and FAA recognize the importance of Albuquerque International Sunport to the community, the region and national air transportation system, as well as the associated challenges inherent in accommodating future aviation needs. The cost of maintaining an airport is an investment which yields impressive benefits to a community. A sound and flexible Master Plan will ensure that Albuquerque International Sunport can continue to serve the air transportation needs for the region.

MASTER PLAN OBJECTIVES

The primary objective of the Albuquerque International Sunport Master Plan is to develop and maintain a financially feasible long-term development program which will satisfy aviation demand and be compatible with community development, other transportation modes, and the environment. The accomplishment of this objective requires the evaluation of the existing airport and a determination of what actions should be taken to maintain an adequate, safe and reliable airport facility to meet the air transportation needs of the area. The completed Master Plan provides an outline of the necessary development and give responsible officials advance notice of future needs to aid in planning, scheduling and budgeting.

Specific objectives of the Albuquerque International Sunport Master Plan are:

- ➢ To determine projected needs of airport users through the year 2025;
- ➢ To identify existing and future facility needs;
- ➢ To evaluate future airport facility development alternatives which will promote safety and optimize airport capacity, while not significantly impacting the environment;
- ➢ To provide a graphic representation of the ultimate airport development;
- ➢ To present land use strategies for the use of airport property;
- ➢ To screen the recommended plan for potential environmental impacts;
- ➢ To establish a schedule of development priorities and a program for improvements;
- ➢ To analyze the airport's financial requirements for capital improvement needs and grant options;
- ➢ To coordinate this Master Plan with local, regional, state and federal agencies;
- ➢ To develop active and productive public involvement through the planning process.

MASTER PLAN ELEMENTS AND PROCESS

The Albuquerque International Sunport Master Plan was prepared in a systematic fashion following FAA guidelines and industry-accepted principles and practices. The Master Plan for Albuquerque International Sunport has six general elements which are intended to assist in the discovery of future facility needs and provide the supporting rationale for their implementation. **Exhibit I-A** provides a graphical depiction of the Albuquerque International Sunport Master Plan process and elements.

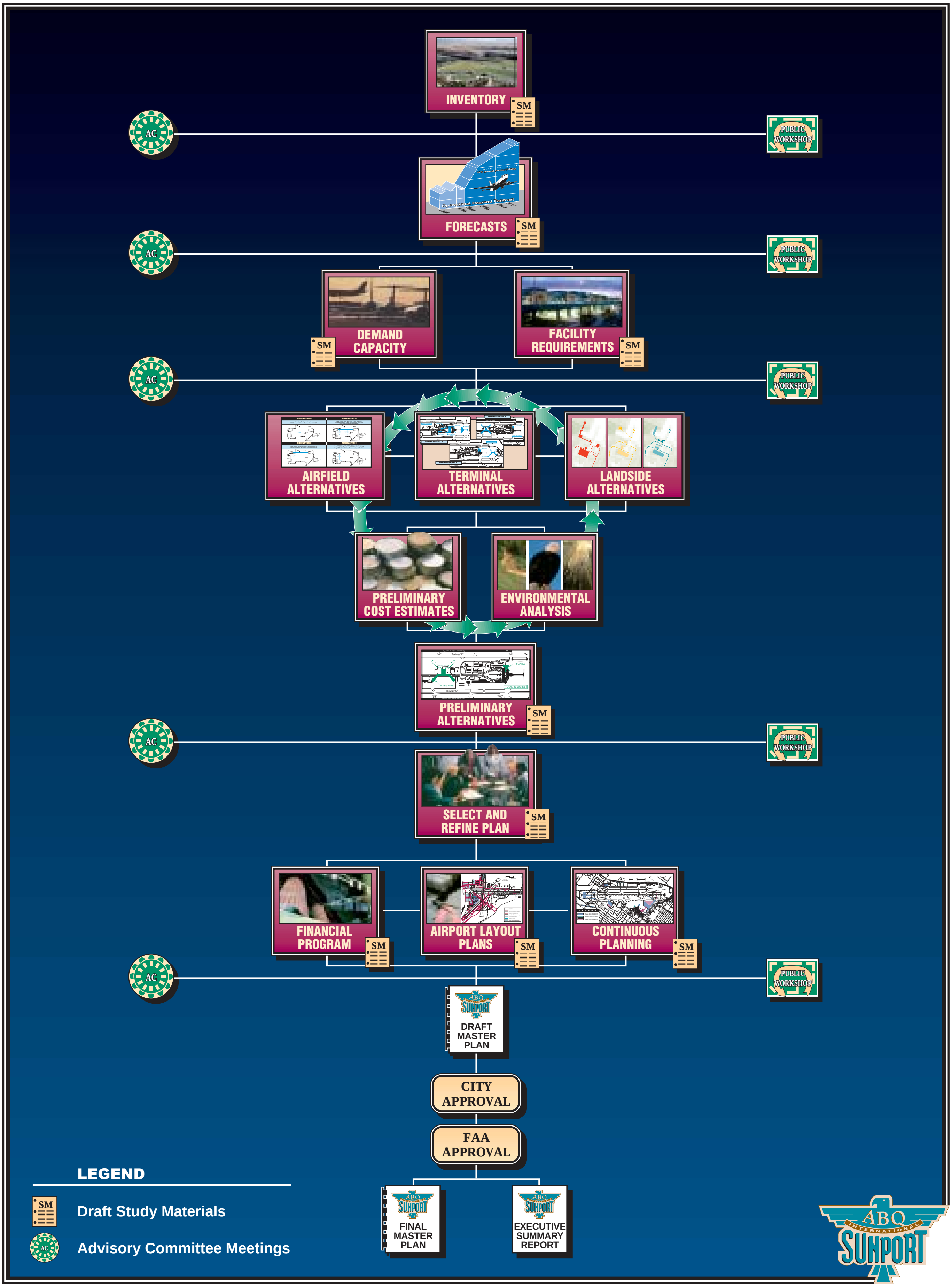


Exhibit I-A
MASTER PLAN
ELEMENTS AND PROCESS

Element One encompasses the inventory efforts. The inventory focuses on collecting and assembling relevant data pertaining to the airport and the area the airport serves. This includes information on existing airport facilities, operations, and control. Local economic and demographic information was collected to define the local growth trends. Planning studies which may have relevance to the Master Plan were also collected and considered.

Element Two examines the potential aviation demand for commercial air service, general aviation, air cargo and military activity at the airport. This analysis utilizes local socioeconomic information, as well as local and national air transportation trends to quantify the levels of aviation activity which can reasonably be expected to occur at Albuquerque International Sunport through the year 2025. The results of this effort are used to determine the types and sizes of facilities which will be required to meet the projected aviation demands for Albuquerque International Sunport over the next twenty-plus years.

Element Three comprises the demand/capacity analysis. The intent of this analysis is to compare the existing facility capacities to forecast aviation demand and determine where deficiencies in capacities (as well as excess capacities) may exist. This element includes detailed computer modeling of aircraft operational characteristics at Albuquerque International Sunport to determine the capacity of the airfield to accommodate future demand. The airfield analysis focuses on determining the optimal number of runways and runway configurations to safely accommodate aircraft operations while maximizing airfield maintenance and improvement costs. The ability of existing passenger terminal building and access facilities, general aviation and air cargo facilities to accommodate forecast demand will also be determined.

Element Four uses the result of the demand/capacity analysis to determine the specific facility needs to accommodate forecast aviation demand. Where deficiencies are identified, the size and type of new facilities to accommodate the demand are identified. The airfield analysis focuses on improvements needed to serve the type of aircraft expected to operate and the airport and navigational aids to increase the safety and efficiency of operations. This element also includes a determination of passenger terminal building, general aviation and air cargo facility needs.

Element Five considers a series of reasonable solutions to accommodate the projected facility needs. This element proposes various facility and site plan configurations which meet the projected facility needs. A thorough analysis is completed to analyze the strengths and weaknesses of each proposed development alternative with the intention of determining a single direction for development.

Element Six includes two independent, yet interrelated, work efforts: Financial Program and Airport Plans. The financial implementation program defines the schedules, costs and funding sources for the recommended development projects. Airport Plans represents the detailed graphical depiction of proposed improvements and related airspace and obstruction analyses which ensure a safe and efficient operating environment for aircraft operating at Albuquerque International Sunport.

COORDINATION

The Albuquerque International Sunport Master Plan is of interest to many within the local community. This includes local citizens, community organizations, airport users, airport tenants, areawide planning agencies and aviation organizations. As an important component of the regional, state and national aviation system, the Albuquerque International Sunport Master Plan is of importance to both state and federal agencies responsible for overseeing air transportation.

To assist in the development of the Albuquerque International Sunport Master Plan, the City of Albuquerque identified a cross-section of community members and interested persons to provide an advisory role in the development of the Master Plan. As members of the Advisory Committee or the Technical Committee, the committee members reviewed working papers and provided comment throughout the study to help ensure that a realistic, viable plan was developed.

To assist in the review process, draft working papers were submitted in a workbook format as each Master Plan element is completed. The working papers allowed for input and review during each step within the Master Plan process to ensure that Master Plan issues were fully addressed as the recommended program was developed.

A series of public information workshops were also scheduled to allow the public to provide input and learn about the study. The public information workshops were conducted to allow public access to general information concerning the Master Plan. The consultants and airport staff were available to answer individual questions.

In addition, special meetings were held with representatives of the airlines serving ABQ as well as the general aviation interests on the airport. These meetings were held to discuss the recommended plan with special emphasis on the rationale behind the recommendation to ultimately close Runway 17-35.

The working papers were also made available to the general public over the internet shortly after submission to the committees. The web site also allowed persons to e-mail comments to the consultants. Comments received from the committee meetings, public workshops, and the web site are included in the Appendices.

REPORT ORGANIZATION

The Master Plan technical report for Albuquerque International Sunport is organized into functional elements. In this manner, broad functional portions of the airport (i.e. airfield, passenger terminal facilities, general aviation facilities, air cargo facilities and support facilities) are segregated and organized into separate chapters of the Master Plan. This is done for future ease of reference.

As indicated previously, the Master Plan analysis follows a specific procedure from inventory through forecasting, demand/capacity, facility requirements, development alternatives and finally specific planning and capital improvements. Within each of these Master Plan elements, specific attention is focused on each of the functional areas of the airport. The common practice in Master Planning is to organize each of the Master Plan elements in a separate chapter of the Master Plan which combine analyses on each of the functional areas of the airport. For airports with a smaller scope of facilities than Albuquerque International Sunport this is sufficient since analysis is limited and can easily be referenced at a later date.

To assist in future implementation of the Albuquerque International Sunport Master Plan, the Master Plan technical report has been organized into functional elements to allow a future user to easily track inventory, demand/capacity, facility requirements, alternatives and eventually plans and improvements for each of the functional areas on the airport. It should be noted that in many cases it is difficult to draw an exact demarcation between functional elements. However, sufficient differentiation does exist between facilities at Albuquerque International Sunport to organize these into separate functional areas. Special care has been taken to ensure appropriate analysis is given where areas might overlap.

The Albuquerque International Sunport Master Plan Technical Report includes nine chapters and related appendices. These are broken into three volumes plus an Executive Summary. The Executive Summary provides an overview of the Master Plan highlighting key information, rationale, and recommendations. Volume I provides the basic master planning information including general background, aviation forecasts, the overall recommended development plan, and the fiscal considerations of the Master Plan. Volumes II and III provide more detailed information on each component of the airport (airfield, passenger terminal, air cargo, general aviation, access, and support facilities.

Chapter One serves as an introduction to the Master Plan report and includes information of the study process, methodology, and goals and objectives. Background information on the airport and regional area is provided to orient the reader with specifics of the Albuquerque area.

Chapter Two summarizes the results of Element Two, Aviation Demand Forecasts.

Chapter Three consolidates the recommended development programs for each functional area to define the overall proposed development for the airport. This chapter includes narrative descriptions of all proposed development at the airport and presents a graphic depiction of all proposed facility improvements. Chapter Three also consolidates the individual development projects for each functional area of the airport into a single, comprehensive capital improvement program. The capital improvement program identifies development priorities and funding strategies to implement the proposed development projects at the airport.

Chapter Four presents the FAA required Airport Layout Plan set. The Airport Layout Plan set is a detailed set of line drawings depicting all proposed improvements, land use and airspace.

Chapters Five through Nine are dedicated to the functional areas of the airport: airfield facilities (Chapter Five), air cargo facilities (Chapter Six), general aviation facilities (Chapter Seven), passenger terminal building (Chapter Eight), and parking, access and support facilities (Chapter Nine). Each chapter is broken into sections which present the results of all analysis for that functional area. The existing facilities of each component are first described and analyzed to determine how they meet existing and potential future needs. Next is a description of the sizes and types of facilities needed to accommodate forecast demand. This is followed by a section dedicated to the development alternatives analyses. The final section of each chapter outlines the recommended concepts and development costs to be incorporated into the Master Plan.

ALBUQUERQUE INTERNATIONAL SUNPORT

Albuquerque International Sunport is positioned to serve all segments of the air transportation industry. As shown on **Exhibit I-B**, Albuquerque International Sunport has facilities to accommodate commercial airline activity, air cargo and general aviation users. Military aviation needs are accommodated at the adjacent Kirtland Air Force Base, which shares airfield facilities with Albuquerque International Sunport.

The commercial airline segment of the air transportation industry includes all air carriers providing scheduled air service. As of March 2000, Albuquerque International Sunport was served by 12 airlines providing nonstop service to 28 destinations across the country including: Amarillo, Texas; Atlanta, Georgia; Chicago, Illinois; Cincinnati, Ohio; Dallas, Texas; Denver, Colorado; El Paso, Texas; Houston, Texas; Kansas City, Missouri; Las Vegas, Nevada; Los Angeles, California; Lubbock, Texas; Midland/Odessa, Texas; Minneapolis, Minnesota; Oakland, California; Orlando, Florida; Phoenix, Arizona; St. Louis, Missouri; Salt Lake City, Utah; San Diego, California; Seattle, Washington; Tampa, Florida and Tucson; Arizona. Convenient connections at many of these airports provided one-stop service to many of the remaining major destinations across the country and internationally.

The major airlines serving Albuquerque International Sunport included: American, America West, Continental, Delta, Frontier, Northwest, Southwest, TWA and United. Regular service was also provided by commuter airlines Mesa, Skywest and regional carrier Rio Grande Air.

Commercial airline activities are conducted from the passenger terminal facilities located in the northwest quadrant of the airport, north of

Exhibit I-B
EXISTING FACILITIES

Runway 8-26, and west of Runway 17-35. The passenger terminal building is primarily accessed from Interstate 25 via Sunport Boulevard. Yale Boulevard and Girard Boulevard also provide access to the passenger terminal building.

The air cargo segment of the air transportation industry includes the activities of air mail and air freight/air express. Air cargo activities at Albuquerque International Sunport include the cargo carried by the scheduled air carriers as well as the dedicated all-cargo airlines. Dedicated air freight carriers serving Albuquerque International Sunport include: Airborne, Burlington Air, Emory/Purolator Express, Federal Express, Kittyhawk, Reliant Airlines, South Aero, and UPS.

Air cargo facilities are presently located along Runway 3-21 and accessed from Spirit Drive. Access to Interstate 25 is available via the University Boulevard interchange located approximately one-mile south of the Spirit Drive/University Boulevard intersection.

General aviation is the largest and most diverse segment of the air transportation industry. The United States active general aviation aircraft constitute 97 percent of all civil aircraft in use today. General aviation uses cover a broad range of activities ranging from personal/recreational flying to air ambulance to business/commercial uses such as aerial applicators, aerial surveying and photography and the non-scheduled transport of company staff members from one location to another. General aviation aircraft range from one and two seat piston-powered aircraft to long-range business jet aircraft capable of flying non-stop to international destinations from Albuquerque.

General aviation facilities at Albuquerque International Sunport are located west of the Runway 12-30/Runway 3-21 intersection. Private companies providing services to general aviation users include: Cutter Flying Service, Seven Bar Aviation, Western Air, Four Seasons Aviation, and Six T, Inc. General aviation facilities are accessed from University Boulevard via Access Road B to Clark Carr Road. Clark Carr Road previously extended directly from University Boulevard to the general aviation area. This intersection was eliminated during the construction of the Consolidated Rental Car Facility.

Kirtland Air Force Base encompasses approximately 52,000 acres of land along the eastern boundaries of Albuquerque International Sunport. Kirtland Air Force Base had its beginnings as a Army Air Corps training field in 1939. Operating from Albuquerque's municipal airport (which is now Albuquerque International Sunport), the first military mission was primarily flight training during World War II.

After the war, the mission of the then Kirtland Army Air Field changed from flight training to flight test activities for the Air Material Command in 1946. This new role was to develop and test aircraft modifications for weapons delivery and determine ballistic characteristics for future nuclear weapons. In 1947, the Army Air Corp became the U.S. Air Force and Kirtland

Army Airfield became Kirtland Air Force Base.

As the Air Force's responsibilities for the use and delivery of nuclear weapons increased, so did the testing and evaluation missions at Kirtland Air Force Base. In 1949, Kirtland became headquarters for the Special Weapons Command (later known as the Special Weapons Center) which was charged with determining future employment of nuclear weapons. Scientific research was added to the base in the 1950's to assess radiation hazards and study nuclear explosions. In 1963, the newly created Air Force Weapons Laboratory absorbed much of the research and development work of the Special Weapons Center.

In 1971, Kirtland Air Force Base merged with the Manzano and Sandia Bases to the east, retaining the designation of Kirtland Air Force Base. Several transitions occurred during the mid to late 1970s. This included the establishment of the Air Force Test and Evaluation Center in 1974, disestablishment of the Special Weapons Center in 1976 and transfer of command from the Air Force Contract Management Division to the Military Airlift Command in 1977.

In 1982, the Air Force Space Technology Center was activated at Kirtland to become the focal point for Air Force space technology planning and development and for coordinating Air Force programs for space missions. In 1990, the Air Force Space Technology Center was combined with three Air Force laboratories to become Phillips Laboratories. Phillips Laboratories is now part of the Air Force Research Laboratory.

In 1993, operational command of Kirtland Air Force Base was transferred from the Air Mobility Command to the newly created Air Force Material Command. The 377th Air Base Wing was formed to be the base's host organization. In 1998, the 377th Air Base Wing was transferred under the Air Armament Center.

The 377th Air Base Wing continues as the host organization for Kirtland AFB. The Wing supports more than 200 tenant organizations, including the Air Force Research Laboratory, Air Force Operational Test and Evaluation Center, 58th Special Operations Wing, New Mexico Air National Guard, Field Command Defense Special Weapons Agency, Air Force Inspection Agency, Air Force Safety Center, the Department of Energy Albuquerque Office and Sandia National Laboratories.

HISTORICAL PERSPECTIVE

Albuquerque International Sunport was initially developed in 1937 through a cooperative effort between the City of Albuquerque and the New Mexico Airport Corporation (a subsidiary of Trans World Airlines). The City of Albuquerque took responsibility for developing airfield facilities, while the New Mexico Airport Corporation developed a terminal building, maintenance hangar and fuel storage facilities on 53 acres owned by the corporation.

Through World War II, the Albuquerque airport served both the airline needs of Trans World Airlines and the growing needs of the Army Air Corp located adjacent to the airport. The City of Albuquerque continued to expand the airfield facilities during the 1940s. By 1945 the airport site had grown to more than 223 acres.

In 1950, the federal government negotiated a quitclaim deed with the City and took possession of the airport. Over the next 12 years, the Department of Defense developed the airport to meet the expanding research and development programs conducted at the Air Base. Meanwhile, the New Mexico Airport Corporation continued operational control over the civilian terminal area.

In 1962, the Department of Defense returned the airfield and most property west of Runway 17-35 by quitclaim deed. Under the agreement to return the airport to the City, the Department of Defense retained title to the air base while agreeing to provide airport crash, fire and rescue services for civilian operations in accordance with Federal Aviation Regulations. The Department of Defense also agreed to pay the City annual compensation for the use of the airfield.

Initially, all civilian facilities were located northwest of the Runway 17-35/Runway 8-26 intersection. This included a new passenger terminal (constructed in 1965), apron areas, air mail facility and aircraft storage hangars. The most significant changes to the facilities occurred in the mid and late 1980's when all general aviation facilities and the airport maintenance facilities were re-located to the southwest quadrant of the airport. This provided space for the expansion of the passenger terminal building.

Recent improvements include the development of the air cargo apron and building in 1992 and the new airport traffic control tower in 1994. Runway 8-26 was reconstructed in the mid-1990s. Runway 3-21 was reconstructed and extended to 10,000 feet in the mid-1990s. Runway 12-30 was reconstructed and extended to 6,000 feet in the late 1990s. A new postal facility was also added to the airport in 1994. Taxiway A was reconstructed in 1993. Taxiway E was constructed in 1991. Four departure gates were added to concourse A in 1996. An observation deck and food court were added in 1998.

A more recent project relocated all rental car functions to a consolidated facility along University Boulevard. This 76-acre site contains a rental car terminal, rental ready/return areas and maintenance/storage areas for each rental car provider operating at Albuquerque International Sunport.

AIRPORT ADMINISTRATION

Albuquerque International Sunport is owned and operated by the City of Albuquerque. The Aviation Department is responsible for the management, operation and development of the airport. The Aviation Department is one of thirteen departments within the City.

Exhibit I-C depicts the current organizational structure of the Aviation Department. The overall management and operation of the airport is the responsibility of the Aviation Director who reports directly to the Mayor and City Council. In Fiscal Year (FY) 2000, there were 249 full-time, 11 part-time and 4 part-time temporary positions authorized for the aviation department.

PREVIOUS FACILITY PLANNING STUDIES

The previous Master Plan for Albuquerque International Sunport was completed in 1994. Using 1991 base year data, the previous Master Plan anticipated future demand and facility needs through the year 2015. The Master Plan outlined improvements for the commercial passenger terminal building, airfield, general aviation and air cargo areas.

The primary airfield recommendations included reconstructing Runway 3-21 to serve as a secondary air carrier runway, closing Runway 17-35, and reconstructing and extending Runway 12-30. Runway 3-21 was planned to be extended to 10,000 feet and equipped with a precision instrument approach procedure to Runway 3. This project was completed in 1994. Runway12-30 was planned to be reconstructed and extended to a length of 6,000 feet and serve general aviation users. This was competed in 1999.

The principal recommendation for the future development of the passenger terminal area requires closing Runway 17-35 to provide for the expansion of the terminal building along the east side of the existing terminal and parallel with the Runway 17-35 alignment. The feasibility of this development and other terminal development options is further examined in this Master Plan update. The development of Sunport Boulevard was envisioned to provide more efficient and direct access to Interstate 25. Sunport Boulevard was constructed in 1998. An expansion to Departure Concourse A was anticipated to provide additional departure gates. This was completed in 1996.

The 1994 Master Plan planned the full development of the air cargo area along Spirit Drive. The initial air cargo apron was constructed in 1989 and expanded in 1996. The air cargo building was constructed in 1992. Long term air cargo development was planned for the east side of Runway 3-21.

While the previous Master Plan retained general aviation facilities in its present location west of Runway 3-21, no significant expansion of this area was planned. The Master Plan anticipated that Double Eagle II Airport, owned and operated by the City of Albuquerque, would serve any major growth needs of general aviation through its designated role as the general aviation reliever airport for Albuquerque International Sunport. As a reliever airport, Double Eagle II Airport was constructed to relieve congestion at Albuquerque International Sunport by providing an alternate airfield facility for general aviation aircraft.

An updated Master Plan for Double Eagle II was conducted under a separate contract, by a separate consultant, at the same time as this

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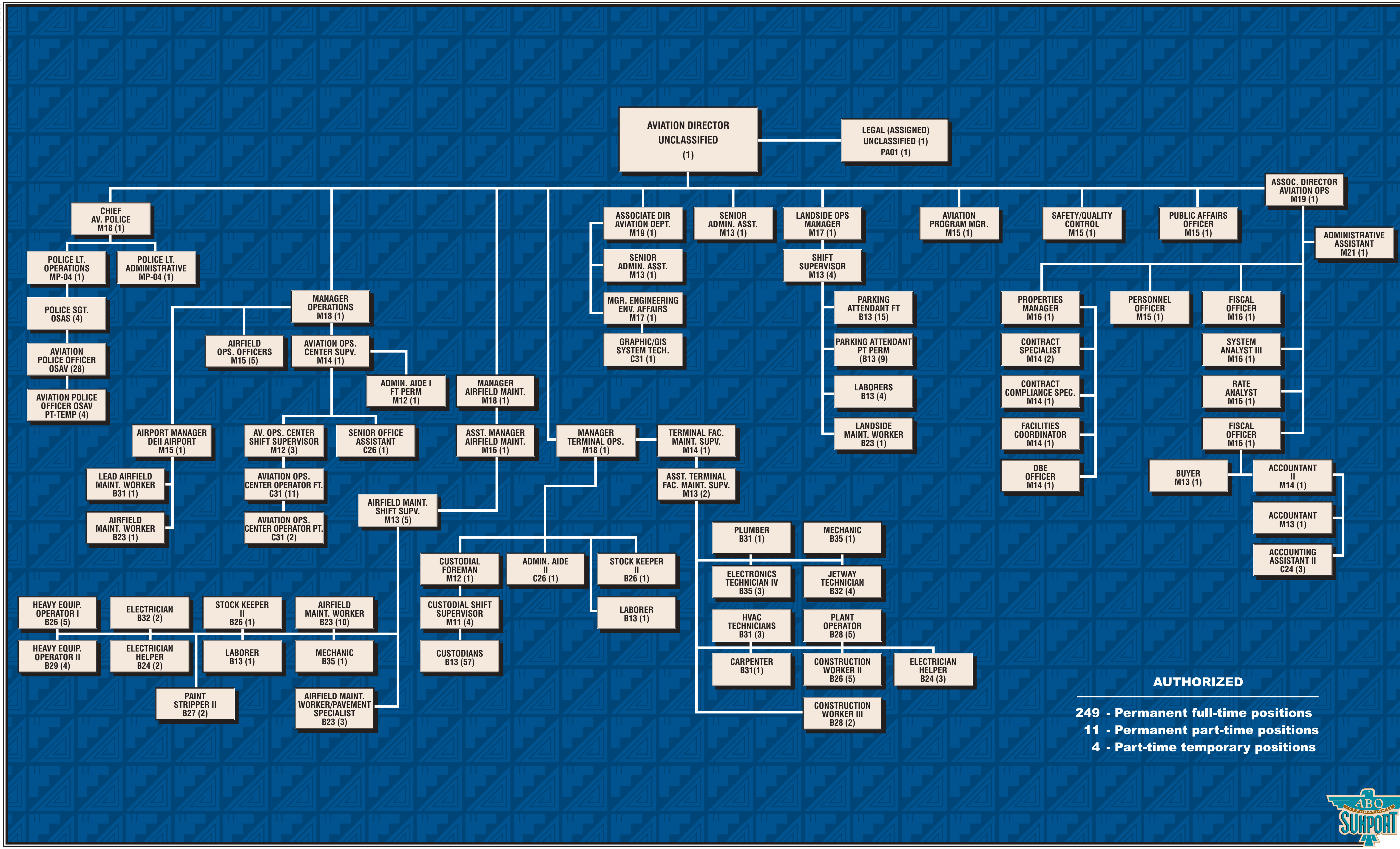

Exhibit I-C
ORGANIZATIONAL CHART
CITY OF ALBUQUERQUE AVIATION DEPARTMENT

Master Plan for Albuquerque International Sunport was prepared.

The *Albuquerque International Sunport Landside Master Plan* was completed in 1998. The purpose of the Landside Master Plan was "to investigate non-aviation airport components and recommend alternatives for the best current and future uses for airport properties." The primary recommendation of the Landside Master Plan was the development of the Consolidated Rental Car Facility along University Boulevard. This was recommended to provide additional public parking capacity in the parking structure and consolidate all rental car functions on airport. The relocation of existing rental car functions from the terminal area also provides an area for the development of the second terminal building. A common shuttle will provide access to and from the terminal for rental car customers. The Landside Master Plan also re-examined and refined recommendations consistent with the 1994 Master Plan.

THE AVIATION SYSTEM ROLE

Airport planning exists on many levels: local, state, and national. Each level has a different emphasis and purpose. This master plan is the primary local airport planning document.

At the state level, the airport is included in the *New Mexico Airport Systems Plan (NMASP)*. The *2000 NMASP* states that the purpose of the *NMASP* is four-fold: (1) The *NMASP* is a guide for the State to formulate policies concerning the investment of New Mexico Aviation Fund resources; (2) the *NMASP* serves as the State's input into the *National Plan of Integrated Airport Systems*; (3) the *NMASP* serves as a point of departure for development of the a multi-year programming process to guide federal and state airport development assistance and (4) the *NMASP* provides an outline for a capital improvement program for each system airport that may be used by airport sponsors in planning for future maintenance and development.

The 2000 NMASP includes 59 airports within the state. Reflective of its importance to the state in providing the primary commercial air link to the national air transportation system, Albuquerque International Sunport is included in the NMASP. Albuquerque International Sunport is classified as a primary, commercial service airport in the NMASP. While improvements at Albuquerque International Sunport are included in the State's five-year capital improvement program, improvements at Albuquerque International Sunport are not eligible for state funding. State statute precludes the granting of state aviation funds for development at Albuquerque International Sunport.

At the national level, the airport is included in the *National Plan of Integrated Airport Systems (NPIAS)*. The *NPIAS (1998-2002)* includes a total of 3,561 airports (both existing and proposed), together with the airport development necessary to anticipate and meet the present and future requirements in support of civil needs. An airport must be included in the *NPIAS* to be eligible for federal funding assistance. Albuquerque International

Sunport is classified as a medium hub, primary commercial service airport in the NPIAS.

AREA BACKGROUND

This section brings together individual studies and data to provide an understanding of the characteristics of the local area. Within this section is a brief summary of the local economy and population (provided in greater detail in Chapter Two), a description of the ground access systems near Albuquerque International Sunport, competitive transportation modes and local climate.

REGIONAL SETTING

The Albuquerque metropolitan area is located in central New Mexico. Located along the banks of the Rio Grande River, Albuquerque is largely situated in the Rio Grande Valley and on the mesas and slopes which rise along either side of the valley floor. The Sandia and Manzano Mountain ranges extend along the eastern edge of the city with the Tijeras Canyon separating the two ranges. West of the city, the land gradually rises to the Continental Divide, approximately 90 miles away.

As shown on **Exhibit I-D**, the Albuquerque metropolitan area is located at the crossroads of Interstates 40 and 25. Interstate 40 is a major east-west ground transportation route extending between California and North Carlina. Interstate 40 connects Albuquerque directly with Oklahoma City, Oklahoma; Little Rock, Arkansas; Memphis and Nashville, Tennessee and Raleigh, North Carolina to the east and Flagstaff, Arizona and Bakersfield, California to the west.

Interstate 25 is oriented primarily in a north-south orientation and extends to El Paso, Texas to south and Buffalo, Montana to the north. Interstate 25 extends through Colorado Springs, Colorado; Denver, Colorado, and Cheyenne, Wyoming to the north.

LOCAL POPULATION AND ECONOMY

Albuquerque is the largest city and metropolitan area in New Mexico. In 2000, the City of Albuquerque had a population of 448,607. The Albuquerque population has steadily grown for many years. Since the 1990 census, the population grew by more than 16 percent. Between 1980 and 2000, the population grew by 35 percent. Between 1970 and 2000, the city population essentially doubled. **Table I-A** summarizes historical population estimates for the City of Albuquerque and compares these to the Albuquerque metropolitan statistical area (MSA) and the entire state of New Mexico. The Albuquerque MSA (Bernalillo, Sandoval and Valencia counties) and state of New Mexico have also experienced steady population increase. As shown in **Table I-A**, the population of both Bernalillo County and New Mexico have grown at rates comparable to the City of Albuquerque.

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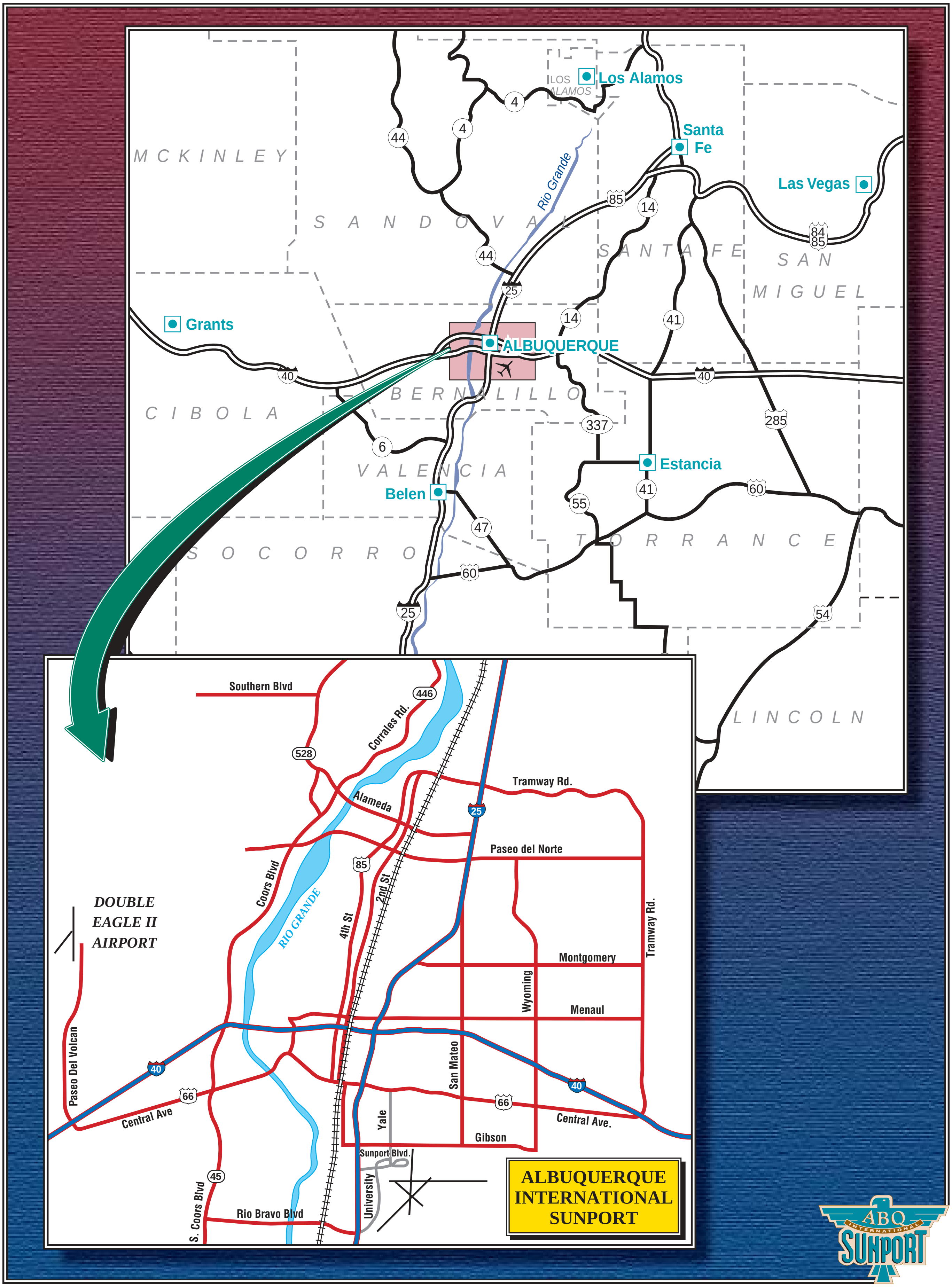


Exhibit I-D
VICINITY MAP

TABLE I-A Historical Population City of Albuquerque, Bernalillo County, New Mexico						
Year	**City of Albuquerque**	**Percent Growth**	**Albuquerque MSA**	**Percent Growth**	**State of New Mexico**	**Percent Growth**
1970	244,501	N/A	353,717	N/A	1,017,055	N/A
1980	332,920	36.2%	485,430	37.2%	1,303,303	28.1%
1990	384,736	13.5%	589,131	21.4%	1,515,069	16.2%
2000	448,607	16.6%	712,738	21.0%	1,819,046	12.0%
Source: U.S. Census						

According to the Greater Albuquerque Chamber of Commerce (GACC), the Albuquerque economy is strong and diverse and is the "state's center for commerce, finance, communications, education, manufacturing, transportation and medical facilities." Major corporations operating in Albuquerque include Intel, Motorola Ceramic Products, Honeywell Defense Avionics, General Electric, General Mills, Philips Semiconductors, Sumitomo Sitix Silicon, Baxter Healthcare, Citicorp Credit Services, Ethicon Endo-Surgery, Sun Healthcare and Southwest Airlines Reservation Center. The Department of Energy operates the Sandia National Laboratories in Albuquerque.

The strength and diversity of the local economy can easily be seen by examining employment by sector data for Albuquerque since 1990. Employment growth has averaged approximately three percent annually. According to the GACC, strong employment growth in 1993-1995 was driven by expansions in semiconductor manufacturing and its suppliers, major construction projects and services. As shown in **Table I-B**, total employment grew from 265,100 in 1990 to 354,900 in 2000, an average annual growth rate of 3.0 percent over the ten-year period. By comparison, the Albuquerque MSA population grew at an average annual rate of 1.9 percent over the same ten-year period.

The annual economic trends for the Albuquerque metropolitan area are collected by the GACC and summarized in their annual report: *Economic Profile of the Greater Albuquerque Region*.

After adding 5,100 new jobs between 1990 and 1996, the manufacturing sector has declined. Affected in part by the Asian financial crisis in 1998, most of the decrease in this sector was due to downsizing in the computer chips and electronics manufacturing (which drove much of the employment growth) and clothing manufacturing.

The GACC reported that even with these recent declines, companies were relocating to the area and existing companies expanding operations. One of the former clothing plants recently closed is being renovated to accommodate a manufacturing division relocating to Albuquerque.

According to the GACC, continued new home and retail business construction are sustaining the construction sector. While 1998 employment in this sector slumped slightly from a peak in 1996, construction employment was up 1,000 jobs in 2000 over 1996. In 1997-98, major construction projects included a number of department stores and large retail complexes. For 1998-99, large retail establishments continued to drive the construction sector. Expansions and new construction at the primary hospitals and road, highway and bridge projects were an important component in the construction sector. New home construction totaled 4,382 dwellings in 1997 and grew to 4,914 homes in 1998, the highest ever recorded.

TABLE I-B
Albuquerque MSA Employment by Sector

	1990	1992	1994	1996	1998	2000	Avg. Ann. Growth Rate
Total Employment	265,100	276,100	307,300	326,300	338,600	354,900	3.0%
Manufacturing	24,300	24,500	28,400	29,400	28,700	28,100	1.5%
Construction	14,200	14,400	21,800	22,400	21,700	23,400	5.1%
Transportation & Public Utilities	13,100	12,900	13,200	15,200	16,200	19,800	4.2%
Wholesale & Retail Trade	65,600	66,900	73,800	79,000	81,800	83,000	2.4%
Finance, Insurance & Real Estate	14,800	14,800	16,000	17,000	17,000	18,900	2.5%
Services & Miscellaneous	78,500	85,700	94,300	101,100	107,600	113,900	3.8%
Government	54,500	56,900	59,800	62,300	65,600	67,800	2.2%

Source: New Mexico Department of Labor, Economic Research and Analysis

The GACC reports that the transportation and public utilities sector were driven by competition in the electric and telecommunications industry.

Wholesale and retail is the second largest employment sector in Albuquerque, providing 83,000 jobs in 2000. Growth in this sector is being supported by the new job growth in other sectors, population increases, and expanded incomes. While trailing national figures ($29,018), per capita personal income for the Albuquerque area ($25,311) was 15 percent higher than the New Mexico average of $21,992. The new retail center construction over the past few years has contributed greatly to the available positions in this sector.

The growth in the Finance, Insurance and Real Estate sector was affected by a large number of bank consolidations. This sector has rebounded recently as real estate continues to expand to support new home construction and a expanded retail and business centers.

The Services sector has enjoyed relatively strong growth since 1990. The nearly four percent annual growth, growth in this sector has been attributed by the GACC to the expansion and development of new teleservicing call centers. The state's exemption from interstate telecommunications gross receipts tax for 800 telephone numbers and wide-area telephone service has been attributed to the call center growth in the area. Expansions in the health care services have also supported growth in this sector.

The government sector is an important component of the local economy. Representing 19 percent of total employment, this sector is supported by over 13,000 civilian Department of Energy and Department of Defense jobs and 5,400 active and reserve positions. Employing more than 33,000 combined, the University of New Mexico and Albuquerque Public Schools are a large component of this sector. State employment (4,800) and local government employment (9,000) also provide a substantial number of local positions. This sector has been attributed to allowing Albuquerque to successfully manage economic cycles in the past.

CLIMATE

The National Oceanic and Atmospheric Administration (NOAA) describes the local climate as "arid continental with abundant sunshine, low humidity, scant precipitation and a wide yet tolerable seasonal range of temperatures." Temperatures in the Albuquerque area are characteristic of the dry, high altitude, continental climate. As shown in **Table I-C**, while the daily range in temperatures is high, extreme temperatures are rare. Daily high temperatures in the winter months are near 50, with daily high temperatures reaching only the freezing mark occurring only a few days each year. While daily high temperatures average near 90 in the summer months, nighttime temperatures are generally comfortable due to the large daily temperature change.

Precipitation within the Rio Grande Valley area is limited and averages only 8.5 inches each year. Nearly half of all annual precipitation results from afternoon and evening thunderstorms during the summer months. According to NOAA, thunderstorm frequency increases beginning early in July, peaks during August and tapers off through September. Thunderstorms are brief, sometimes producing heavy rainfall and often reduce afternoon temperatures.

The very limited precipitation in the winter months occurs mostly as snow. Snowfalls are generally less than an inch, with snowfalls greater than an inch occurring only four times annually.

As shown in **Table I-D**, on average, rain falls on only 97 days each year, while snow can be expected to occur on 26 days. Visibility is restricted on only 21 days each year.

According to data maintained by NOAA, more than three-fourths of daylight hours have sunshine, even in the winter months. The prevalence of sunshine and limited days of low lying clouds and/or limited visibilities serves to increase the operational efficiency and capacity of Albuquerque International Sunport by allowing pilots to operate in situations with good visibility. This reduces dependence on navigational aids to direct aircraft to the airport which slows the arrival and departure procedures. Additionally, visual conditions offer greater flexibility for air traffic control and in some cases reduces the need to implement air traffic control procedures which increase the separation distances between aircraft arriving and departing the airport.

TABLE I-C
Temperature and Precipitation Data
Albuquerque, New Mexico

	Temperature (degrees Fahrenheit)								
	Means			Extreme		Precipitation (inches)		Snowfall (inches)	
	Max	Min	Avg	Max	Min	Mean	Max	Mean	Max
January	47	23	35	69	-17	.4	1.3	3	10
February	53	27	41	76	-5	.4	1.8	2	10
March	61	33	47	85	8	.5	2.2	2	14
April	71	41	56	89	19	.4	1.8	1	8
May	80	50	65	98	28	.6	2.5	T	T
June	90	60	75	107	40	.5	2.6	0	0
July	92	65	79	105	52	1.3	3.3	0	0
August	89	63	77	101	50	1.5	3.3	0	0
September	83	56	70	100	37	.9	2.6	T	T
October	72	44	58	91	21	.9	3.1	T	3
November	57	32	45	77	-7	.5	1.9	1	8
December	48	24	36	72	-7	.5	1.8	3	15
Annual	70	43	57	107	-17	8.5	13.1	11	34

T - Trace Amount
Source: International Station Meteorological Climate Summary
Time period: 1948-1995

TABLE I-D
Mean Number of Days by Month with Precipitation or Obstructions to Vision
Albuquerque, New Mexico

	Precipitation		
	Rain (Days)	**Snow (Days)**	**Obstructions to Vision [1] (Days)**
January	4	5	3
February	4	5	3
March	6	5	2
April	6	2	2
May	9	<1	1
June	9	0	<1
July	17	0	1
August	16	0	<1
September	10	<1	1
October	7	1	2
November	5	3	2
December	4	5	4
Annual Total	97	26	21

[1] Smoke, Haze, Blowing Snow, Dust or Sand

Source: International Station Meteorological Climate Summary
Time period: 1948-1995

According to Federal Aviation Administration regulations, visual flight conditions exist when the cloud ceilings are 3,000 feet above the ground and visibility is greater than three miles. As shown in **Table I-E**, these conditions occur over 97 percent of the time in the Albuquerque region. Lower visibility and cloud ceiling situations are even more rare.

TABLE I-E Percent Frequency of Ceiling and Visibility Conditions Albuquerque, New Mexico				
	Visibility (Statute Miles)			
Ceiling	>=1	>=½	>=¼	>=0
>=3,000'	97.9%	97.9%	97.9%	97.9%
>= 200'	99.7%	99.8%	99.8%	99.9%
>=100'	99.7%	99.8%	99.9%	99.9%
>=0	99.7%	99.8%	99.9%	100%
Source: International Station Meteorological Climate Summary Time period: 1948-1995				

Albuquerque enjoys calm wind conditions a majority of the time. Sustained winds above 12 miles per hour occur approximately 80 percent of the time, while sustained winds greater than 25 miles per hour occur only three percent of the time. Late winter and spring storms, and occasional east winds from the Tijeras Canyon, are the main sources of strong wind conditions.

ENVIRONMENTAL INVENTORY

Available information about the existing environmental conditions at the Albuquerque International Sunport (ABQ) have been derived from the 1994 *Environmental Assessment for Improvements to Runway 3-21 (EA),* 1998 *Environmental Baseline Survey of Approximately 50 Acres of Kirtland Air Force Base Property Offered For Lease to Accommodate a Proposed Extension of Albuquerque Sunport Runway 12-30* (EBS), and 1998 *Landside Master Plan*, as well as from initial coordination with federal, state, and local agencies. The intent of this task is to inventory potential environmental sensitivities that might affect future improvements at ABQ. Factors with potential impacts include the following:

- Area Land Use
- Historic and Cultural Resources
- Wetlands
- Floodplains
- Water Supply and Quality
- Biotic Resources
- Air Quality
- Geology and Soils
- Solid and Hazardous Waste Sites

AREA LAND USE

ABQ is located in the city of Albuquerque, south of Interstate 40 (I-40) and east of Interstate 25 (I-25). Immediately to the east of the airport, and operated in conjunction with the commercial airport facility, is Kirtland Air Force Base (KAFB). On the Base are three grade schools (Kirtland Elementary, Sandia Elementary and Wherry School) and the Atomic Museum. Southeast of the Base is the Sandia National Laboratory, consisting primarily of vacant land over underground storage.

North and east of the airport and the Air Force Base is a large, urban area containing both single-family and multi-family dwellings. Included within these neighborhoods area a number of public and private grade schools and parks. Also located north of the airport are the Puerto del Sol Golf Course (off Gibson Boulevard and located in the RPZ for Runway 17 which is Airport/City property), the New Mexico State Fairgrounds (off Central Avenue), and the University of New Mexico (off Central Avenue). Commercial businesses within this area are primarily located along Central Avenue, Gibson Boulevard, Yale Boulevard, San Mateo Boulevard and Carlisle Boulevard.

Downtown Albuquerque is located approximately four miles northwest of the airport and includes both commercial/industrial and residential land uses. The Rio Grande Park and Zoo are located in this area, as are several hospitals which include the Presbyterian, St. Joseph's, Lovelace Memorial, University of New Mexico and Heart Hospitals, and Atchison, Topeka and Santa Fe Railroad.

Land uses between the airport and the Rio Grande River, located west of ABQ, are primarily vacant and commercial/ industrial. The University of New Mexico Golf Course is also located within this area. Land uses west of both ABQ and the river are primarily single-family residential with some commercial/industrial uses along Isleta Boulevard, Coors Boulevard, Bridge Boulevard, and Central Avenue. Again, schools and parks are scattered through the residential neighborhoods.

Southwest of the airport, land uses are residential west of the Rio Grande River, and a combination of residential, commercial/industrial and vacant east of the Rio Grande River. Schools are located in the vicinity of the residential neighborhoods.

Land uses south of ABQ are primarily vacant. Montesa Park is located within the wash area, Tijeras Arroyo. The park contains a number of public facilities including, a solid waste transfer station, water reservoir and well, Conservation offices, Environmental Health Department test site, fish pond, and a training facility for heavy equipment (operated by the Army Corps of Engineers).

On the other side of the Arroyo is the location of the planned Mesa del Sol development. Mesa del Sol is planned for a variety of land uses including residential, commercial/industrial and recreational. In January of 1993, the Mesa del Sol property was annexed by the City of Albuquerque. This master planned community totals 12,400 acres, including 2,598 acres of residential development. The New Mexico State Land Commission has prepared a Level A Conceptual Mesa del Sol Master Plan which is waiting to be approved by the Albuquerque City Council. Once it is approved, marketing efforts will be focused on developing the employment phase of the plan. Approval has already been granted for a Regional Recreation Complex to be located in this area, and will include a 16,000 seat amphitheater, 44 ball fields, swimming pools and picnic pavilions. The amphitheater was completed in the summer of 2000. This recreational facility will be operated by the County of Bernalillo.

HISTORIC AND CULTURAL RESOURCES

As part of the 1994 EA, correspondence was received from the Office of Cultural Affairs - Historic Preservation Division which identified that the old Albuquerque Municipal Airport Building (SR# 482) had been included in the National Register of Historic Places, the New Mexico Register of Cultural Properties and is registered as a city of Albuquerque Landmark. The terminal is currently being renovated. The majority of the Phase I renovation is complete which included improvements to the building interior and exterior. Phase II, which includes tenant improvements and landscaping is scheduled to start in late 2000.

In addition, as part of the 1994 *Environmental Assessment for the Improvements to Runway 3-21*, a literature search and field survey was conducted in 1993 to identify cultural resources in the vicinity of the proposed runway extension project. Two archaeological sites with the "potential to yield information important to the prehistory of the region and which have possible National Register significance" were located. A "prehistoric cultural locality" was also identified during the survey. This site was identified as an old Anasazi site. This site was excavated, mapped and artifacts removed and cataloged by Mariah Associates.

The first archaeological site contained a scatter of ceramic and lithic artifacts. The site area was located between the extended runway and its taxiway and had been leveled and extensively disturbed. The original site was likely confined to a smaller area and the artifacts later scattered as the result of a grading operation. No structural features are visible, but the surveyor noted that subsurface structures and cultural sediments may exist. The surveyor anticipated the site was probably a small hamlet settlement of Socorro Phase affinity.

The second archaeological site contained a scatter of lithic artifacts and fire-cracked rock debris. The fire-cracked debris indicated the presence of a hearth structure(s). The surveyor noted that it was probable that the site area was buried by low dune formation. According to the surveyor, the site was probably Late Archaic Period encampment and may contain hearths and possible shelter basins or shallow pithouses.

The prehistoric cultural locality contained six obsidian flakes. No associated structural features or cultural sediments were located.

WETLANDS

The U.S. Army Corps of Engineers (ACOE) regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the Clean Water Act.

Wetlands are defined by *Executive Order 11990, Protection of Wetlands*, as "those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction." Categories of wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mud flats, natural ponds, estuarine area, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained soils.

Correspondence included in the 1994 EA received from the ACOE, U.S. Fish and Wildlife Service (USFWS), and the New Mexico Environmental Department identified no significant impacts to wetlands. In addition, a review of the National Wetland Inventory (NWI) maps identified no wetland areas located in the vicinity of the airport. According to the ACOE "the project was not regulated under the provisions of Section 404 of the Clean Water Act". The determination was made because no waters of the United States or adjacent wetlands were located within the proposed project area. The wash area, Tijeras Arroyo, is located at an elevation approximately 300 feet lower than the airport. The wash area may be considered by the ACOE as a water of the United States.

FLOODPLAINS

As defined in the *FAA Order 5050.4A*, floodplains consist of "lowland and relatively flat areas adjoining inland and coastal water including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year". Federal agencies are directed to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains. Floodplains have natural and beneficial values, such as providing ground water recharge, water quality maintenance, fish, wildlife, plants, open space, natural beauty, outdoor recreation, agriculture and forestry. *FAA Order 5050.4A (12)(c)* indicates that "if the proposed action and reasonable alternatives are not within the limits of a base floodplain (100-year flood area)," then it may be assumed that there are no floodplain impacts. The limits of base floodplains are determined by Flood Insurance Rate Maps (FIRM) prepared by the Federal Emergency Management Agency

(FEMA). ABQ is not located within a 100-year floodplain

The airport property is located on top of a mesa east of the Rio Grande River. The airfield has relatively minor relief yet elevations change rapidly in any direction from the field. The Tijeras Arroyo establishes the southern constraint to the airfield. The airfield has an elevation of 5,352 feet mean sea level (MSL). The bottom of the Arroyo is approximately 5,000 MSL.

WATER SUPPLY AND QUALITY

Pursuant to *FAA Order 5050.4A*, the *1982 Airport Act* requires that Airport Improvement Program applications for projects involving airport location, runway location, or a major runway extension shall not be approved unless the governor of the state in which the project is located certifies that there is "reasonable assurance" that the project will be located, designed , constructed, and operated in compliance with applicable air and water quality standards. A water quality certificate for this project will be sought during a final EA process.

Water supply and quality concerns related to airport development most often relate to the following:

- Potable water supply and quality
- Domestic sewage disposal
- Surface runoff and soil erosion

Potable Water Supply and Quality

ABQ gets its water supply through a system of several city owned wells which are located off airport property. The City of Albuquerque Environmental Health Department closely monitors the groundwater supplies in the airport area based on the Superfund sites that are in the area. There are three groundwater monitoring wells located on airport property (near the end of Runway 8) that are monitored by the city of Albuquerque Environmental Health Department. These groundwater monitoring wells specifically monitor the water quality that is associated with area Superfund sites, specifically the South Valley Superfund site. According to EPA officials, contamination from the South Valley Superfund site is moving up gradient towards a city water supply well that supplies water to the airport. This water supply well is located northwest of the airport, at the intersection of Randolph and University Roads. The airport's water supply could potentially be jeopardized if this water supply well becomes contaminated.

Domestic Sewage Disposal

ABQ is connected to the City of Albuquerque sewage collection system. Between 1994-1998, the sewage treatment plant was expanded and upgraded to accommodate flow increases within the City. The improved sewage treatment plant provides a capacity for 76 million gallons a day, however, the current flow rate is only 55 million gallons a day. Adequate capacity exists with the current sewage treatment plant and is projected to meet the areas demands for the next several years. The Sewage Treatment Master Plan is currently being updated by the city.

Surface Runoff and Soil Erosion

ABQ is located in the Waters of the Rio Grande watershed. The airport primarily drains to the south into the Tijeras Arroyo and ultimately into the Rio Grande River. Portions of the airport on the west side drain into the South Diversion Channel which flows into the Tijeras Arroyo. Impervious surfaces such as rooftops and paved parking lots, roadways, and runways, are specific characteristics which may affect the hydrology (runoff quantity) and water quality of a given drainage basin.

As an industrial facility, ABQ is required to comply with Section 402(p) of the Clean Water Act which includes the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water discharges. ABQ currently holds a valid and updated Multi-Sector Group NPDES operating permit.

ABQ has also completed a Storm Water Pollution Prevention Plan as well as a Spill Response Plan which responds to spills from fuel storage facilities.

BIOTIC RESOURCES

Biotic communities refer to those flora and fauna (ie. vegetation and wildlife) habitats which are present in an area. Impacts to biotic communities are determined based on whether a proposal would cause a minor permanent alteration of existing habitat or whether it would involve the removal of a sizeable amount of habitat, habitat which supports a rare species, or a small, sensitive tract.

As part of the 1994 EA, the U.S. Fish and Wildlife Service (USFWS), New Mexico Game and Fish Department, and New Mexico Energy, Minerals and Natural Resources Department were contacted to determine the current status regarding potential impacts to wildlife, plants and native habitat located in the vicinity of the proposed project area.

The USFWS provided a “finding of no effect” on listed species, wetlands, or other important wildlife resources. They stated that the runway upgrade project should have no effect on federally listed or candidate species.

The New Mexico Game and Fish Department noted that the proposed action should not incur significant impacts to wildlife or its habitat.

The New Mexico Energy, Minerals and Natural Resources Department noted that three New Mexico endangered plants may occur in the vicinity of the airport. These plants included; White visnagita cactus (Neolloydia intertexts), Wright's fishhook cactus (Mammillaria wrightii), and Gramagrass cactus (Toumeya papyracantha).

A literature search and field survey of the area was completed in April 1993 as part of the 1994 EA. Although suitable habitat for at least four species of state endangered or sensitive plant species existed in the project area, none were observed. The surveyor noted that little habitat in the project area is undisturbed and much of it has been subject to decades of continuous use. Land outside the airport boundaries, while it retained native habitat, has been heavily impacted by off-road vehicle traffic and illegal dumping resulting in a badly fragmented and disturbed natural habitat.

During the plant survey, two Burrowing owls were identified in the project area. These owls are protected by the state of New Mexico. Their burrow was located just outside of the proposed construction zone for the runway extension.

AIR QUALITY

The U.S. Environmental Protection Agency (USEPA) has adopted air quality standard that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of a primary and secondary standards for six criteria pollutants which include: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_x), Nitrogen Oxide (NO_x), Particulate Matter (PM_{10}), and Lead (Pb).

Primary air quality standards are established at levels to protect the public health from harm with an adequate margin of safety. Secondary standards are set at levels necessary to protect the public health and welfare from any known or anticipated adverse affects of a pollutant. All areas of the country are required to demonstrate attainment with the NAAQS. New Mexico has adopted the federal ambient air quality standards.

Air contaminants increase the aggravation and the production of respiratory and cardiopulmonary diseases. The standards also establish the level of air quality which is necessary to protect the public health and welfare, including among other things, affects on crops, vegetation, wildlife, visibility, and climate, as well as affects on materials, economic values, and on personal comfort and well-being.

Within the ABQ area, the air quality programs are coordinated with the city of Albuquerque Environmental Health Department, which serves as staff for the Albuquerque/Bernalillo County Air Quality Control Board and administers the State Implementation Plan (SIP) for Bernalillo County.

The Middle Rio Grande Council of Governments (MRGCOG) is required to complete a Transportation Improvements Program (TIP) for the Albuquerque metropolitan statistical area (MSA) and a conformity analysis for Bernalillo County. The TIP emission budgets are then compared to the SIP estimates prepared by the city of Albuquerque Environmental Health

Department and must be below the SIP levels to maintain conformity.

ABQ is located in an attainment area under a maintenance plan for moderate CO standards. The status was officially re-designated in 1996 from non-attainment for CO to maintenance area for CO. According to MRGCOG air quality personnel, the ABQ area may be reaching ozone exceedances within the next two years. Being re-designated as a maintenance area, MRGCOG no longer has to prepare transportation control measures but must maintain all other air quality programs initiated while under non-attainment status.

GEOLOGY AND SOILS

Correspondence received as part of the 1994 EA from the United States Department of Agriculture (USDA) - Soil Conservation Service (SCS) in 1992, identified the soils located within the area of ABQ show evidence of ground subsidence. Collapsible soils are a major cause of the subsidence. The SCS recommended that a geotechnical ground-subsidence study be prepared prior to any construction in the airport area to evaluate soil collapse issues. Soil and/or geotechnical testing is conducted prior to any construction activities to determine the stability of the soils in the airport area.

SOLID WASTE DISPOSAL SITES

Currently, solid waste at the airport is collected by the city of Albuquerque and transported to the Cerro Colorado Landfill located approximately 25 miles west of the ABQ. According to city solid waster personnel, this landfill currently has adequate capacity and is expected to remain open for the next 20 to 25 years.

There are no open landfills located within two miles of the airport property. A transfer station (convenience center) is located in Montesa Park south of the airport, just over 600 feet southeast of the south end of Runway 17-35. The presence of landfills and transfer stations in the vicinity of airports is of concern as they often attract scavenger birds which can increase the potential for bird strikes. No bird strike problem has been documented for this transfer station, which is located at an elevation approximately 300 feet lower than the airport.

There are two closed landfills in close proximity to the airport. South Yale landfill, a closed municipal landfill is located west of Runway 8, on the east side of I-25, on airport property. It was closed in the 1960's and the limits of the landfill have decreased over the past thirty years. During this time, a number of areas within the landfill have been developed. Portions of this landfill were impacted by the construction of Sunport Boulevard and George Road in 1996. At that time the city installed a landfill liner and vent and landfill gas monitoring system to allow the release of methane gas generated by the closed landfill. There are twelve vents that monitor methane gas as well as other landfill gases located in various locations in the landfill area. These vents are monitored approximately two to three times a year by Aviation Department as well as by the city of Albuquerque Environmental Health Department. Methane gas is detected in fairly large amounts, also benzene gas is detected. According to airport personnel, there has been no detection of contamination to the airport's groundwater supply from the landfill site.

A *Landside Master Plan* was prepared in June 1998 which assessed the development potential of the South Yale Landfill area for airport uses. It concluded that light uses such as parking, walkways, and storage areas are possible uses for the landfill area. Using the landfill for other facilities would require proper design and consideration of geotechnical issues, including complete removal of solid waste.

The second closed landfill is the old KAFB landfill which is located on KAFB property, adjacent and south of Runway 26. This landfill is currently being monitored by KAFB with a system of wells to identify the potential release of hazardous materials into the groundwater supply and air.

HAZARDOUS WASTE SITES

Hazardous waste site concerns related to airport development include the following:

- EPA National Priorities List (NPL) sites
- Underground pipeline
- Glycol Use

EPA National Priorities List Sites

There are at least two sites listed on the EPA NPL that are in close proximity to the airport. The NPL primarily serves as an information and management tool. It is part of the Superfund cleanup process and the NPL is updated periodically.

Section 105(a)(8)(B) of the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), as amended, requires that the statutory criteria provided by the Hazard Ranking System (HRS) be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States.

The identification of a site for the NPL is intended primarily to guide the Environmental Protection Agency (EPA) in:

- Determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with a site;
- Identifying what CERCLA-financed remedial actions may be appropriate;
- Notifying the public of sites EPA believes warrant further investigation; and
- Serving notice to potentially responsible parties that EPA may initiate CERCLA-financed remedial action.

The sites listed on the NPL that are in close proximity to the airport are: the South Valley (also known as the GE site) and the Atchison, Topeka, and Santa Fe (AT&SF) site, also known as the AT&SF Tie Treater. These sites are located in the South Valley portion of Albuquerque.

Industrial development in the South Valley area began in the 1950's with the construction of a metal parts manufacturing plant by the Atomic Energy Commission. By the 1960's, organic chemicals (solvents) were being handled in the area. The South Valley (GE site) is located approximately one half mile southwest of the airport and covers about two square miles. Wells in the San Jose well field became contaminated by organic compounds, forcing the closure of over twenty private wells and two Albuquerque municipal wells. A new city water supply well was completed in April 1987 (Burton #4). Contamination in the soil and shallow ground water has been found in the residential area north of the GE plant. The three groundwater monitoring wells on airport property were installed to specifically monitor the movement of ground water contaminants from the GE site. The municipal groundwater supply well located at the intersection of Randolph and University Roads is in jeopardy of being contaminated by the GE site. The GE contamination is moving up gradient towards this city well. This city water supply well supplies water to the airport. The three groundwater monitoring wells are closely evaluated by the City of Albuquerque Environmental Health Department. The EPA completed the initial Remedial Investigation/Feasibility Study phase in 1988 along with the installation of a new replacement city water supply well in 1987. A remedial Design was completed in May 1995 on the pumping and treatment of the deep aquifer in the area. Construction began on a remediation system in May 1995. Construction was completed on a recovery system and treatment plant and remedial operations began in April 1996. On-going remediation efforts continue on this site as well as extensive groundwater monitoring by the EPA and city.

The AT&SF site is located west of Interstate 25 (I-25) and east of State Road 47 (SR 47), approximately one to two miles west of the airport. The EPA has identified fifteen city of Albuquerque, three KAFB, and 148 private wells within four miles of the site that serve an estimated 43,500 people. The site is an abandoned wood-preserving facility in an industrial area. AT&SF used the facility to treat various wood products (railroad ties, bridge timbers, fence posts, etc.) with a solution of creosote and oil. The site operated from March 1908 to January 1972, at which time it was closed and dismantled. Washdown waters, spills and leakage were disposed of in an unlined surface impoundment. The sump and impoundment area covered approximately 3.4 acres. The site was proposed on the NPL on October 14, 1992, because of the threat to ground water. AT&SF and EPA signed an Administrative Order on Consent on June 6, 1994 for the performance of the Remedial Investigation and Feasibility Study. In April 22, 1999, sludges and contaminated soils were removed in the old impoundment area. On-going cleanup efforts are being performed on the site to continue rectifying the presence of creosote contaminants in the groundwater. Groundwater contaminants from this site do not seem to be a threat to any of the water supplies at the airport.

Underground Pipeline

According to the 1998 EBS, no hazardous materials or petroleum products were observed on the property during the inspection. Evidence of an abandoned four inch jet fuel line was observed on adjacent properties, although no soil staining or unusual odors were observed. KAFB records indicate that the abandoned pipeline was owned and operated by Standard Transmission Corporation (a predecessor to Chevron Pipe Line Company) and traverses the proposed lease area for Runway 12-30. It was determined through discussions with Chevron personnel that the pipeline had been abandoned for at least 20 years, and no indication of potential contamination has been noted.

Hydrocarbon testing conducted along the abandoned pipeline alignment showed hydrocarbon levels similar to background levels, suggesting the absence of hydrocarbon contamination in the study area. Additional soil tests were conducted along the abandoned pipeline area in December 1998. A total of six borings were conducted along the centerline of the pipeline to a depth of five feet below the existing ground elevation. A second set of borings were performed a minimum of 30 feet from the pipeline alignment and were intended as background indications for comparison to samples retrieved along the pipeline. No indication of petroleum was indicated and no odor was present during drilling activities.

The majority of the pipeline has been removed during airfield improvement projects.

No other records of uses associated with the use or storage of hazardous materials or petroleum products was identified during the preparation of the EBS. Storage or accumulations of hazardous and petroleum waste were not noted during the inspection of the property.

Glycol Use

During the winter months, it is sometimes necessary to de-ice aircraft at the airport. All users at the airport use propylene as a deicing agent with the exception of Trans World Airlines (TWA) which uses ethylene. Glycol is currently collected and disposed of into the sanitary sewer system.

Chapter Two

Aviation Forecasts

Chapter Two
Aviation Demand Forecasts

An important factor in any facility plan is a definition of the demand that it should reasonably be expected to accommodate during the useful life of its key components. In airport master planning, this involves projecting aviation activity indicators over at least a 20-year period. Forecasts of passengers, cargo, based aircraft, and operations (takeoffs and landings) serve as the basis for airport facility planning.

FAA Advisory Circular 150/5070-6A outlines six standard steps involved in the forecast process. These include:

1) Determine existing FAA and other related forecasts for the area served by the airport.

2) Determine if there are significant local conditions or changes in forecast factors.

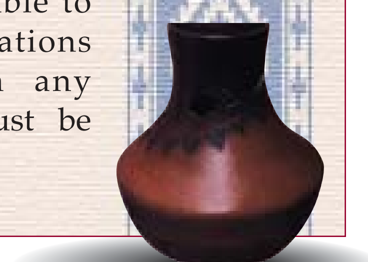
3) Make and document any adjustments to the aviation activity forecasts.

4) Where applicable, consider the effects of changes in uncertain factors affecting demand for airport services.

5) Evaluate the potential for peak loads within the overall forecasts of aviation activity.

6) Monitor actual activity levels over time to determine if adjustments are necessary in the forecasts.

Aviation activity can be affected by many influences on the local, regional, and national level, making it virtually impossible to predict year-to-year fluctuations over twenty years with any certainty. Therefore, it must be



remembered that forecasts are to serve only as guidelines and planning must remain flexible enough to respond to a range of unforeseen developments.

Recognizing this, it is intended to develop the Albuquerque International Sunport Master Plan to be demand-based rather than time-based. As a result, the reasonable levels of activity potential that are derived from the forecasting effort will be related to planning horizon levels rather than dates in time. These planning horizons will be established as levels of activity that will call for consideration of the implementation of the next step in the master plan program.

The following forecast analysis examines recent developments, historical information, and current aviation trends to provide an updated set of aviation demand projections for Albuquerque International Sunport. The intent is to permit the City of Albuquerque to make the planning adjustments necessary to ensure the airport is prepared to address future demands in an efficient and cost-effective manner.

NATIONAL AVIATION TRENDS

The Federal Aviation Administration (FAA) publishes a national aviation forecast on an annual basis. These forecasts include projections for major air carriers, regional/commuters, general aviation, and FAA workload measures. They are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and by the general public. The current edition when this chapter was prepared was **FAA Aerospace Forecasts - Fiscal Years 2000-2011**. The forecast uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

According to the FAA, the U.S. aviation industry outlook for the next 12 years is for sustained, moderate economic growth, even though growth is expected to be somewhat slower in the short term (2001-2004). In addition real fuel prices over this period are expected to decline slightly, even though prices have risen in 2000. Scheduled domestic passenger enplanements are forecast to increase 3.6 percent annually with scheduled international enplanements forecast to increase by an average of 5.1 percent per year through 2011.

COMMERCIAL AVIATION

The U.S. commercial aviation industry experienced a sixth consecutive year of traffic growth in 1999, with passenger enplanements growing 3.5 percent. This growth was attributed in part to strong U.S. economic growth and to continued economic expansion. Also in 1999, the industry's capacity, measured in available seat-miles (ASM's), grew by 4.6 percent. This resulted in load factors decreasing marginally from an all-time high of 70.9 percent to 70.8 percent, the first decline since 1993.

The regional/commuter industry continued to grow at significantly higher rates than the air carriers, with passenger enplanements increasing by 12.0 percent in 1999. The regional/commuters also achieved an all-time high load factor of 57.6 percent.

The regional commuter fleet has continued to be upgraded with increasing numbers of regional/commuter airlines operating 30 to 75 seat regional jets. In fact, regional jets accounted for nearly half of the commercial jet orders in 1999, indicating that regional/commuters will continue to be the fastest growing sector of the industry in the years to come.

The FAA projections for commercial service and regional/commuter passenger enplanements indicate relatively strong growth. As shown on **Exhibit II-A**, commercial enplanements are projected to grow at an average annual rate of 3.6 percent through 2011. Regional/commuter enplane-ments are projected to grow at an annual rate of 5.5 percent over the same time frame.

AIR CARGO

U.S. air carrier's air cargo traffic in 1999 declined for the first time since 1985. The overall 1.4 percent decline in revenue ton miles (RTM's) was due to a 3.0 percent decline in international cargo, as domestic cargo was up 0.3 percent. As presented on **Exhibit II-B**, freight/express RTM's are forecast to more than double over the next 12 years as moderate to strong economic activity both domestically and internationally fuels the demand for the speedy movement of goods and product by air. The growth of e-commerce has only served to heighten this demand. The annual rate of growth of freight/express over the 12-year period is forecast to average 5.4 percent.

By contrast, significantly slower growth is forecast for air mail as electronic alternatives (fax, e-mail, etc.) cut into the volume of mail moved by air. Domestic and international RTM's are projected to increase at an annual rates of 3.8 percent and 3.1 percent respectively over the forecast period.

GENERAL AVIATION

The United States general aviation fleet is projected to total 230,995 in 2011, an increase of almost 24,000 aircraft over the 12-year forecast period (0.9 percent annual growth). The forecast assumes that the business use of general aviation aircraft will expand at a more rapid pace than personal use. The more expensive and sophisticated turbine-powered part of the fixed-wing fleet is expected to grow at four times the rate of that forecast for the piston aircraft categories (2.8 percent to 0.7 percent annually). The fleet forecasts have been summarized in **Exhibit II-C**.

The number of active pilots are forecast to increase by 2.1 percent annually through 2011. Most of this growth is anticipated in the student and airline transport categories. General aviation hours flown are projected to increase an annual average of 2.2 percent through 2011. This larger increase in hours relative to the increase in aircraft indicates that a higher utilization of the general aviation fleet is expected.

The general aviation industry is particularly vulnerable to an economic slowdown or recession. The recent turnaround in the demand for general aviation products and services, tenuous as it is, has occurred during a period of unprecedented economic growth. It is not known how the industry or its customers will react to a protracted slowing of demand or an economic recession.

AIRPORT SERVICE AREA

The service area of an airport is defined by its proximity to other airports providing similar service. Albuquerque's service area is rather extensive in that it is the only airport in the state of New Mexico with commercial service by the major airlines. As indicated on **Exhibit II-D**, there are 12 other airports around the state that have commercial service, but ABQ is the only one served by the major airlines. All but one of the other 12 airports have commuter service to ABQ. In fact, ABQ is the only destination with major airline services for nine of the airports.

Over 95 percent of the commercial passengers enplaning in New Mexico do so at Albuquerque International Sunport. Since the Albuquerque metropolitan statistical area (MSA) comprises just 39 percent of the population in the state, it is obvious that the airport draws passengers from well beyond the metropolitan area.

El Paso International Airport is the next closest airport with major airline service. It is 224 miles south of ABQ. Amarillo and Lubbock are the next closest. They are located in west Texas, 278 and 289 miles respectively from ABQ. Denver International Airport draws some traffic from northern New Mexico, and Phoenix Sky Harbor International Airport draws from the western New Mexico border.

Over the years, studies have shown that over two-thirds of the ABQ originating passengers come from within a thirty mile radius of the airport. The next largest contributor has been the Santa Fe/Los Alamos area. Thus, the six county area of Bernalillo, Sandoval, Valencia, Torrance, Los Alamos and Santa Fe generates over 75 percent of the passengers at ABQ.

Los Alamos and Santa Fe both have airports with regional/commuter service. Los Alamos' service is to ABQ. Santa Fe's service is presently to Denver, but there is a potential for regional jet service in the future. Combined, the two airports have generated over 30,000 annual enplanements.

There is good potential that the Santa Fe traffic will grow in the future. F.A.R. Part 139 certification is under consideration. This could eventually lead to 19-passenger aircraft being supplemented or replaced by 30- to 60-seat aircraft including regional jets.

While improving, the level of air service at Santa Fe is still not expected to approach that available at ABQ. Thus ABQ can be expected to continue to draw a smaller, but still significant share of the Santa Fe market area in the future.

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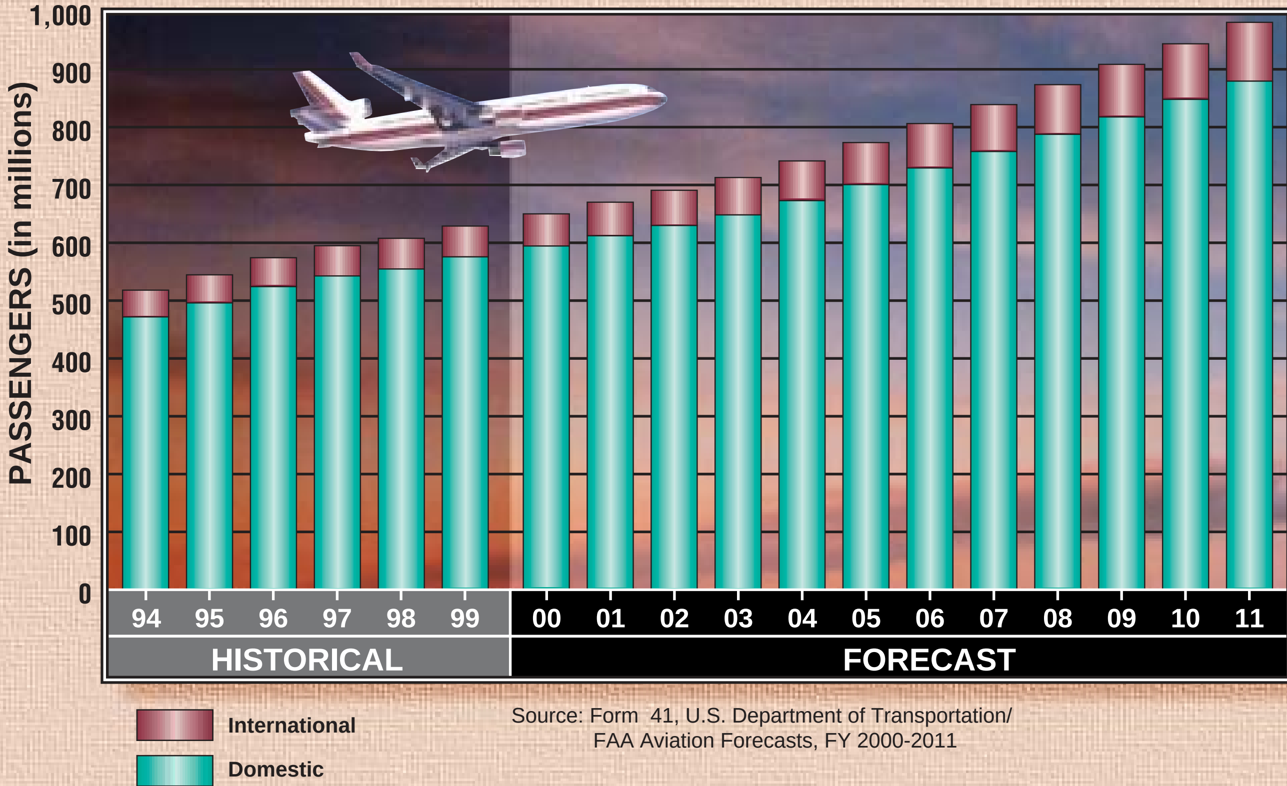
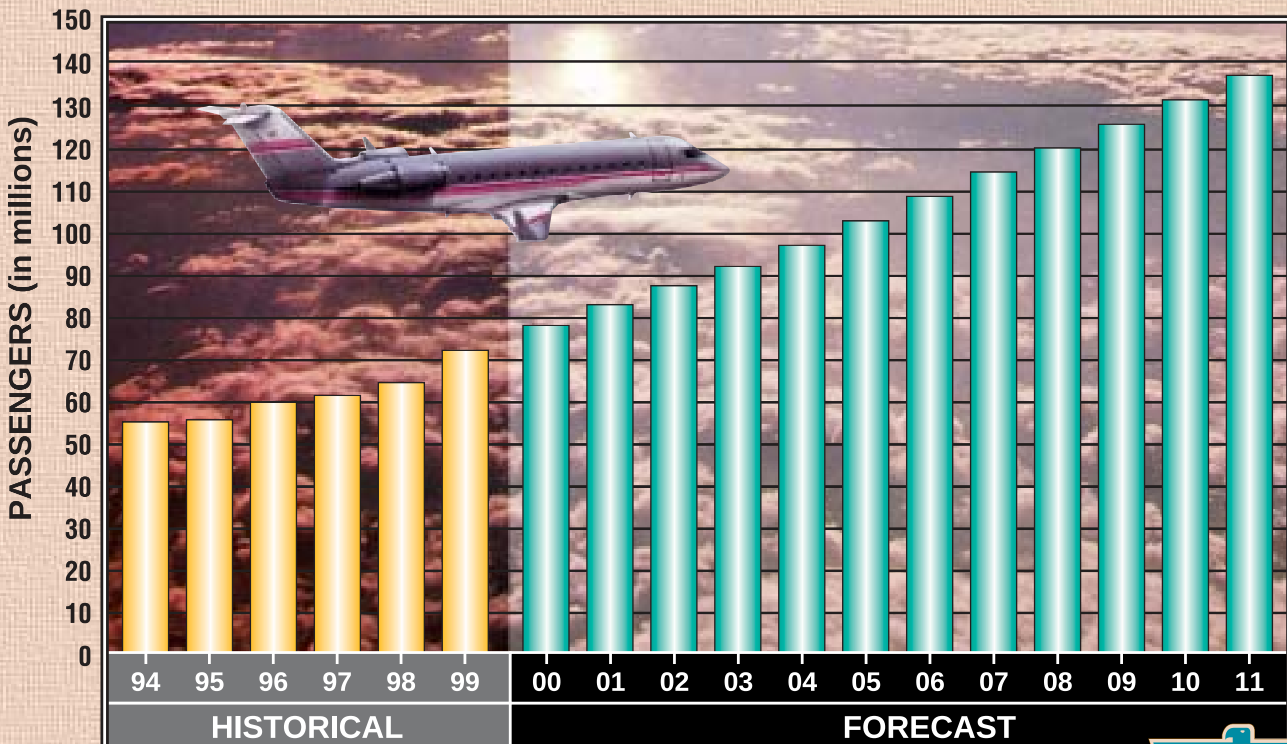
SCHEDULED COMMERCIAL PASSENGER ENPLANEMENTS



Source: Form 41, U.S. Department of Transportation/
FAA Aviation Forecasts, FY 2000-2011

U.S. REGIONAL/COMMUTER SCHEDULED PASSENGER ENPLANEMENTS



Source: FAA Aviation Forecasts, FY 2000-2011

Exhibit II-A
U.S. COMMERCIAL AND
REGIONAL/COMMUTER FORECASTS

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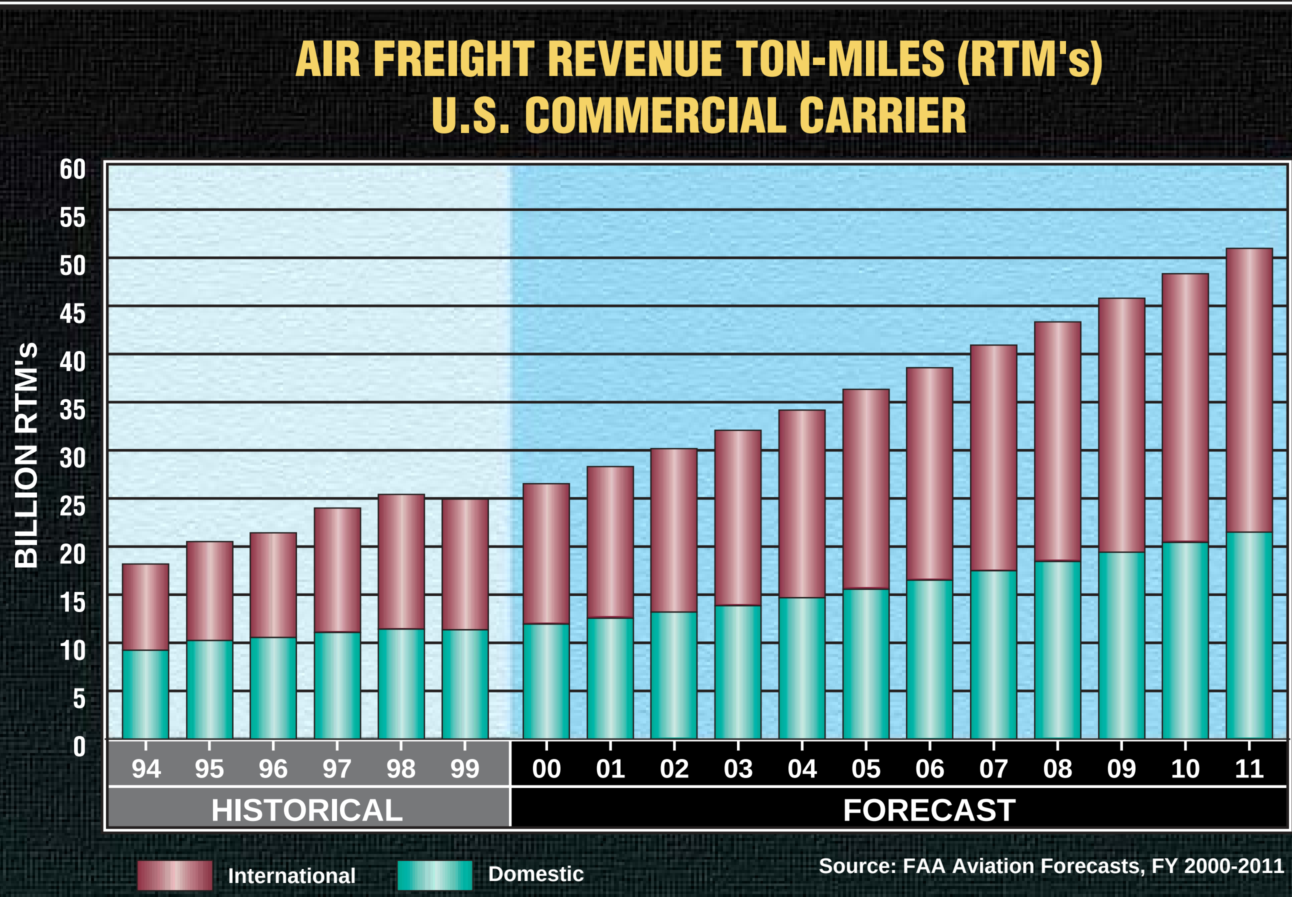

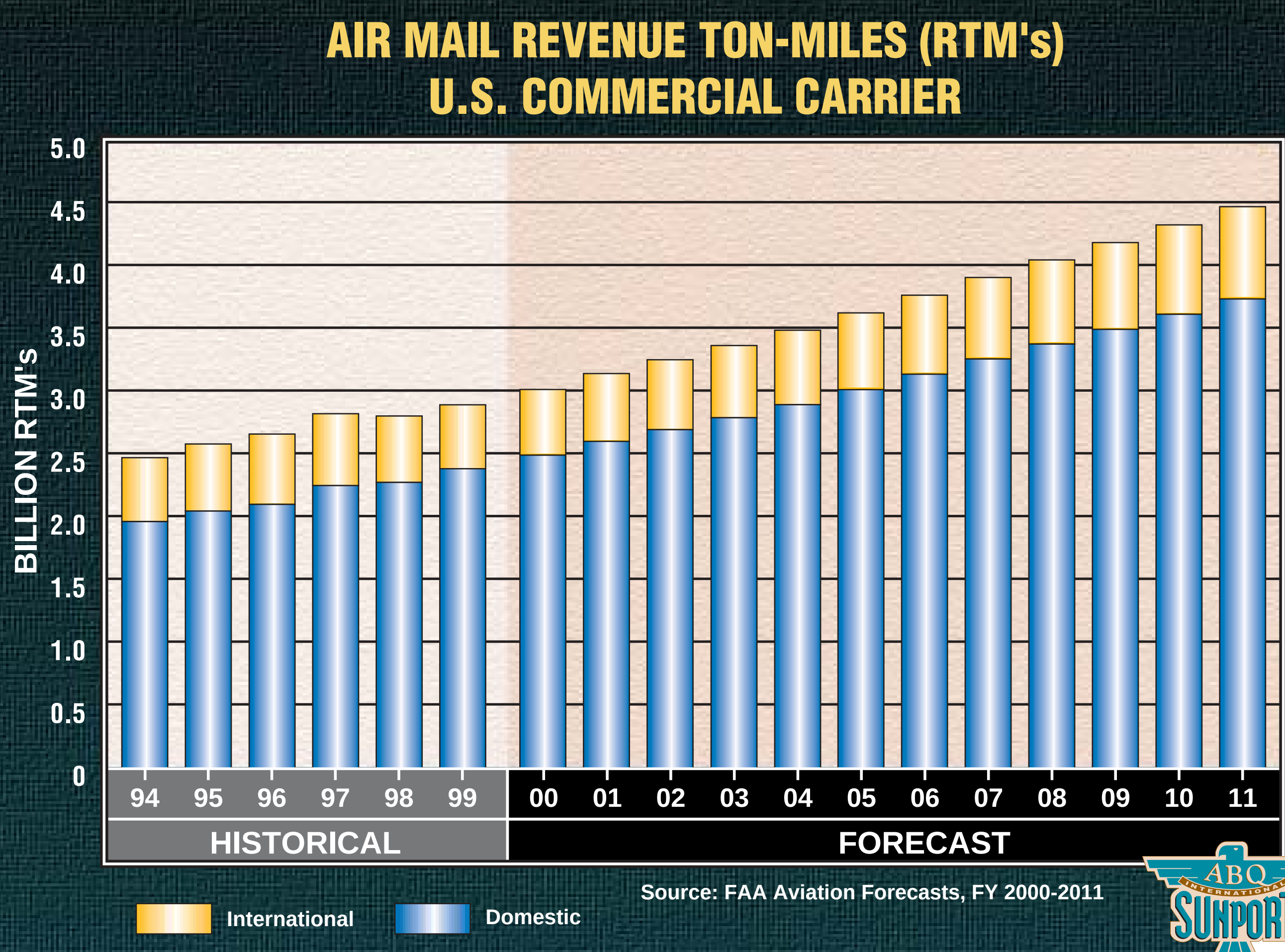

Exhibit II-B
U.S. AIR CARGO FORECASTS

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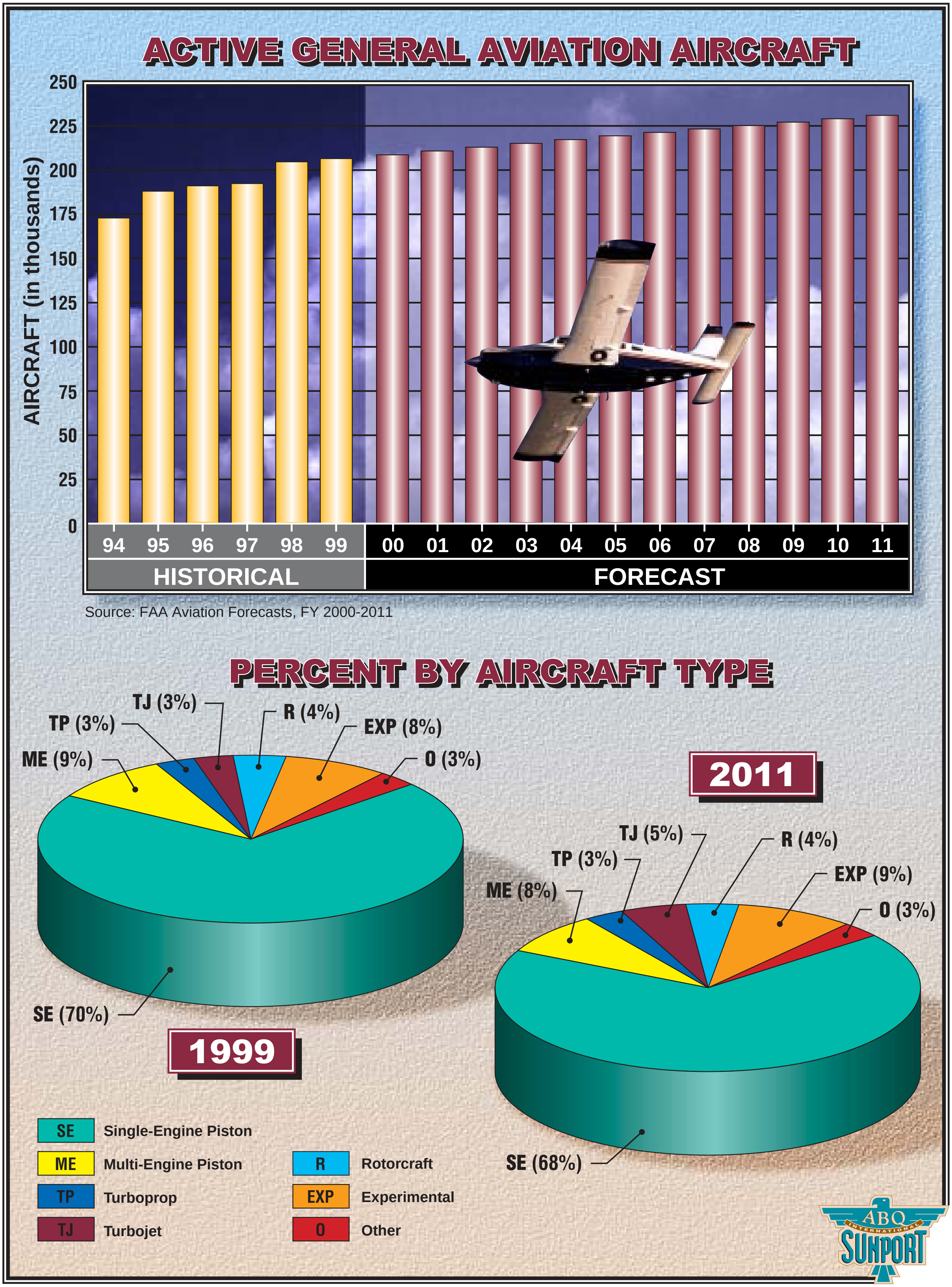

Exhibit II-C
U.S. ACTIVE GENERAL AVIATION
AIRCRAFT FORECASTS

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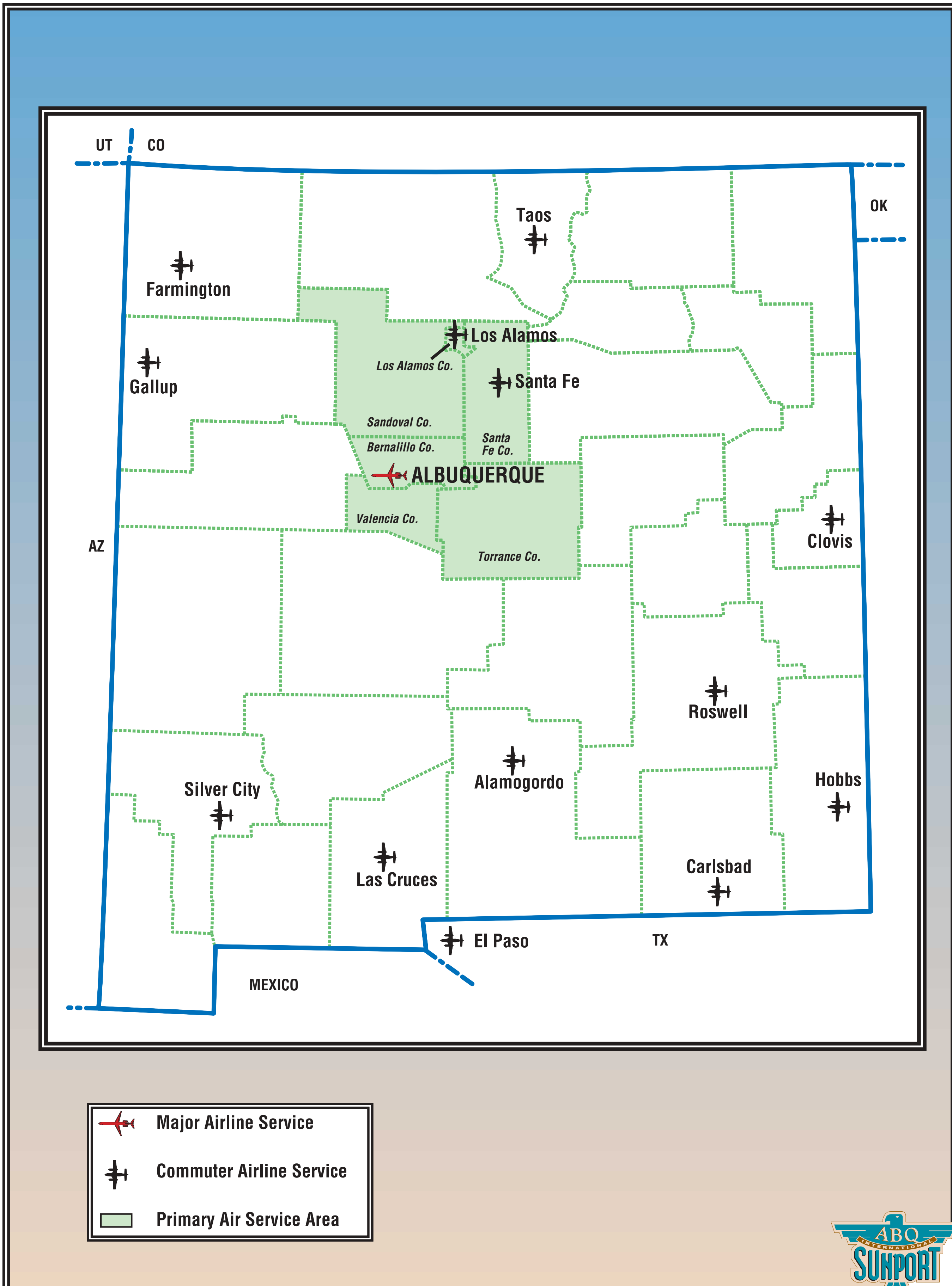

Exhibit II-D
AIRPORT SERVICE AREA

Even as commuter service improves throughout the state, ABQ can expect to continue to draw passengers state-wide. Therefore, virtually the entire state, as well as portions of southern Colorado and eastern Arizona can be considered as part of the airports secondary trade area. The six-county area, however, remains the primary core of the commercial service market area.

The general aviation service area is more localized due to the availability of other airports that serve general aviation exclusively. Therefore, the general aviation market area is limited to the MSA, and primarily to Bernalillo County. In fact, much of that market is shared with Double Eagle II (the City of Albuquerque's other airport).

SOCIOECONOMIC TRENDS

Local and regional forecasts developed for key socioeconomic variables provide an indication of the potential for supporting growth in aviation activity at an airport. Three variables found most valuable in evaluating service area traffic growth potential are population, employment, and per capita personal income (PCPI).

The University of New Mexico Bureau of Business and Economic Research (UNM-BBER) regularly updates forecasts of population for the state and its counties. The projections available at the time these aviation forecasts were prepared were released in April, 1997. **Table II-A** and **Exhibit II-E** depict the historic and forecast population for the Albuquerque MSA, the six-county primary service area, and the state.

Population in the six-county area has grown 43 percent since 1980. This equates to an annual average rate of 2.1 percent. The six-county population is forecast to grow from an estimated 837,737 in 1999 to 1,290,241 by 2025. This equates to an annual average growth rate of 1.5 percent. The population of the state of New Mexico has grown over 33 percent since 1980. This equates to an annual average rate of 1.5 percent. The state population is forecast to grow from an estimated 1,739,844 in 1999 to 2,534,984 by 2025. This equates to an annual average growth rate of 1.5 percent.

Employment forecasts were obtained from **The Complete Economic and Demographic Data Source (CEDDS 2000)**, by Woods and Poole Economics, Inc., January 2000. These historic and forecast wage and salary employment figures for Bernalillo County, the Albuquerque MSA, the six-county primary service area, and the state are presented in **Table II-A** and **Exhibit II-E**.

Employment in the six county primary service area grew 77 percent between 1980 and 1999. This equates to approximately 3.0 percent annually. Employment is forecast to grow from 534,174 in 1998 to 850,110 by the year 2025. This equates to a 1.7 percent average annual growth rate. State employment grew 58 percent during the same time period for a 1.7 percent annual average. The forecasts for the state's employment indicates a 53 percent growth from 945,953 in 1998 to 1,445,080 in 2025. This equates to a 1.6 percent average annual rate.

TABLE II-A
Local and Regional Socioeconomic Variables
Albuquerque International Sunport

	Population			Wage and Salary Employment			Per Capital Personal Income (1992$)	
Year	New Mexico	Six-County Region	ABQ MSA	New Mexico	Six-County Region	ABQ MSA	New Mexico	ABQ MSA
ACTUAL								
1980	1,303,303	586,039	485,430	598,966	301,303	247,466	$13,717	$14,864
1981	1,332,747	599,436	497,093	613,692	304,960	249,709	13,712	14,706
1982	1,363,822	609,082	503,286	622,157	304,368	247,180	13,687	15,171
1983	1,394,362	622,098	514,311	634,697	319,415	258,917	13,848	15,696
1984	1,416,719	635,467	525,266	659,493	338,840	275,524	14,400	16,510
1985	1,438,360	648,207	536,073	679,549	357,234	290,378	14,866	17,211
1986	1,462,728	665,729	549,861	685,967	370,765	301,041	14,957	17,614
1987	1,478,519	684,767	564,602	706,376	388,351	315,747	14,937	17,657
1988	1,490,336	696,580	574,007	739,492	406,691	331,147	15,045	17,707
1989	1,503,901	709,110	583,794	759,293	418,665	339,261	15,180	17,592
1990	1,515,933	719,535	591,591	770,505	423,503	342,272	15,399	17,749
1991	1,547,115	732,836	601,981	793,649	435,773	349,336	15,332	17,753
1992	1,580,750	749,635	615,472	807,714	445,368	356,632	15,752	18,225
1993	1,614,937	767,686	628,911	837,363	465,480	372,939	16,076	18,729
1994	1,653,320	788,047	644,959	871,500	484,296	389,903	16,261	19,277
1995	1,682,417	807,212	658,895	903,412	510,444	411,516	16,624	19,662
1996	1,706,151	818,072	667,210	907,100	517,334	417,993	16,710	19,808
1997	1,722,939	827,691	673,182	923,360	526,120	424,221	16,875	20,057
1998	1,733,535	833,110	676,530	945,953	534,174	429,801	17,192	20,552
1999	1,739,844	837,737	678,820	NA	NA	NA	NA	NA
FORECAST								
2005	1,956,725	959,999	780,614	1,079,170	626,650	501,150	$19,809	$23,057
2010	2,090,678	1,034,975	837,911	1,168,170	681,620	541,630	21,208	24,628
2015	2,232,424	1,114,784	898,479	1,258,850	737,220	582,600	22,646	26,216
2020	2,380,802	1,199,628	962,646	1,351,130	793,330	623,960	24,159	27,863
2025	2,534,964	1,290,241	1,030,907	1,445,080	850,110	665,870	25,789	29,619

Notes: The ABQ MSA consists of Bernalillo, Sandoval, and Valencia Counties.
The Six-County Region consists of the ABQ MSA plus Los Alamos, Santa Fe, and Torrance Counties.
The PCPI for the six-county region is not available.

Sources: Actual Data: U.S. Department of Commerce, Bureau of Economic Analysis
Population Forecast: University of New Mexico, Bureau of Business and Economic Research, April 1997
Employment and PCPI: The Complete Economic and Demographic Data Source (CEDDS, 2000), Woods and Poole, Economics, Inc., January 2000.

Per capita personal income (PCPI) is presented in **Table II-A and Table II-E** in 1992 dollars. Forecasts of PCPI were also obtained from **CEDDS 2000.** It should be noted that the PCPI for the six-county region was not available. Therefore, the PCPI for the MSA is substituted on the exhibit.

As indicated by the table, inflation-adjusted PCPI has experienced minor slumps during recessions and growth the rest of the time. The adjusted PCPI of the MSA grew 38 percent between 1980 and 1998. The MSA PCPI is projected to grow 44 percent from $20,552 in 1998 to $29,619 by the year

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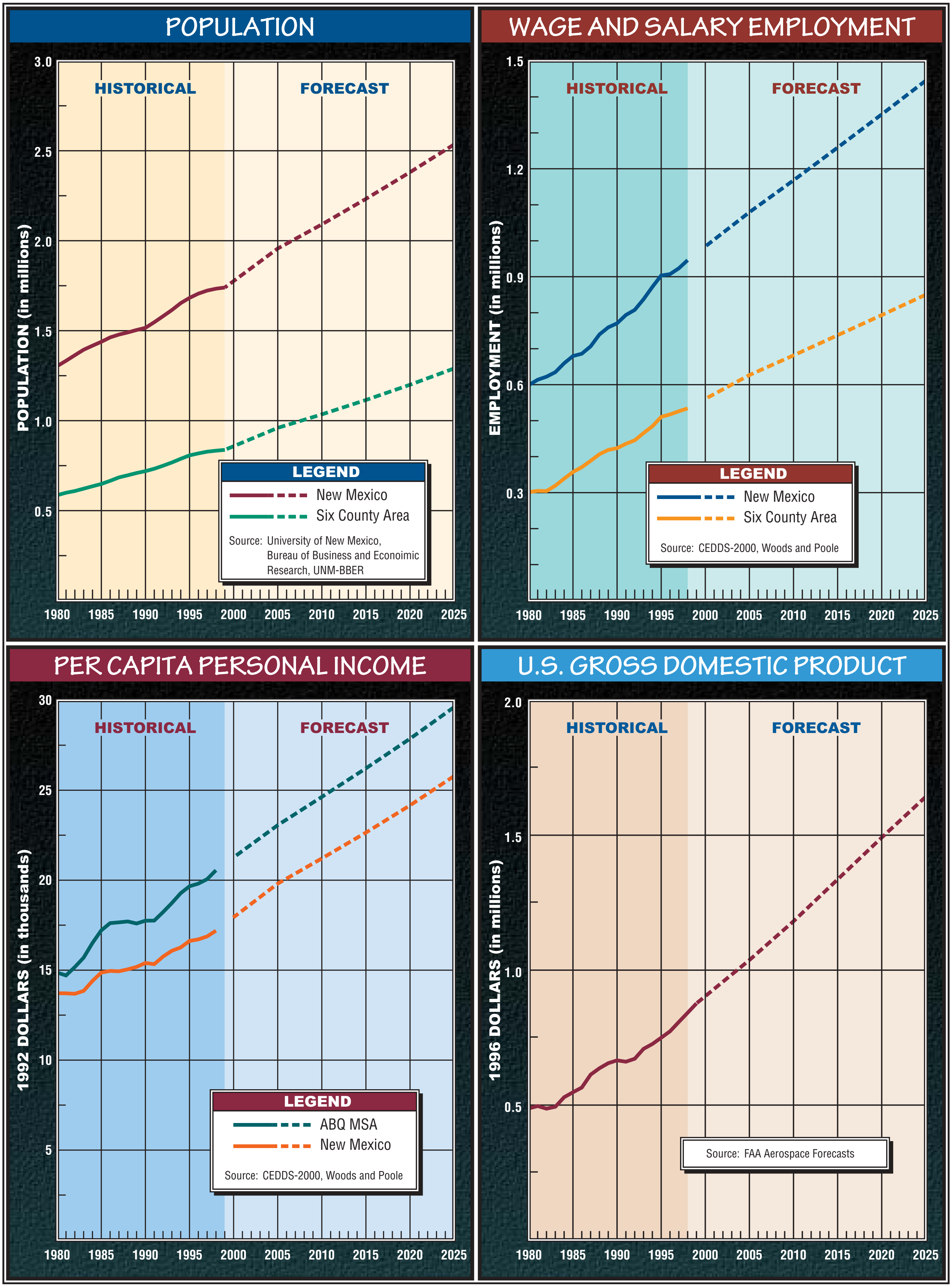


Exhibit II-E
SOCIOECONOMIC
TRENDS AND PROJECTIONS

2025. The PCPI of the state grew 25 percent during the same time period. The New Mexico PCPI is forecast to grow 50 percent from $17,192 in 1998 to $25,789 by 2025.

On a national basis, the gross domestic product (GDP) has grown 80 percent (in constant, 1996 dollars) since 1980. This equates to an average annual growth of 3.1 percent. The national labor supply is expected to expand at a moderate rate over the forecast period. Economic factors such as low interest rates, increasing capital investment, and continued technological growth provides the base for a projected annual growth rate of 2.8 percent through 2011. Inflation-adjusted GDP is depicted along with inflation-adjusted domestic revenue per passenger mile (yield) and domestic available seat-miles (ASM) on **Table II-B.**

TABLE II-B
National Independent Variables

Year	GDP 1996$	Domestic Yield 1999 cents per pax mile	Available Seat Miles (billions)
ACTUAL			
1980	4,877.2	21.32	349.0
1981	4,963.0	22.95	343.4
1982	4,866.9	20.87	355.9
1983	4,938.4	19.34	374.4
1984	5,292.1	20.41	411.7
1985	5,475.1	18.75	436.7
1986	5,650.4	16.92	488.4
1987	6,128.3	16.15	521.9
1988	6,364.8	16.94	533.3
1989	6,553.6	17.28	529.5
1990	6,656.8	16.67	557.6
1991	6,607.3	16.02	548.4
1992	6,717.2	15.24	554.1
1993	7,083.6	15.70	568.8
1994	7,263.5	14.99	578.1
1995	7,495.9	14.51	602.1
1996	7,733.0	14.69	621.1
1997	8,080.1	14.18	639.9
1998	8,420.8	14.45	644.3
1999	8,768.4	13.97	677.9
FORECASTS			
2005	10,374.0	12.21	855.4
2010	11,811.5	12.04	1,052.3
2015	13,724.9	12.87	1,280.3
2020	14,914.5	11.70	1,560.7
2025	16,428.0	11.58	1,876.1

Sources: FAA Aerospace Forecasts 2000-2011, March 2000 (and previous years).
FAA Long Range Aerospace Forecasts 2015, 2020, 2025, June 2000.

FORECAST METHODOLOGY

The most reliable approach to estimating aviation demand is through the utilization of one or more analytical techniques. Methodologies frequently considered include: trend line projections, correlation/regression analysis, and market share analysis.

Trend line projections are probably the simplest and most familiar of forecasting techniques. By fitting growth curves to historical data, then extending them into future years, a basic trend line projection can be produced. A basic assumption with this technique is that outside factors will continue to affect aviation demand in much the same manner as in the past. As broad as this assumption may be, the trend line serves as a reliable benchmark for comparing other projections.

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

In regression analysis, values for the aviation demand element in question, the dependent variable, are projected on the basis of one or more other indicators, the independent variables. Historical values for all variables are analyzed to determine the relationship between the independent and dependent variables. These relationships may then be used, with projected values of the independent variable(s), to project corresponding values of the dependent variable.

Market share analysis involves a historical review of the activity at an airport or airport system as a percentage share of a larger statewide or national aviation market. Trend analysis of this historical share of the market is followed by projection of the share into the future. These shares are then multiplied by forecasts of the activity within the larger geographical area to produce a market share projection. This method has the same limitations as trend line projections, and similarly can provide a useful check on the validity of other forecasting techniques.

Forecasts will be developed in the following sections for the following categories:

- Commercial service.
- Air freight and air mail activities.
- General aviation activities.
- Military activities.
- Peaking characteristics (for commercial and general aviation).
- Annual instrument approaches (all categories).

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

PASSENGER SERVICE FORECASTS

To determine the types and sizes of facilities necessary to properly accommodate present and future airline activity at any airport, two basic elements must be forecast: annual enplaned passengers and annual aircraft operations. Annual enplaned passengers is the most basic indicator of demand for commercial service activity. From a forecast of annual enplanements, operations and peak period activity can be projected based upon behavioral factors characteristic of ABQ or the airline industry as a whole.

AIR SERVICE

Exhibit II-F and **Table II-C** examine records of annual passenger enplanements at Albuquerque International Sunport from 1962 through 1999, the base year for the Master Plan forecasts. During the 1960's and 1970's, ABQ experienced a major expansion of passenger activity. From 1962 to 1979, the airport experienced an increase of traffic every year with an annual average growth rate of 11.5 percent. Total enplanements grew by over one million during the 17-year time span.

The airport surpassed one million enplaned passengers for the first time in 1978, the year that airline deregulation went into effect. Traffic continued to increase in 1979, the first full year of deregulation. A worsening economic recession coupled with the immediate effects of deregulation, resulted in traffic declining in each of the next two years. An expanding local and national economy contributed to another period of growth. From 1981 through 1990, enplanements increased by over 1.4 million for an average annual growth rate of 9.7 percent.

TABLE II-C
Historic Airline Enplanements
Albuquerque International Sunport

Year	Enplanements	Annual % Change
1962	196,284	N/A
1963	245,961	25.3%
1964	277,344	12.8%
1965	316,838	14.2%
1966	382,502	20.7%
1967	473,504	23.8%
1968	543,714	14.8%
1969	571,463	5.1%
1970	574,000	0.4%
1971	596,008	3.8%
1972	662,538	11.2%
1973	710,681	7.3%
1974	766,197	7.8%
1975	786,047	2.6%
1976	856,718	9.0%
1977	971,752	13.4%
1978	1,100,669	13.3%
1979	1,239,504	12.6%
1980	1,149,664	-7.2%
1981	1,083,733	-5.7%
1982	1,229,446	13.4%
1983	1,472,570	19.8%
1984	1,721,869	16.9%
1985	1,920,113	11.5%
1986	2,066,129	7.6%
1987	2,141,538	3.6%
1988	2,144,678	0.1%
1989	2,362,570	10.2%
1990	2,491,702	5.5%
1991	2,461,434	-1.2%
1992	2,629,792	6.8%
1993	2,807,489	6.8%
1994	3,077,974	9.6%
1995	3,064,069	-0.5%
1996	3,308,048	8.0%
1997	3,138,663	-5.1%
1998	3,069,629	-2.2%
1999	3,131,951	2.0%

Source: City of Albuquerque Aviation Department

A 1.2 percent decline in 1991 coincided with the Gulf War and the beginning of a brief economic recession. It also coincided with a decline in both domestic and worldwide airline passenger traffic. This was followed by three more years of growth before traffic once again slowed in 1995.

Enplanements at ABQ reached an all-time high in 1996 at 3,308,048. By 1998, enplanements, had fallen back to the 1995 level. This may be attributable, in part, to the shortage of aircraft being experienced in the airline fleet during this period. This is further evidenced by the decline in airline operations at ABQ while the airport load factors increased.

Other factors included discontinuance of service by U.S. Airways in 1997 and by Reno Air in 1998. Both airlines experienced financial difficulties and retreated to smaller, tighter systems. Since that time, Reno Air has been acquired by American Airlines and a merger of U.S. Airways with United Airlines is under consideration.

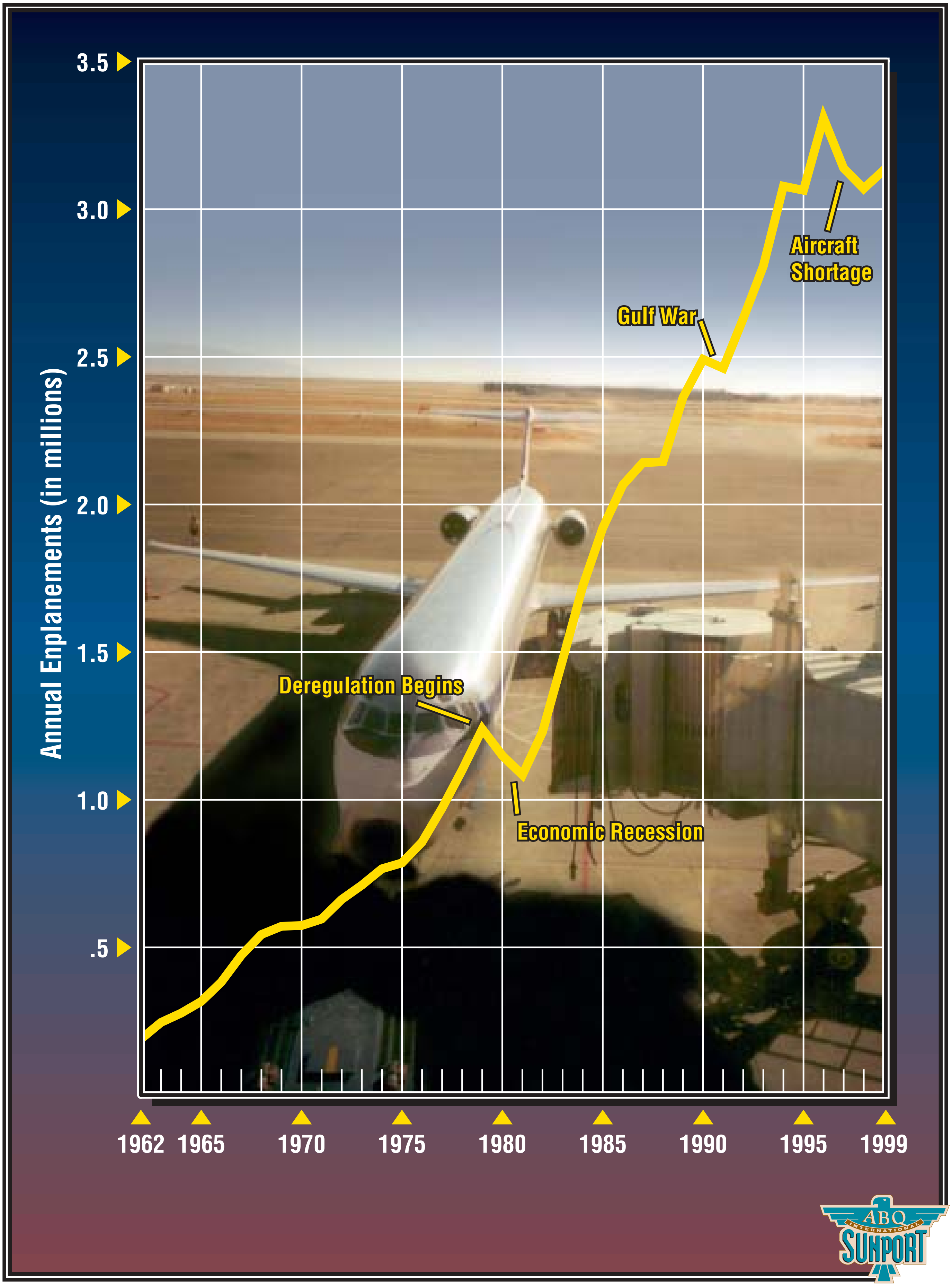
In addition, regional/commuter passengers have experienced a significant decline at ABQ. This decline has been related more to increasing fares than to less service.

Passenger traffic began to grow again in 1999 with an increase of 2.0 percent. In the first seven months of 2000, traffic was up 1.2 percent. For the decade of the 1990's ABQ enplanements grew 32.6 percent, or an annual average of 2.9 percent.

Table II-D depicts the enplanements by the individual scheduled airlines the last three years. Southwest Airlines holds the largest market share, and has seen that share grow from 42.3 percent in 1997 to 47.2 percent in 1999. Delta Airlines and American Airlines rank second and third respectively with 11.2 percent and 9.2 percent of the ABQ passenger market. Regional/commuter airlines comprised 3.0 percent of the traffic in 1999, down from 4.2 percent in 1997, and 4.7 percent in 1991.

The origins and destinations of ABQ air travelers has changed somewhat over the last two decades. **Table II-E** examines the changes in the top twenty destinations from 1980 and 1990 to 1999. The Los Angeles Basin has been replaced as the top destination by Phoenix. Phoenix was ranked fourth in 1980, but has increased traffic with ABQ by over 500 percent. This rise may be attributable to the establishment of Phoenix hubs by Southwest and America West. There are presently 21 daily flights to Phoenix from ABQ.

Los Angeles is still the second busiest market, and the Dallas/Ft. Worth metroplex has remained third over the two decades. The San Francisco Bay area has moved from fifth to fourth, and Las Vegas has jumped from eighth to fifth. Denver has fallen out of the top five destination from second to tenth. More regionalized destinations such as Tulsa, Kansas City, Oklahoma City, and San Antonio have been replaced in the top twenty by longer haul destinations such as Baltimore, Minneapolis, Orlando, and Portland.



98MP19-II-F-8/24/00

Exhibit II-F
HISTORIC ENPLANEMENTS

Table II-F compares the non-stop destinations currently available from ABQ to those in 1983 and 1992, the times of the last two airport master plans. In 1983, there were 121 departures to 27 cities. In 1992, there were 130 departures to 26 cities. This compares to 149 daily departures to 35 cities in June of 2000.

Exhibit II-G graphically compares the non-stop flight destinations from Albuquerque International Sunport to its top twenty destinations. ABQ has daily non-stops to eight of its top ten markets and 15 of its top twenty markets. Daily non-stop service is currently not available to New York, Washington D.C., Baltimore, Boston, and Portland. Since the last master plan, service has been added to the top twenty destinations of San Diego, Atlanta, Seattle, Minneapolis, and Orlando.

TABLE II-D
Passenger Enplanements by Scheduled Airline
Albuquerque International Sunport

	1997	Percent	1998	Percent	1999	Percent
Major Airlines						
America West	212,344	6.8%	204,940	6.7%	201,491	6.4%
American	343,122	10.9%	294,088	9.6%	289,236	9.2%
Continental	150,904	4.8%	146,326	4.8%	165,062	5.3%
Delta	351,522	11.2%	370,679	12.1%	349,526	11.2%
Frontier	32,703	1.0%	31,352	1.0%	26,988	0.9%
Northwest	79,799	2.5%	75,275	2.5%	79,039	2.5%
Reno Air	57,614	1.8%	10,617	0.3%	0	0.0%
Southwest	1,329,211	42.3%	1,375,696	44.8%	1,478,691	47.2%
TWA	157,731	5.0%	173,616	5.7%	179,409	5.7%
US Airways	37,713	1.2%	0	0.0%	0	0.0%
United	255,465	8.1%	274,816	9.0%	268,458	8.6%
Major Airlines Total	3,008,128	95.8%	2,957,405	96.3%	3,037,900	97.0%
Regional/Commuters						
Great Lakes	2,603	0.1%	0	0.0%	0	0.0%
Mesa	114,160	3.6%	99,123	3.2%	74,926	2.4%
Mountain Air	3,847	0.1%	0	0.0%	0	0.0%
Rio Grande Air	0	0.0%	0	0.0%	1,793	0.1%
Skywest	12,497	0.4%	13,101	0.4%	17,332	0.6%
Regional/Commuters Total	133,107	4.2%	112,224	3.7%	94,051	3.0%
Scheduled Airline Total	3,141,235	100.0%	3,069,629	100.0%	3,131,951	100.0%

As indicated earlier, the top destination of Phoenix is served by 20 daily non-stops, the most of any destination. The Dallas/Ft. Worth area is second with a combined 15 daily non-stops to Dallas Love Field and Dallas-Ft. Worth International Airport. Denver is third with 10 non-stops.

ENPLANEMENT FORECASTS

Scheduled Enplanements

Several analytical techniques were examined for their applicability to projecting scheduled airline enplanements at ABQ. These included time-series extrapolation, regression analyses (using several variables), and market share analysis. These are the same analyses considered in the **1993 Master Plan Update**.

TABLE II-E
Top Twenty Destination Markets
Albuquerque International Sunport

Destination	1980	Destination	1990	Destination	1999*
1. Los Angeles	93,450	1. Los Angeles	282,280	1. Phoenix	265,325
2. Denver	75,545	2. Phoenix	243,380	2. Los Angeles	240,290
3. Dallas/Ft. Worth	74,775	3. Dallas/Ft. Worth	201,780	3. Dallas/Ft. Worth	202,825
4. Phoenix	44,025	4. San Francisco	121,400	4. San Francisco	147,830
5. San Francisco	42,090	5. Las Vegas	112,180	5. Las Vegas	118,475
6. New York	37,865	6. San Diego	76,200	6. Houston	92,735
7. El Paso	34,330	7. Houston	68,550	7. New York	87,860
8. Las Vegas	31,350	8. New York	66,090	8. Chicago	84,295
9. Chicago	30,035	9. Denver	58,170	9. Washington	81,835
10. Houston	28,215	10. El Paso	57,780	10. Denver	70,985
11. Washington	24,675	11. Washington	56,150	11. San Diego	70,475
12. Tulsa	12,960	12. Chicago	47,360	12. Seattle	55,185
13. Boston	12,440	13. Boston	26,880	13. Atlanta	49,595
14. Kansas City	11,535	14. San Antonio	26,660	14. El Paso	49,115
15. Oklahoma City	11,510	15. Seattle	26,630	15. Baltimore	48,185
16. San Antonio	11,470	16. Kansas City	25,660	16. Minneapolis	41,850
17. Seattle	10,795	17. Austin	23,510	17. Orlando	41,540
18. Salt Lake City	10,100	18. Amarillo	19,920	18. Boston	36,355
19. San Diego	9,640	19. Lubbock	18,760	19. Salt Lake City	35,460
20. Atlanta	8,740	20. Minneapolis	16,690	20. Portland, OR	34,205
Top Twenty Total	615,545		1,576,030		1,854,420
Total Originations	959,260		2,080,510		2,704,445
Total Enplanements	1,149,664		2,491,702		3,106,973
% Originations	83.44%		83.50%		87.04%

Source: Department of Transportation/Air Transport Association, Origin-Destination Survey of Airline Passenger Traffic
* Twelve months ended September 1999

98MP19-II-G-8/24/00

ALBUQUERQUE

TOP 20 DESTINATIONS (1999)

1. PHOENIX, AZ
2. LOS ANGELES BASIN, CA
3. DALLAS / FT. WORTH, TX
4. SAN FRANCISCO BAY, CA
5. LAS VEGAS, NV
6. HOUSTON, TX
7. NEW YORK, NY
8. CHICAGO, IL
9. WASHINGTON D.C.
10. DENVER, CO
11. SAN DIEGO, CA
12. SEATTLE, WA
13. ATLANTA, GA
14. EL PASO, TX
15. BALTIMORE, MD
16. MINNEAPOLIS, MN
17. ORLANDO, FL
18. BOSTON, MA
19. SALT LAKE CITY, UT
20. PORTLAND, OR

NON-STOP SERVICE MARKETS (June 2000)

ALAMOGORDO, NM
AMARILLO, TX
ATLANTA, GA
CARLSBAD, NM
CHICAGO, IL
CINCINNATI, OH
CLOVIS, NM
COLORADO SPRINGS, CO
DALLAS / FT. WORTH, TX
DENVER, CO
DURANGO, CO
EL PASO, TX
FARMINGTON, NM
GALLUP, NM
HOUSTON, TX
KANSAS CITY, MO
LAS CRUCES, NM
LAS VEGAS, NV
LOS ALAMOS, NM
LOS ANGELES, CA
LUBBOCK, TX
MIDLAND / ODESSA, TX
MINNEAPOLIS, MN
ORLANDO, FL
PHOENIX, AZ
ROSWELL, NM
SALT LAKE CITY, UT
SAN DIEGO, CA
SAN FRANCISCO, CA
SEATTLE, WA
SILVER CITY, NM
ST. LOUIS, MO
TAMPA, FL
TUCSON, AZ

ABQ INTERNATIONAL SUNPORT

Exhibit II-G
TOP TWENTY O-D MARKETS/
NON-STOP SERVICE DESTINATIONS

TABLE II-F
Non-Stop Service 1983, 1992, and 2000
Albuquerque International Sunport

	Daily Flights				Daily Flights		
	1983	**1992**	**2000**		**1983**	**1992**	**2000**
Less than 200 miles				***Between 800 and 1,000 miles***			
Alamogordo	1	1	1	Minneapolis	0	0	2
Durango	1	2	2	St. Louis	4	3	7
Farmington	10	11	9	San Francisco/Oakland	1	3	2
Gallup	3	0	3				
Las Cruces	2	2	3				
Los Alamos	9	5	1				
Roswell	5	7	6				
Santa Fe	0	3	0				
Silver City	2	2	3				
Taos	0	0	1				
Subtotal	33	33	29	Subtotal	5	6	11
Between 200 and 400 miles				***Between 1,000 and 1,200 miles***			
Amarillo	2	2	2	Chicago	0	3	2
Carlsbad	3	3	4	Seattle	0	0	1
Clovis	2	2	3				
Colorado Springs	0	2	3				
Denver	22	10	10				
El Paso	12	5	7				
Lubbock	2	2	2				
Midland/Odessa	0	1	1				
Phoenix	7	19	20				
Tucson	2	2	1				
Subtotal	53	48	53	Subtotal	0	3	3
Between 400 and 600 miles				***Between 1,200 and 1,400 miles***			
Dallas	13	16	15	Cincinnati	0	0	2
Las Vegas	5	8	5	Atlanta	0	0	3
Salt Lake City	2	3	5				
Subtotal	20	27	25	Subtotal	0	0	5
Between 600 and 800 miles				***Over 1,400 miles***			
Houston	2	5	7	Orlando	0	0	1
Kansas City	0	0	3	Pittsburgh	0	2	0
Los Angeles Basin	9	6	8	Tampa	0	0	1
San Diego	0	0	3				
Subtotal	11	11	21	Subtotal	0	2	2
				TOTAL NON-STOPS	121	130	149

Sources: Albuquerque International Sunport Consolidated Flight Schedules.

Table II-G examines scheduled enplanements as a percentage of domestic enplanements in the United States. After increasing each year between 1987 and 1994, the ABQ share of the U.S. market has declined in recent years. The table shows a projection based upon ABQ maintaining its 1999 market share into the future.

This projection is also presented on **Exhibit II-H** for comparison.

TABLE II-G
Market Share Analysis – ABQ Enplanements
Albuquerque International Sunport

Year	ABQ Enplanements	U.S. Dom. Enpl. (Millions)	Market Share (%)
1970	574,000	146.7	0.391%
1971	596,008	149.0	0.400%
1972	662,538	165.9	0.399%
1973	710,681	183.2	0.388%
1974	766,197	189.5	0.404%
1975	786,047	186.6	0.421%
1976	856,718	195.1	0.439%
1977	971,752	216.6	0.449%
1978	1,100,669	246.7	0.446%
1979	1,239,504	283.4	0.437%
1980	1,149,664	287.9	0.399%
1981	1,083,733	274.7	0.395%
1982	1,229,446	286.0	0.430%
1983	1,472,570	308.1	0.478%
1984	1,721,869	333.8	0.516%
1985	1,920,113	369.9	0.519%
1986	2,066,129	404.7	0.511%
1987	2,141,538	441.2	0.485%
1988	2,144,678	441.2	0.486%
1989	2,362,570	443.6	0.533%
1990	2,491,702	456.6	0.546%
1991	2,461,434	445.9	0.552%
1992	2,629,792	464.7	0.566%
1993	2,807,489	470.4	0.597%
1994	3,077,974	511.3	0.602%
1995	3,064,069	531.1	0.577%
1996	3,308,048	558.1	0.593%
1997	3,138,663	578.3	0.543%
1998	3,069,629	589.3	0.521%
1999	3,131,951	611.2	0.512%
FORECAST			
2005	3,839,488	749.9	0.512%
2010	4,661,248	910.4	0.512%
2025	7,549,440	1,474.5	0.512%

Sources: City of Albuquerque Aviation Department Records
FAA Aerospace Forecasts 2000-2011, March 2000 (and previous years)
FAA Long Range Aerospace Forecasts 2015, 2020, and 2025, June 2000.

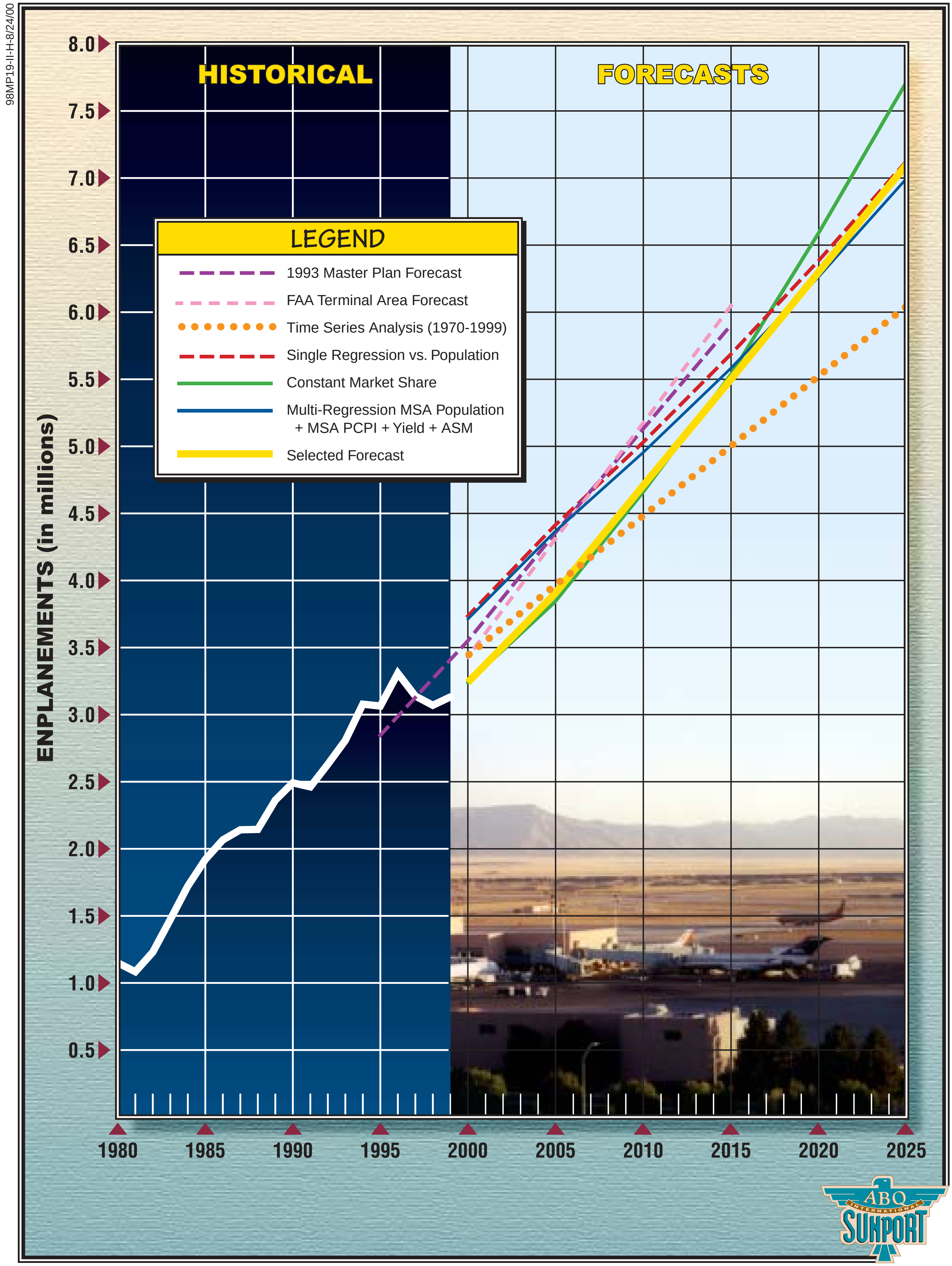


Exhibit II-H
SCHEDULED AIRLINE
ENPLANEMENT PROJECTIONS

A set of time-series extrapolations of airline enplanements were developed based upon various time periods: These included the 37 year period of 1962-1999, the three decades of 1970-1999, and the two decade period of 1980-1999. As is evident from **Table II-H,** the best correlation was for the period of 1970-1999. The correlation coefficient (r^2) was determined to be 0.970. The correlation coefficient **(Pearson's "r")** measures the association between changes in the dependent variable (enplanements) and the independent variable(s) (calendar years). An r^2 greater than 0.95 indicates good predictive reliability. A value below 0.95 may be used with the understanding that the predictive reliability is lower. The statistical fit of the time-series analysis in all three periods is good, but the resulting projections varied. These projections are presented in **Table II-J**.

Next several regression analyses were run to examine the correlation between enplanements and the independent variables. A variety of local and national independent variables were considered. Local variables included population and wage and salary employment for the MSA as well as the six-county region, and the state. Per capita income (inflation-adjusted PCPI) for the MSA and the state was also tested. The historic statistics for these variables were presented on **Tables II-A**. On a national level U.S. domestic enplanements, U.S. gross domestic product (inflation-adjusted GDP), and airline revenues per domestic passenger mile (inflation-adjusted yield) were tested for correlation with passenger enplanements at ABQ. The historic values for these variables were presented in **Tables II-B** and **II-G**.

The variables were tested over the last two decades as this represents a significant period of time since airline deregulation went into effect. A summary of the resulting correlations is included in **Table II-H**. Several local and regional variables provided good correlations. MSA population offered the best single variable correlation with an r^2 of 0.968. The six-county region employment had the next highest correlation at 0.965. In fact all the local and regional variables provided an r^2 over 0.95 except for state employment (0.947).

In contrast, none of the national variables provided and r^2 over 0.95. Domestic available seat miles (ASM) had the highest correlation at 0.945 followed by domestic enplanements at 0.942. Passenger yield and GDP tested at 0.917 and 0.902 respectively.

The next step was to consider multiple regressions utilizing key variables. **Table II-H** indicates the r^2 values for several combinations. Each combination shown resulted in a higher correlation than any of the single variables. The highest resulting correlation was MSA population combined with MSA PCPI, yield, and ASM. This multiple regression represents four variables. The first related to a local demand base (population), a second related to local economics (PCPI), a third related to industry pricing (yield), and a fourth related to industry supply (ASM).

TABLE II-H
Correlation Analysis
ABQ Enplanements

Time-Series Correlation	**r^2**		**r^2**
Enplanements, 1962-1999	.956		
Enplanements, 1970-1999	.970		
Enplanements, 1980-1999	.952		
Single Variable Correlations (1980-1999)			
vs. MSA Population	.968	vs. MSA Adjusted PCPI	.958
vs. Region Population	.962	vs. New Mexico Adjusted PCPI	.956
vs. New Mexico Population	.954	vs. U.S. Adjusted GDP	.902
vs. MSA Employment	.963	vs. U.S. Adjusted Pass. Yield	.917
vs. Region Employment	.965	vs. U.S. Domestic Enplanements	.942
vs. New Mexico Employment	.947	vs. U.S. Available Seat Miles (ASM)	.945
Multiple Variable Correlations (1980-1999)			
vs. MSA Population		vs. Region Employment	
+ MSA PCPI	.977	+ MSA PCPI	.973
+ Domestic Yield	.978	+ Domestic Yield	.977
+ Domestic Enplanements	.967	+ Domestic Enplanements	.967
+ ASM	.972	+ ASM	.972
+ MSA PCPI + Yield	.981	+ MSA PCPI + Yield	.978
+ MSA PCPI + ASM	.978	+ MSA PCPI + ASM	.975
+ MSA PCPI + Dom. Enpl.	.977	+ MSA PCPI + Dom. Enpl.	.973
+ MSA PCPI + Yield + ASM	.981	+ MSA PCPI + Yield + ASM	.978

Table II-J presents the resulting projections from the single variable regression for MSA population, region employment, and region population, as well as the four-variable regression discussed above. Besides the market share and time-series projections, for comparison purposes, the table also includes two standard growth rate projections of 3.0 and 3.5 percent per year.

In addition the forecast form the 1993 Master Plan and the FAA's 1999 Terminal Area Forecasts (TAF) are also shown.

It is evident from the table that the longer the time-series envelope, the more conservative the projection. In addition, the projection resulting from the regression with employment is lower than the regressions with population. Combining the other variables with the population tempered the projection slightly.

The highest long-range projections were obtained from the constant market share and the 3.5 percent annual growth rate. This is not surprising in that the FAA forecast for U.S. domestic enplanements calls for 3.6 percent average annual growth from 2000 to 2011 and 3.2 percent average annual growth after that.

TABLE II-J **Scheduled Passenger Enplanement Projections (in Millions)**	2005	2010	2025
Time-Series Analysis			
1962-1999	3.721	4.170	5.518
1970-1999	3.963	4.484	6.048
1980-1999	4.163	4.756	6.536
Regression Analysis (1980-1999)			
Single Variable			
vs. MSA Population	4.409	5.031	7.126
vs. Region Employment	4.165	4.650	6.138
vs. Region Population	3.705	4.360	7.127
Multi-Variable			
vs. MSA Pop. + MSA PCPI + Yield + ASM	4.363	4.955	6.996
U.S. Domestic Market Share (constant)	3.839	4.661	7.549
Growth Rate Projection			
3.0% Annually	3.740	4.335	6.754
3.5% Annually	3.850	4.573	7.661
Selected Forecast	**3.900**	**4.700**	**7.100**
1993 Master Plan	4.350	5.125	NA
FAA Terminal Area Plan	4.303	5.175	NA

Exhibit II-H graphically compares several of the projections. Included on the graph are the projections for the 1980-1999 time-series analysis, the MSA population regression, the multi-variable regression, and the share-of-the-market analysis. The graph also indicates that the updated projections are somewhat lower than the forecasts from the previous master plan and the TAF. A planning forecast was chosen within the range of the projections depicted on the exhibit. This projection is presented in bold on **Table II-J**. The selected forecast matches closer to the lower range of the projections in the short term, then growing to the mid-range over the rest of the planning period.

- PASSENGER ORIGINATIONS

As indicated earlier, an enplaning passenger is an air traveler boarding the aircraft at the airport. These enplanements include those who are originating their flight at the airport (originating passengers) and those who transfer from one aircraft to another (connecting passengers). **Table II-K** examines the recent history of originating and connecting passengers at Albuquerque International Sunport. Since 1990, originations have fluctuated between 83 and 89 percent. At the same time connecting passengers have fluctuated around 400,000 annually.

For planning purposes, future originations were projected to range from 86 percent to 90 percent over the planning period. The resulting forecasts are presented on **Table II-K**.

TABLE II-K
Originating Passengers
Albuquerque International Sunport

Year	Enplanements	Originating Passengers	Originations % of Enplaned	Connecting Passengers
ACTUAL				
1980	1,149,664	959,260	83.4%	190,404
1985	1,920,113	1,525,510	79.4%	394,603
1990	2,491,702	2,080,510	83.5%	411,192
1991	2,461,434	2,143,170	87.1%	318,264
1992	2,629,792	2,260,435	86.0%	369,357
1993	2,807,489	2,396,610	85.4%	410,879
1994	3,077,974	2,663,380	86.5%	414,594
1995	3,064,069	2,642,445	86.2%	421,624
1996	3,308,048	2,950,220	89.2%	357,828
1997	3,138,663	2,738,775	87.3%	399,888
1998	3,069,629	2,716,110	88.5%	353,519
1999	3,131,951	2,704,445	86.4%	427,506
FORECASTS				
2005	3,900,000	3,393,000	87.0%	507,000
2010	4,700,000	4,136,000	88.0%	564,000
2025	7,100,000	6,390,000	90.0%	710,000

Source: Originating Passengers – U.S. Department of Transportation/Air Transport Association, Origin-Destination Survey of Airline Passenger Traffic.

- REGIONAL/ COMMUTER ENPLANEMENTS

Commuter airline passengers make up a small portion of the scheduled airline enplanements at ABQ. As indicated on **Table II-D**, the commuter airlines totaled just 3.0 percent of the scheduled enplanements in 1999. This percentage has declined the past two years from 4.2 percent in 1997. In 1991, the base year of the previous master plan, commuter enplanements comprised 4.7 percent of the scheduled enplanements. During the first five months of 2000, the commuter enplanements percentage was down even further to just 1.2 percent.

Presently commuter service is provided by Mesa Airlines, SkyWest (Delta Connection) and by Rio Grande Air. Mesa Airlines utilizes Beech 1900's for approximately 26 daily flights to

Colorado Springs and destinations throughout New Mexico. SkyWest operates two daily flights to the Delta hub in Salt Lake City using regional jets. Rio Grande Air operates Cessna 207's and 208's to Los Alamos, Taos, and Durango, Colorado.

Mesa Airlines has historically been the largest commuter airline at ABQ with its intrastate service throughout New Mexico. As is evident from **Table II-D,** that traffic has declined dramatically. Mesa is in the process of phasing out the majority the Beech 1900 aircraft in its fleet and replacing the 19-seat aircraft with 50-passenger regional jets and 30-passenger turboprops. Santa Fe is one of the markets expected to be served by the regional jet. The larger New Mexico markets can expect similar service in the future. It is expected that the regional jets will fly directly to airline hubs in Phoenix (as America West Express) and Denver (as United Express). The same could hold true for those to be served by the 30-passenger aircraft. It can be expected that airports currently provided flights under the Essential Air Service program will continue to have service to ABQ. Currently, Alamogordo, Clovis, Gallup, and Silver City have essential air service to Albuquerque.

As a result, it is quite likely that the commuter percentage of scheduled enplanements could continue to decline. Conversely, there is also a potential for supplementing air service to ABQ from major hubs with regional jets flown by commuter airlines. For planning purposes, the commuter enplanements were forecast as three percent of the scheduled enplanements throughout the planning period. The commuter passenger forecasts are included on **Table II-L.**

CHARTER ENPLANEMENTS

Albuquerque International Sunport supports a minor level of charter airline activity. **Table II-L** outlines the number of annual enplanements in recent years. Over the past two years, charter passengers have been the equivalent of 0.06 percent of the scheduled passengers. With the strong scheduled service available, charter activity at ABQ is expected to remain relatively light. Charter enplanements are expected to remain at less than 0.1 percent compared to scheduled enplanements. **Table II-L** depicts the charter enplanement forecast.

INTERNATIONAL ENPLANEMENTS

A 1997 evaluation of international service opportunities from indicated the ABQ market generated a demand of approximately 100,000 annual origin-destination passengers with Mexico. With no current service these passengers currently connect through other southwestern airports with service to Mexico. The study further recommended pursuing scheduled service to Mexico. The same study also indicated that there was insufficient traffic to justify non-stop service to Canada.

The study concluded that several markets in Mexico appeared to have sufficient demand to produce a profitable route. These included Mexico City, Puerto Vallarta, San Jose del Cabo with connections to Guadalajara, Acapulco, and Mazatlan. The study estimated that the Mexico City route could operate daily, while the other routes would could operate three times a week.

TABLE II-L
Total Enplanement Forecasts

	Scheduled Enplanements					
Year	**Total**	**Majors**	**Regionals**	**Charter Enplanements**	**Total Enplanements**	**International Enplanements**
ACTUAL						
1997	3,141,235	3,008,128	133,107	918	3,142,153	0
1998	3,069,629	2,957,405	112,224	1,757	3,071,386	0
1999	3,131,951	3,037,900	94,051	1,775	3,133,726	322
FORECASTS						
2005	3,900,000	3,783,000	117,000	2,000	3,902,000	59,000
2010	4,700,000	4,559,000	141,000	3,000	4,703,000	94,000
2025	7,100,000	6,887,000	213,000	5,000	7,105,000	213,000

Source: City of Albuquerque Aviation Department records.

The study indicated that a Mexican airline such as AeroMexico would be the most likely candidate for initiating service.

At present, there are two Albuquerque routes are authorized in the U.S.-Mexico Bilateral Agreement. These include Chihuahua and Ciudad Juarez. The study indicated that this could be revised if desired by a carrier.

For the purposes of this master plan it is estimated that non-stop international service could eventually evolve into as much as three percent of the scheduled airline enplanements at ABQ over the course of the planning period. **Table II-L** outlines the potential international enplanements. It should be noted that these passengers are included within the scheduled and charter enplanements as well.

AIRLINE OPERATIONS

The commercial service fleet mix defines a number of key parameters in airport planning, including critical aircraft (for pavement designs and ramp geometry), terminal complex layout, and maximum stage length capabilities (affecting runway length evaluations). A projection of fleet mix has been developed for Albuquerque International Sunport by reviewing equipment used by carriers serving the airport. **Exhibit II-J** depicts aircraft types and seating capacities of the major airlines. In addition, typical trip length patterns, and the orders that airlines serving ABQ have placed with manufacturers for new aircraft have been considered.

Changes in equipment, airframes and engines have always had a significant

98MP19-II-J-8/24/00

AIRCRAFT TYPE							SOUTHWEST AIRLINES	TWA		Avg.
B747-100						450				450
B747-400						418			372	395
B747-200						370			369	370
L-1011				295						295
DC-10-40		297				281			298	292
DC-10-10									287	287
DC-10-30			282			281				282
B-777-200		232	283	279					292	272
A-300		267								267
MD-11				260						260
B-767-300		208		252				233	234	232
B-757-200	190	188	183	182		190			182	186
B-767-200		172	174	204					168	180
B-737-800		146	155	154						152
MD-90				150						150
B-727-200		150	153	149		149		141	141	147
A-320	150					148		138		145
MD-80/83/88		139	141	142				140		141
B-737-700			124				137			131
B-737-300	131		128	128	136		137		120	130
DC-9-50						125				125
A-319						124		120		122
B-727-100			120							120
MD-87		117								117
B-737-200	113			107	119		122	103		113
B-737-500			104				122		104	110
DC-9-40						110				110
DC-9-30						100		100		100
F-100		97								97
DC-9-10						78				78
F-70	78									78

SOURCE: OAG Desktop Flight Guide – North America Edition, June, 2000

ABQ INTERNATIONAL SUNPORT

Exhibit II-J

U.S. DOMESTIC AIRLINE SEATING

impact on airline and airport planning activities. The new technology aircraft entering the fleet today operate more efficiently with greater mission flexibility and reliability. This flexibility has contributed to the large number of orders placed for the latest models of the B737, MD-80 and 90, A320, and B757. The new 737 aircraft are being manufactured in several models ranging in seating capacity from 108 to 184 seats. Southwest Airlines is among those ordering the new 737 aircraft. The MD-80 and 90 series had been the aircraft of choice for Reno Air. Several airlines have placed orders for the Boeing 757, ensuring that this aircraft will be seen in much greater frequency in the domestic and international fleets.

Commuter airlines such as Mesa Airlines and SkyWest are transitioning to advanced turboprop aircraft and regional jets to fit their market needs. Many of these aircraft have greater seating capacity, lower operating costs, and are considerably more comfortable for the flying public. Regional jet aircraft are now available in the 50 and 37-seat ranges.

The following summary of recently announced purchases or orders provides an overview of how several airlines presently serving ABQ are transitioning their fleets.

America West: America West is using B737-300 and A320 aircraft into ABQ . The A319 has also been introduced into the market recently in the past year. The airline has orders and options for more B737-300 and B757 aircraft, but has larger orders for the A319/ A320/ A321.

American: American Airlines presently flies MD-80's into ABQ. The airline has a large order for various B737 aircraft, including the B737-800. They are expected to phase out the F100's, and MD-80's, and MD-90's in the fleet. American continues to acquire B757's, B767's, and B777's in the higher seating ranges.

Delta: Delta Airlines presently flies B737-300s and 800s as well as the B727-300 aircraft into ABQ. The airlines have placed orders for the new B737-600/700/800 aircraft. They have also hush-kitted existing B737-200 and B727-200 aircraft. Orders and options have also been placed for B757, B767, and B777 aircraft. The airline is also accelerating the retirement of its MD-90's and MD-11's.

Frontier: Frontier presently operates hush-kitted B737-200's into ABQ. Their fleet currently consists primarily of the B737-300's and A319's with a few B737-200'. The airline has orders for more A319's and A318's. They also have options on A320's.

Northwest: Northwest currently uses B727-200 aircraft into ABQ. The airline is ordering A319/A320/A321 aircraft as well as the A330. They also have orders for more B757 and B747 aircraft. In addition they have ordered the RJ 85, a regional jet aircraft. While plans are to retire some of their MD-80 and DC-9 aircraft, they intend to retain the bulk of their DC-9's for many years.

Southwest: Southwest Airlines has been operating B737-300, -500, and-700 aircraft at ABQ. Southwest new aircraft orders are for the B737-300, -700, and the -800. The airline's CEO has indicated intentions to expand seat-mile capacity by eight percent per year through 2012.

TWA: TWA presently operates MD-80's into ABQ. TWA also has hush-kitted DC-9's and B727-200 aircraft, although many of their DC-9 aircraft have been retired. They are ordering MD-83's, A318's, B717's, and B757's.

United: United Airlines operates B737-300 and 500 aircraft as well as B727's and B757's into ABQ. United has ordered A319/A320's and are exchanging DC-10 aircraft for B727 hush kits from FedEx. They also have B767, B747, and B777 aircraft on order.

Mesa: Mesa Airlines currently operates Beech 1900's into ABQ. The airline is reducing its fleet of the 19-passenger airplane and adding more 30-passenger Dehavilland Dash 8 turboprops and the 50 and 30 passenger regional jets.

Skywest: Skywest Airlines operates as Delta Connection into ABQ with the Canadair Regional Jet (CRJ). The airline has phased out the 19-passenger Metroliner for the EMB-120 (Brasilia) and 50-passenger CRJ's.

The long term outlook on the fleet mix at Albuquerque International Sunport is dependent on traffic growth and additional technological advancements. Current trends and fleet orders have provided input into the projection of annual departures and operations by the scheduled carriers.

Table II-M presents a percentage breakdown of the major airline fleet mix by seating capacity for recent years at Albuquerque International Sunport. Aircraft within the 125-144 seat range have been dominant at ABQ. This has consisted primarily of the Boeing 737-300 and 400 and the MD-80. The average seats per departure has remained relatively constant around 131 during the last three years. In fact, the seats per departure has changed very little over the last decade.

The average seats per aircraft for domestic flights in the United States declined between 1994 and 1999. According to **FAA Aerospace Forecasts Aircraft 2000-2011**, the seats per departure are anticipated to begin to grow slowly, increasing by just 0.6 seats per year through 2011. Over the long range, however, seating capacity is expected to grow at 1.0 seats per year.

The boarding load factor (BLF) is presently averaging 60 percent for the major airlines at ABQ. This is up from 55 percent in the early 1990's. This increase follows along with the rise in the domestic airline load factors over the same period. The FAA forecast that the current load factors will be maintained in the future.

Commuter airline activity has been dominated by 19-passenger turboprop aircraft. This could change to the 37 and 50 passenger regional jets over the planning period.

TABLE II-M Historic Airline Fleet Mix			
Fleet Mix Seating Capacity	**1997**	**1998**	**1999**
Major Airlines			
> 350	0.0%	0.0%	0.0%
220-350	0.0%	0.0%	0.0%
165-219	2.3%	1.7%	3.0%
145-164	12.2%	11.3%	9.9%
125-144	67.2%	68.0%	68.3%
110-124	18.2%	18.4%	18.8%
90-109	0.1%	0.6%	0.0%
< 90	0.0%	0.0%	0.0%
Totals	100.0%	100.0%	100.0%
Seats per Departure	131.3	130.7	131.3
Boarding Load Factor	58.1%	59.9%	60.1%
Enplanements per Departure	76.3	78.2	78.8
Annual Enplanements	3,008,128	2,957,405	3,037,900
Annual Departures	39,426	37,814	38,528
Annual Operations	78,852	75,628	77,056
Commuter Airlines			
> 60	0.0%	0.0%	0.0%
40-59	3.0%	2.8%	3.6%
20-39	0.0%	0.0%	0.0%
10-19	97.0%	97.2%	88.6%
< 10	0.0%	0.0%	7.8%
Totals	100.0%	100.0%	100.0%
Seats per Departure	19.9	19.9	19.1
Boarding Load Factor	56.5%	45.7%	43.4%
Enplanements per Departure	11.3	9.1	8.3
Annual Enplanements	133,107	112,224	94,051
Annual Departures	11,810	12,346	11,347
Annual Operations	23,620	24,692	22,694

The examination of trends in aircraft use contributes to the airline fleet mix projections that have been developed for Albuquerque International Sunport. The forecasts depicted in **Table II-N** take into account a continuing transition to larger aircraft. This is in line with **FAA Aerospace Forecasts 2000-2011** projections for an increasing seats-per-departure ratio in the future. The rate of increase at ABQ is projected to be similar to the national average for domestic flights.

TABLE II-N
Airline Fleet Mix and Operations Forecast
Albuquerque International Sunport

Fleet Mix Seating Capacity	Actual 1999	FORECAST 2005	2010	2025
Major Airlines				
> 350	0.0%	0.0%	0.0%	0.0%
220-350	0.0%	0.0%	1.0%	5.0%
165-219	3.0%	6.0%	8.0%	16.0%
145-164	9.9%	15.0%	20.0%	33.0%
125-144	68.3%	63.0%	58.0%	40.0%
105-124	18.8%	15.0%	12.0%	6.0%
90-105	0.0%	1.0%	1.0%	0.0%
< 90	0.0%	0.0%	0.0%	0.0%
Totals	100.0%	100.0%	100.0%	100.0%
Seats per Departure	131.3	134.2	138.2	152.3
Boarding Load Factor	60.1%	62.0%	63.0%	63.0%
Enplanements per Departure	78.8	83.2	87.1	96.0
Annual Enplanements	3,037,900	3,783,000	4,559,000	6,887,000
Annual Departures	38,528	45,500	52,400	71,800
Annual Operations	77,056	91,000	104,800	143,600
Commuter Airlines				
> 60	0.0%	0.0%	0.0%	0.0%
40-59	3.6%	10.0%	20.0%	50.0%
20-39	0.0%	15.0%	20.0%	35.0%
10-19	88.6%	70.0%	60.0%	15.0%
< 19	7.8%	5.0%	0.0%	0.0%
Totals	100.0%	100.0%	100.0%	100.0%
Seats per Departure	19.1	23.1	27.4	38.4
Boarding Load Factor	43.4%	45.0%	45.0%	48.0%
Enplanements per Departure	8.3	10.4	12.3	18.4
Annual Enplanements	94,051	117,000	141,000	213,000
Annual Departures	11,347	11,300	11,400	11,600
Annual Operations	22,694	22,600	22,800	23,200
Charter Airlines				
> 350	0.0%	0.0%	0.0%	0.0%
220-350	0.0%	0.0%	0.0%	5.0%
165-219	8.9%	10.0%	15.0%	20.0%
145-164	14.3%	20.0%	30.0%	40.0%
125-144	1.8%	10.0%	15.0%	15.0%
110-124	75.0%	60.0%	40.0%	20.0%
90-109	0.0%	0.0%	0.0%	0.0%
< 90	0.0%	0.0%	0.0%	0.0%
Totals	100.0%	100.0%	100.0%	100.0%
Seats per Departure	123.3	128.0	136.5	152.7
Boarding Load Factor	23.2%	25.0%	25.0%	25.0%
Enplanements per Departure	31.7	32.0	34.1	38.2
Annual Enplanements	1,775	2,000	3,000	5,000
Annual Departures	56	63	88	131
Annual Operations (rounded)	112	100	200	300

A separate fleet mix is depicted for commuter airlines, since aircraft types and seating capacities are dramatically different than those of the major airlines. In the long range, the forecast reflects commuter markets served by turboprops as well as commuter jets in the 30 to 50 passenger range.

Charter airline operations were projected based upon an slightly increasing seats per departure ratio in the future. In 1999, the B737-200 provided over two-thirds of the charter operations, and the B727-200 approximately 20 percent of the flights. In the future, it is anticipated that more larger aircraft could be utilized, particularly if an international market develops. The charter operation forecasts are also included in **Table II-N**.

AIR CARGO

Air cargo is basically comprised of air freight and air mail. Air freight is handled by both passenger airlines and all-cargo airlines. Air mail is handled primarily by the passenger airlines, but also by a contract carrier for the United States Postal Service. **Table II-P** summarizes freight and mail tonnage reported at ABQ since 1973.

AIR FREIGHT

Air freight tonnage began a dramatic rise in 1986 that continued through 1996. During this period the freight handled at ABQ grew nine-fold for an annual average increase of 22.1 percent. This growth rate was driven by increasing service to Reno by all-cargo carriers. Freight volumes dropped by 10 percent in 1997, but have been increasing since, although yet to reach the all-time high set 1996.

The ongoing growth of the air freight industry, particularly in the areas of e-commerce and just-in-time inventories, contributed to the strong growth in air freight nationwide. Locally, an expanding economy has further contributed to this growth.

Table II-Q examines ABQ total freight as a percentage of the domestic freight/express revenue ton-miles (RTM's) since 1993. Over this period, ABQ air freight tons has grown in pace with the national RTM's. Extrapolating the average market share over the planning period results in the projection presented in this table.

A time-series analysis was performed for the period of 1988-1999. This period was utilized because it represented the period of growth after the initial increases experienced in 1987 and 1988. The r^2 of the time series was 0.876. The correlation and the resulting projection are depicted on **Table II-P** for comparison to other projections. This time series generated the lower projection than the market share analysis.

Statistical correlations with local and national socioeconomic variables were examined for applicability to air freight projections. Correlation analyses focused around the period from 1988 to 1999 as well. As with passenger enplanements local and regional variables tested included the MSA, six-county region, and state population, employment, and inflation-adjusted per capita personal income (PCPI). On a national level, the inflation-adjusted U.S. gross domestic product (GDP) was also tested. **Table II-P** presents the results of the analyses for the 1988-1999 period. This includes the correlation coefficient as well as resulting projections.

TABLE II-P
Historic Air Cargo (Freight and Mail)
Albuquerque International Sunport

Year	Deplaned Freight (tons)	Enplaned Freight (tons)	Total Freight (tons)	Enplaned Mail (tons)
1973	5,302	3,320	8,622	2,076
1974	6,301	3,988	10,289	2,149
1975	5,352	3,479	8,831	2,165
1976	5,601	3,490	9,091	2,636
1977	6,212	3,597	9,809	2,752
1978	6,751	3,617	10,368	2,818
1979	6,926	3,409	10,335	2,973
1980	5,225	2,346	7,571	3,147
1981	4,619	1,795	6,414	3,554
1982	4,834	1,505	6,339	4,308
1983	10,122	7,457	17,579	4,945
1984	11,699	7,348	19,047	5,075
1985	16,288	11,474	27,762	4,774
1986	5,703	2,161	7,864	4,392
1987	13,107	3,136	16,243	4,408
1988	12,363	6,633	18,996	4,168
1989	14,990	7,694	22,684	4,728
1990	17,264	8,327	25,591	5,846
1991	18,082	9,236	27,318	4,771
1992	25,596	15,123	40,719	7,063
1993	32,531	19,909	52,440	8,134
1994	32,043	19,331	51,374	7,575
1995	30,033	22,123	52,156	8,325
1996	41,147	29,998	71,145	8,657
1997	37,768	27,179	64,947	9,947
1998	37,858	27,367	65,225	10,700
1999	39,420	28,264	67,684	11,075

The New Mexico population ($r^2 = 0.949$) provided the highest single variable correlation, followed by the MSA population ($r^2 = 0.948$). Employment, PCPI, and GDP variables resulted in lower correlations. Tests were also run for the multiple variables of population, PCPI, combined with GDP. These resulted in just slightly higher correlation.

TABLE II-Q Air Freight Market Share Analysis						
Year	ABQ Freight (tons)	U.S. Domestic Freight RTM's (Millions)*	% Market Share	ABQ Enplaned Mail (tons)	U.S. Domestic Mail RTM's (Millions)	% Market Share
ACTUAL						
1993	52,440	8,557.4	0.00061	8,134	1,816.7	0.00045
1994	51,374	9,334.5	0.00055	7,575	1,988.8	0.00038
1995	52,156	10,342.1	0.00050	8,325	2,073.6	0.00040
1996	71,145	10,655.3	0.00067	8,657	2,126.4	0.00041
1997	64,947	11,177.9	0.00058	9,947	2,276.2	0.00044
1998	65,225	11,527.3	0.00057	10,700	2,300.8	0.00047
1999	67,684	11,453.3	0.00059	11,075	2,410.2	0.00046
FORECAST						
2005	92,000	15,672.2	0.00059	15,300	3,040.5	0.00046
2010	121,000	20,533.4	0.00059	19,600	3,639.7	0.00046
2025	258,000	43,700.0	0.00059	36,600	5,680.0	0.00046

* Source: FAA Aerospace Forecasts 2000-2011, March 2000.

As is evidenced on **Table II-R**, the single variable regression with state population produced slightly lower projections in the short term than the multiple regression, but a higher long range projection. This long range projection is comparable to that of the market share projection.

Exhibit II-K graphically depicts the projections as well as the previous master plan forecast. The 1993 Master Plan freight forecast has proved to be low when compared to the results of the last eight years. The constant market share projection was selected as the Master Plan forecast. This projection stakes into account the industry growth and also compares favorably with the long range projection based upon local state population growth.

AIR MAIL

Enplaned air mail tonnage from 1973 to the present is outlined on **Table II-P**. Limited historic data was available for total mail, so enplaned mail was used to evaluate air mail growth. Enplaned mail methodically from 1973 though 1991 at an annual average rate of 4.7 percent. As shown on **Exhibit II-K,** the volume of air mail jumped in 1992 in response to increasing commercial flights as well as all-mail service by the Postal Service contract carrier. Between 1992 and 1999, enplaned air mail at ABQ increased at an average annual rate of 6.6 percent to its all-time high of 11,075 tons. As shown on the exhibit, this exceeded the long range forecast of the previous master plan.

TABLE II-R Air Freight Projections (U.S. tons)			
Correlation Analysis	**r^2**		**r^2**
Time-Series (1988-1999)	.878		
Single Variable Correlations (1988-1999)			
vs. MSA Population vs. Region Population vs. New Mexico Population vs. MSA PCPI vs. U.S. GDP	.948 .944 .949 .890 .812	vs. MSA Employment vs. Region Employment vs. New Mexico Employment vs. New Mexico PCPI	.906 .915 .907 .921
Multiple Variable Correlations			
vs. MSA Pop. + NM PCPI vs. MSA Pop. + NM PCPI & GDP	.941 .943	vs. NM Pop. + NM PCPI vs. NM Pop. + NM PCPI + GDP	.944 .947

Projections (tons)	2005	2010	2025
Time-Series	89,000	107,000	160,000
Regression Analysis vs. New Mexico Population vs. NM Pop. + NM PCPI + GDP	 112,000 114,000	 138,000 140,000	 257,000 216,000
Constant Market Share	92,000	121,000	258,000
Selected Forecast	**95,000**	**125,000**	**258,000**
1993 Master Plan	72,000	85,500	NA

The time series from 1988 to 1999 offered the best statistical correlation (r^2 = 0.947) of the years tested. The resulting projection is depicted on **Table II-S** and **Exhibit II-K**.

The ABQ enplaned mail was also compared to the national domestic revenue-tons (RTM's) of air mail in **Table II-Q.** The local market share average was extrapolated to produce the constant market share projection depicted on **Table II-Q** and **Exhibit II-K**.

As with air freight, several statistical correlations with enplaned air mail were tested for the period of 1988-1999. The correlations are presented in **Table II-S**. The best single variable correlation was found to be New Mexico PCPI with an r^2 of 0.952. The resulting projection is depicted on **Table II-S** and **Exhibit II-K**. Multiple correlations were also tested with the highest correlation (r^2 = 0.947) resulting from the independent variables of state PCPI, state population, and national GDP. The results of this analysis are also presented on the table and exhibit. The multiple correlation resulted in the highest projection, while the constant market share was the lowest. The selected forecast was derived as a mid-

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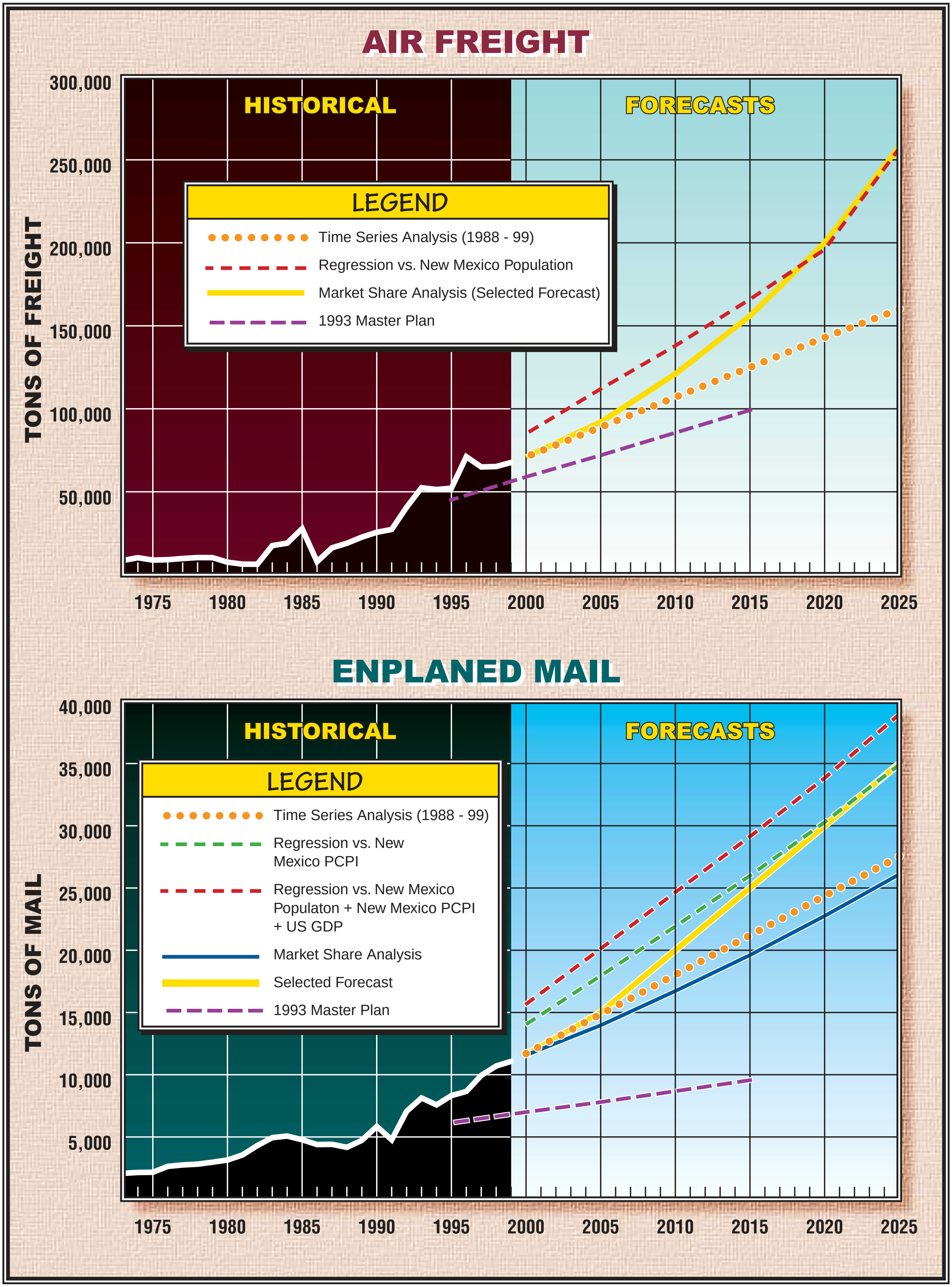


Exhibit II-K
AIR CARGO FORECASTS

range in the short and intermediate term moving toward the high range in the long term. This forecast is presented on the table and exhibit.

TABLE II-S
Enplaned Mail Projections (U.S. tons)

Correlation Analysis	r^2		r^2
Time-Series (1988-1999)	.947		
Single Variable Correlations (1988-1999)			
vs. MSA Population	.913	vs. MSA Employment	.882
vs. Region Population	.920	vs. Region Employment	.895
vs. New Mexico Population	.916	vs. New Mexico Employment	.902
vs. MSA PCPI	.904	vs. New Mexico PCPI	.952
vs. U.S. GDP	.917		
Multi-Variable Correlations (1988-1999)			
vs. Region Pop. + NM PCPI	.961	vs. NM Pop. + NM PCPI	.961
vs. Region Pop. + NM PCPI + GDP	.961	vs. NM Pop. + NM PCPI + GDP	.962

Projections (tons)	2005	2010	2025
Time-Series (1988-1999)	14,900	18,000	27,500
Regression Analysis			
vs. New Mexico PCPI	18,000	21,900	34,900
vs. NM Pop. + NM PCPI + GDP	20,100	24,700	38,900
Constant Market Share	14,000	16,700	26,100
Selected Forecast	**15,000**	**20,000**	**35,000**
1993 Master Plan	7,800	8,650	NA

Table II-T provides a summary breakdown of the air cargo forecasts. This includes enplaned and deplaned freight and mail as well as the breakdown of freight and mail handled by the all-cargo carriers versus the cargo bins of the passenger carriers. Three years of historic data is also provided for each component. As is evident from the table, deplaned freight and mail is historically greater than enplaned. This is expected to continue in the future.

The share of freight and mail carried by the all-cargo carriers is forecast to increase over the planning period. This is expected because of two factors. The first being that all-cargo traffic is forecast to increase at a faster rate than passenger traffic. The second factor is the higher load factors being experienced by the passenger airlines generates more baggage which has priority over freight and mail in belly of the aircraft.

TABLE II-T Air Cargo Forecast Summary (tons)						
	ACTUAL			**FORECAST**		
	1997	**1998**	**1999**	**2005**	**2010**	**2025**
AIR FREIGHT						
All-Cargo						
Enplaned	25,209	25,785	26,294	37,600	49,100	103,700
Deplaned	31,940	32,785	34,323	48,700	65,300	138,000
Total	57,149	58,570	60,617	86,300	114,400	241,700
Belly						
Enplaned	1,970	1,582	1,970	2,400	2,900	4,300
Deplaned	5,828	5,073	5,097	6,300	7,700	12,000
Total	7,798	6,655	7,067	8,700	10,600	16,300
Total						
Enplaned	27,179	27,367	28,264	40,000	52,000	108,000
Deplaned	37,768	37,858	39,420	55,000	73,000	150,000
Total	64,947	65,225	67,684	95,000	125,000	258,000
AIR MAIL						
All-Cargo						
Enplaned	577	1,391	900	1,800	3,600	9,500
Deplaned	561	1,360	1,278	2,200	3,000	7,300
Total	1,138	2,751	2,179	4,000	6,600	16,800
Belly						
Enplaned	9,370	9,309	10,175	13,200	16,400	25,500
Deplaned	10,916	10,877	11,558	14,800	20,000	34,700
Total	20,286	20,186	21,732	28,000	36,400	60,200
Total						
Enplaned	9,947	10,700	11,075	15,000	20,000	35,000
Deplaned	11,477	12,237	12,836	17,000	23,000	42,000
Total	21,424	22,937	23,911	32,000	43,000	77,000

ALL-CARGO OPERATIONS

Albuquerque International Sunport is served by most of the major all-cargo carriers or their contract carriers. These include Airborne Express (ABX), Emery, FedEx, and United Parcel Service (UPS) as well as several commuter carriers. These airlines utilize turboprop and commercial jet aircraft.

The cargo airlines presently carry nearly 90 percent of the freight volume at ABQ. As indicated in **Table II-T**, this can be expected to increase to nearly 94 percent of the volume over the long range planning period.

All-cargo operations by the commercial jet aircraft totaled 5,958 in 1999. Operations by the commuter aircraft totaled 5,496. As cargo volumes grow, part of the growth can be expected to be added to existing flights. Additional flights and larger aircraft will be necessary to absorb some of the long range growth. Thus, air cargo operations were projected to increase, although not as fast as the cargo tonnage.

Table II-U presents the operational forecasts for the all-cargo carriers taking into account the aircraft size and load factors. The major cargo carriers deplane more freight and mail at ABQ than they enplane, so the operations and mix forecast was developed based upon forecast deplaned pounds. Conversely, the commuter carriers enplane more than they deplane, so the commuter operations were derived from enplaned pounds. The commuter cargo carriers enplane approximately six percent of the freight and mail at ABQ. This percentage can be expected to decrease over time.

TABLE II-U
All-Cargo Airline Operations Forecast
Albuquerque International Sunport

		FORECAST		
Fleet Mix Payload Capacity (lbs)	**Actual 1999**	**2005**	**2010**	**2025**
ALL-CARGO COMMERCIAL JET				
> 140,000	0.7%	1.0%	2.0%	8.0%
100,000-140,000	11.2%	13.0%	15.0%	20.0%
70,000-100,000	33.3%	35.0%	37.0%	39.0%
50,000-70,000	17.6%	19.0%	18.0%	14.0%
35,000-50,000	9.6%	9.0%	9.0%	7.0%
25,000-35,000	27.6%	23.0%	19.0%	12.0%
< 25,000	0.0%	0.0%	0.0%	0.0%
	100.0%	100.0%	100.0%	100.0%
Average Capacity (lbs)	62,192	65,330	69,420	83,560
Load Factor	38.4%	42.0%	45.0%	50.0%
Lbs/Dep.	23,899	27,439	31,239	41,780
Deplaned tons	35,598	49,700	66,800	143,100
Annual Departures	2,979	3,600	4,300	6,900
Annual Operations	5,958	7,200	8,600	13,800
ALL-CARGO COMMUTER				
Enplaned tons	1,369	2,100	2,500	3,900
Lbs/Dep.	996	1,300	1,400	1,700
Annual Departures	2,748	3,200	3,600	4,600
Annual Operations	5,496	6,400	7,200	9,200

GENERAL AVIATION

General aviation is defined as that portion of civil aviation which encompasses all facets of aviation except commercial operations. To determine the types and sizes of facilities that should be planned to accommodate general aviation activity, certain elements of this activity must be forecast. These indicators of general aviation demand include:

- Based Aircraft
- Based Aircraft Fleet Mix
- Annual Aircraft Operations

BASED AIRCRAFT

The number of based aircraft is the most basic indicator of general aviation demand. Based aircraft at Albuquerque International Sunport totaled 227 in 1999. Based aircraft at ABQ has increased since 1991, the base year of the last master plan, when based general aviation aircraft totaled.189. In fact the based aircraft today exceeds the long range forecast of the 1993 Master Plan.

The number of aircraft based at an airport is, to some degree, dependent upon the nature and magnitude of aircraft ownership in the local service area. In addition, ABQ is one of several airports serving the general aviation needs of the Albuquerque metropolitan area. Therefore, the process of developing forecasts of based aircraft for ABQ begins with a review of historical aircraft registrations in the area. **Table II-V** lists the history of registered motorized aircraft in Bernalillo County. Because of the number of balloons and gliders registered in the county, they must be discounted from the totals to gain a realistic view of demand for the types of aircraft that use ABQ.

County Registered Aircraft

The number of motorized aircraft in the county reached a new high in 1999 at 721. This is just 50 more aircraft than were registered in 1980. During the past two decades the registered aircraft dipped to a low of 591 in 1989. Since that time the number of registered aircraft has been on the rise. Over the last ten years registered aircraft have increased by 22 percent or an annual average of 2.0 percent.

Table II-V also compares registered aircraft to active general aviation aircraft in the United States. Unfortunately, the FAA changed its method of compiling active aircraft this past year, and historic data was corrected only back to 1993. Over that period of time, however, the Bernalillo County share of the U.S. market of general aviation aircraft has fluctuated around a average of 0.36 percent. **Table II-V** presents a projection of registered aircraft in Bernalillo County based upon maintaining this percentage as a constant market share in the future.

A time-series extrapolation of registered aircraft was developed based upon the periods of 1980 to 1999 and 1989 to 1999. The more recent period had the best correlation with an r^2 of 0.891, compared to 0.335 for the longer term period. The **Table II-W** presents the resulting projection for comparison.

TABLE II-V **Bernalillo County Registered Motorized Aircraft** **Market Share Analysis**			
Year	**Bernalillo County Registered Aircraft Engined**	**U.S. Active GA Aircraft**	**Market Share %**
ACTUAL			
1980	671		
1983	623		
1986	620		
1987	614		
1988	599		
1989	591		
1990	606		
1991	600		
1992	604		
1993	640	177,119	0.361
1994	647	172,936	0.374
1995	687	188,089	0.365
1996	714	191,129	0.374
1997	692	192,414	0.360
1998	690	204,710	0.337
1999	721	206,530	0.349
FORECAST			
2005	790	219,415	0.360
2010	825	229,070	0.360
2025	925	256,400	0.360

Sources: Based Aircraft – U.S. Census of Civil Aircraft
U.S. Active Aircraft: FAA Aerospace Forecasts, 2000-2011, March 2000.
FAA Long Range Aerospace Forecasts 2015, 2020, and 2025, June 2000.

Note: FAA changed its methods of estimating Active Aircraft, so estimates for years prior to 1993 are not available.

Next, further correlation analyses were conducted to evaluate potential statistical fits between registered aircraft and local socioeconomic variables often linked to general aviation demand. These variables include population, employment, and per capita income. National inflation-adjusted GDP was also tested. County employment provided the best correlation with an r^2 of 0.944. A multi-variable correlation test of county employment, MSA PCPI, and GDP provided an r^2 of 0.963.

Table II-W presents the various projections for comparison. The multiple regression provides a low range projection while the time-series represents the high range. The regression with county employment and the market share projection are in the middle range. The county population regression was selected as the master plan. The market share and population regression are very similar in the near term, but population regression is more optimistic in the long range.

TABLE II-W
Registered Aircraft Projections
Bernalillo County

Correlation Analysis	**r^2**		**r^2**
Time-Series (1980-1999)	.335	Time-Series (1989-1999)	.891
Single Variable Correlations (1988-1999)			
vs. County Population vs. MSA PCPI	.869 .891	vs. County Employment vs. U.S. GDP	.944 .852
Multi-Variable Correlations			
vs. Employment + PCPI	.962	vs. Employment + PCPI + GDP	.963

Projections (tons)	**2005**	**2010**	**2025**
Time-Series (1989-1999)	807	876	1,015
Regression Analysis			
vs. County Employment	783	833	994
vs. Employment + PCPI + GDP	743	774	867
Market Share (constant)	790	825	925
Selected Forecast	**783**	**833**	**994**
1993 Master Plan	637	654	NA

Based Aircraft Forecast

Records on historical data of general aviation based aircraft at ABQ in recent years is limited. **Table II-X** compares the current based aircraft to those in 1991, the base year of the previous master plan. Based aircraft has grown from 189 to 227 during this period.

Table II-X also compares the based aircraft at ABQ as a percentage of the general aviation aircraft registered in Bernalillo County in 1991 and 1999. The Sunport's share of registered motorized aircraft was 31.5 percent each year.

Future growth at Albuquerque International Sunport will be somewhat dependent upon growth areas of the metropolitan area, as well as the services and capacities offered at the other airports in the region. The metropolitan area growth is reflected in the registered aircraft forecasts. The direction of this growth and the services will affect the market share at the Sunport.

TABLE II-X General Aviation Forecast							
Year	Single Engine	Multi-Engine	Jet	Rotor-craft	Total	County Registered	ABQ Market %
ACTUAL							
1990	121	61	7	3	192	606	31.68
1991	123	55	8	3	189	600	31.50
1999	135	79	8	5	227	721	31.48
FORECAST							
2005	146	83	12	6	247	783	31.50
2010	153	86	16	7	262	833	31.50
2025	178	98	28	9	313	994	31.50

The growth in the region is occurring primarily on the west, north and south sides of the metropolitan area. Double Eagle II Airport is a designated reliever airport located on the northwest side of the city. It is has been the longstanding policy of the City of Albuquerque Aviation Department to encourage the use of Double Eagle II as an alternative airport for general users. This is reflected in the 257 aircraft currently based at the reliever airport. It is anticipated that the City will continue to develop Double Eagle II with competitive services and improvements to be even more attractive general aviation.

Coronado is a private airport located in north Albuquerque that has 118 base aircraft. While there are no guarantees that a private airport will remain open in the long range, the airport does serve a significant clientele of general aviation users.

To the south, Mid-Valley Airport at Los Lunas has 107 based aircraft. This airport, along with Alexander Airport located further south in Belen, can be expected to attract some of the general aviation activity to be generated by the south side growth of the metropolitan area.

For planning purposes, the Sunport is projected to maintain a general aviation based aircraft market share comparable to the last decade. **Table II-X** reflect this forecast of based aircraft. **Exhibit II-L** compares these forecasts with those from the previous master plan. The forecast is significantly higher than the previous master plan forecast, whose long range total has already been exceeded.

Based Aircraft Fleet Mix

The fleet mix of general aviation based aircraft at ABQ was compared to existing and forecasted U.S. fleet trends and a projection developed. The overall national trend indicates a greater percentage of business and corporate jet aircraft in the future. This is being spurred in large part by the growing popularity for fractional ownership. Similar to a time-share, factional ownership allows many businesses more affordable access to the advantages of general aviation corporate travel. While single-engine propellor aircraft are experiencing a comeback of sorts, there percentage is still expected to decline slightly. Multi-engine propellor aircraft are also expected to decline in percentage. Piston-powered twins are not expected to grow at all, while turboprop aircraft are forecast to grow at a much lower rate than previously expected.

Albuquerque International Sunport's mix of based aircraft includes higher percentages of turboprop and business jet aircraft than the U.S. active general aviation fleet mix. The U.S. trend in aircraft mix presented in **FAA's Aerospace Forecasts - 2000-2011**, and the **FAA Aerospace Long Range Forecast for 2015, 2020, and 2025** contributed to the development of the ABQ general aviation fleet mix projections in **Table II-X**.

GENERAL AVIATION OPERATIONS

General aviation operations are classified by airport traffic control into two types: local and itinerant. A local operation is a take-off or landing performed by an aircraft that operates in the local traffic pattern within sight of the airport or which executes simulated approaches or touch-and-go operations at the airport. Local operations are typically training operations. Itinerant operations are those performed by an aircraft with a specific origin or destination away from the airport.

Itinerant Operations

Exhibit II-M and **Table II-Y** depict the last two decades of annual general aviation itinerant and local operations at Albuquerque International Sunport. The exhibit also compares the previous master plan forecasts with the activity since. General aviation itinerant operations generally declined through the 1980's and early 19900's, reaching a low of 47,728 in 1995. Itinerant operations have rebounded somewhat since that time to just over 62,000 in 1999. Statistics for the first five months of 2000 was up over 13 percent from the previous year. Thus, it appears that the long downturn has been replaced with positive growth in general aviation traffic at ABQ.

Table II-Y also presents the history of general aviation operations at airports with FAA control towers. While FAA forecasts active general aviation aircraft to increase by 23 percent by the year 2025, general aviation itinerant operations at the towered airports (including ABQ) are forecast to increase by 48 percent over the same time frame.

Therefore, aircraft operations can be expected to increase at a faster rate than based aircraft in the future. **Table II-Y** depicts the percentage market share of the towered airport general aviation itinerant operations

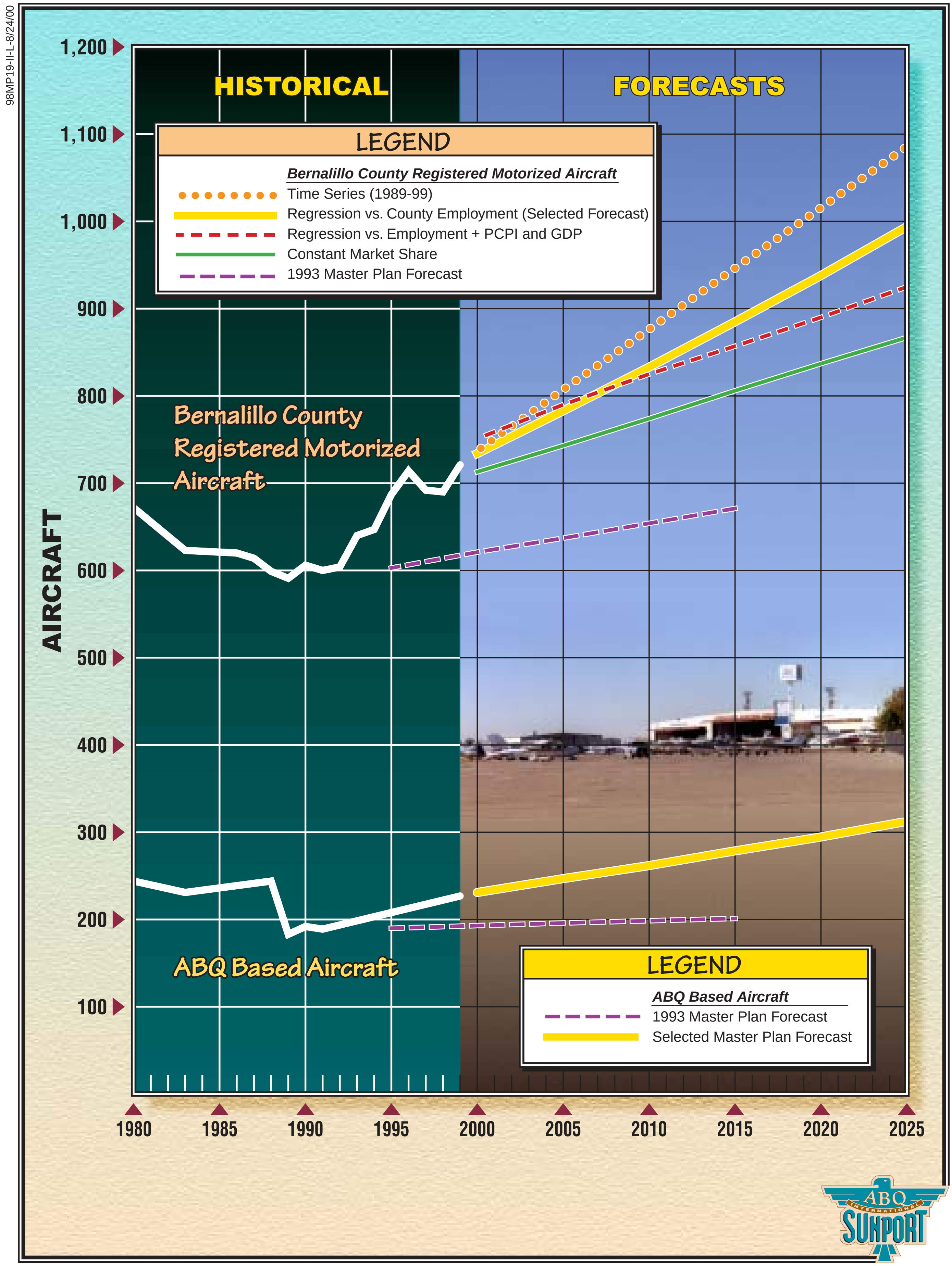
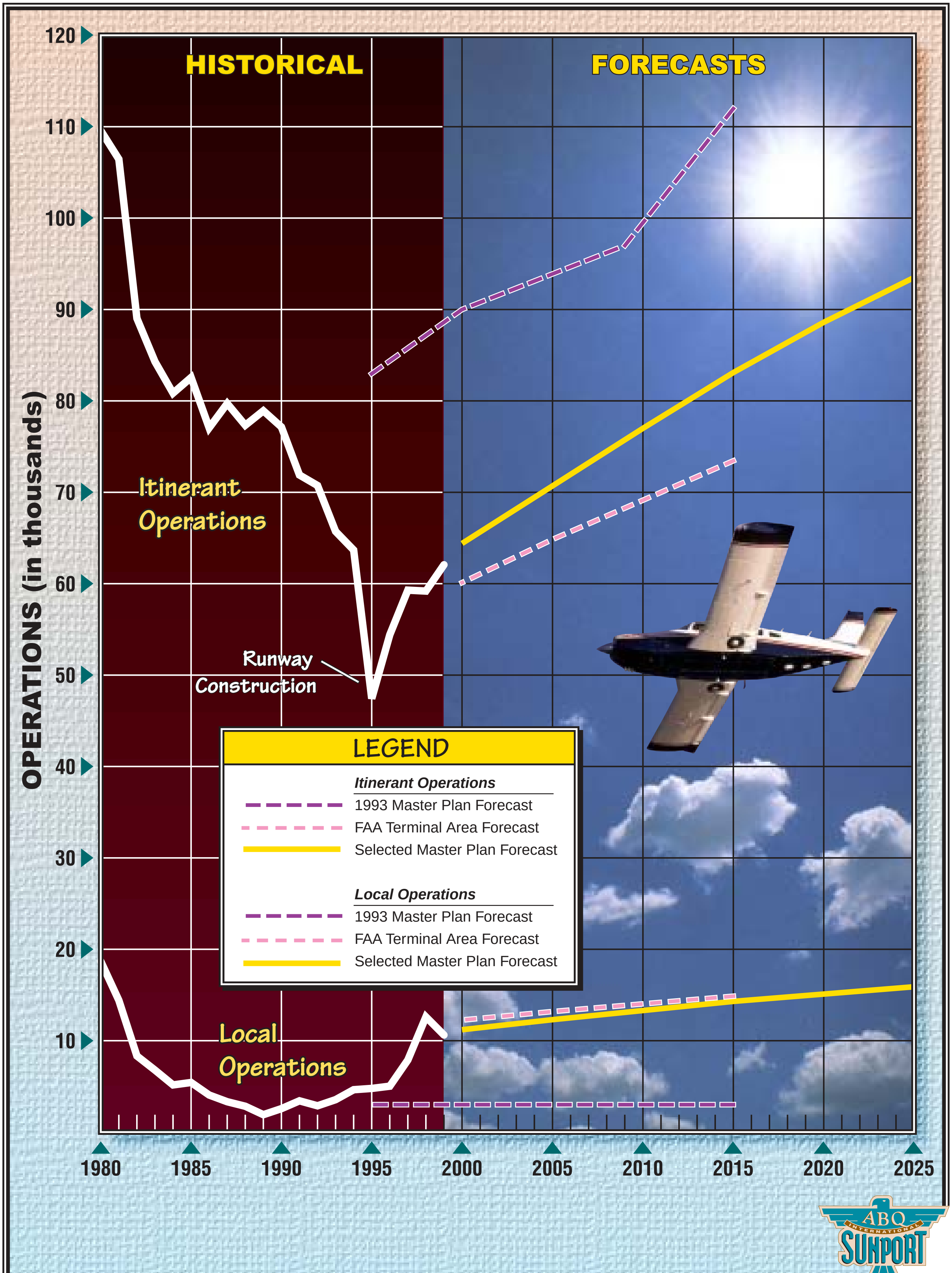


Exhibit II-L
GENERAL AVIATION
AIRCRAFT FORECASTS

98MP19-II-M-8/24/00



ABQ INTERNATIONAL SUNPORT

Exhibit II-M
GENERAL AVIATION
OPERATIONS FORECAST

attributable to ABQ since 1980. This percentage declined through the early 1990's, but has seemed to stabilize in recent years. Thus, general aviation itinerant operations at ABQ were forecast to maintain a fairly stable market share over the planning period. The itinerant operations forecasts are presented in **Table II-Y** and on **Exhibit II-M**.

TABLE II-Y
General Aviation Operations Forecast
Albuquerque International Sunport

Year	Total Operations	Local Operations	Itinerant Operations	GA Local Ops. U.S. Towered (millions)	Market Share %	GA Itin. Ops. U.S. Towered (millions)	Market Share %
ACTUAL							
1980	128,254	18,682	109,572	20.6	0.0907%	28.3	0.387%
1981	120,858	14,413	106,445	18.2	0.0792%	26.4	0.403%
1982	97,359	8,330	89,029	13.5	0.0617%	20.7	0.430%
1983	91,074	6,780	84,294	14.0	0.0484%	21.3	0.396%
1984	86,007	5,160	80,847	14.6	0.0353%	22.2	0.364%
1985	87,985	5,426	82,559	14.8	0.0367%	22.4	0.369%
1986	81,103	4,055	77,048	15.2	0.0267%	21.9	0.352%
1987	83,034	3,321	79,713	15.8	0.0210%	22.1	0.361%
1988	80,161	2,826	77,335	15.4	0.0184%	22.1	0.350%
1989	80,821	1,904	78,917	15.7	0.0121%	22.1	0.357%
1990	79,711	2,564	77,147	17.1	0.0150%	23.1	0.334%
1991	75,311	3,420	71,891	16.6	0.0206%	22.2	0.324%
1992	73,617	2,876	70,741	16.3	0.0176%	22.1	0.320%
1993	69,265	3,546	65,719	15.5	0.0229%	21.1	0.311%
1994	68,316	4,636	63,680	15.2	0.0305%	21.1	0.302%
1995	52,204	4,776	47,428	15.1	0.0317%	20.9	0.227%
1996	59,433	5,022	54,411	14.5	0.0347%	20.8	0.261%
1997	67,179	7,887	59,292	15.2	0.0520%	21.7	0.274%
1998	71,798	12,606	59,192	16.0	0.0790%	22.1	0.268%
1999	72,692	10,622	62,070	17.0	0.0625%	23.0	0.269%
FORECAST							
2005	83,000	12,300	70,700	18.9	0.0650%	25.7	0.275%
2010	90,300	13,300	77,000	20.5	0.0650%	28.0	0.275%
2025	109,400	15,900	93,500	24.5	0.0650%	34.0	0.275%

Local Operations

Local operations at Albuquerque International Sunport have been growing since bottoming out in 1989 at 1,904. In 1998, local operations reached 12,606, the highest since 1981. Local operations were down 16 percent in 1999 to 10,622. In the first five months of 2000, however, local operations were back up by 16 percent from the same period in1999.

Table II-Y and **Exhibit II-M** present the history of local operations for comparison to the forecast of the previous master plan. The 1993 Master Plan had projected local operations to remain at a constant 3,000 annually.

The table also compares ABQ local general aviation operations as a percentage of local operations at FAA towered airports. The market share declined through the 1980's but has recovered somewhat in the late 1990's. The FAA projects local general aviation operations to increase by 44 percent by 2025.

Because of the availability of Double Eagle II Airport as a reliever airport, local operations are not expected to grow significantly at ABQ. Double Eagle II Airport has a more compatible mix of traffic, so the general aviation training operations do not have to mix with the larger, faster commercial jet and military aircraft present at ABQ. Local operations were projected to remain at a constant share of the FAA towered local operations through the planning period. This is presented in **Table II-Y**. As indicated on **Exhibit II-M** the new Master Plan forecast for general aviation operations is very comparable to the FAA Terminal Area Forecast.

OTHER AIR TAXI

Air taxi activity has been independently reported by air traffic control towers since 1972 and was instituted to include commuter passenger and all-cargo airlines, as well as for-hire general aviation operations. Commuter airline operations were forecast earlier along with the major airline operations. Subtracting the commercial passenger and all-cargo operations from the air taxi operations reported by the ATCT indicates other air taxi operations totaled 1,164 in 1999. This operation level was forecast to increase at a rate similar to that projected for general aviation itinerant operations. The non-scheduled air taxi operations forecasts for Albuquerque International Sunport are presented in the summary table at the end of this chapter.

MILITARY ACTIVITY

Military operations are an important factor in air traffic activity at Albuquerque International Sunport because of the joint use agreement with Kirtland Air Force Base. The 542nd Crew Training Wing owns and maintains helicopters and C-130 aircraft. The 150th Tactical Fighter Group of the New Mexico Air National Guard (NMANG) operates F-16 fighter aircraft. In 1999, there were 58 military aircraft based at Kirtland. This is down from 68 in 1991, the base year of the previous master plan.

Table II-Z presents the annual military operations since 1991 at ABQ. While military based aircraft are down, military operations have increased. In 1999, military operations totaled 43,761 compared to 35,314 in 1991 and a low of 24,009 in 1996. Operations during the first five months of 1999 were up three percent from the previous year. Future activity is dependent upon the future missions at the base. This makes projecting military utilization difficult since local missions can change with little notice. There are indications that one helicopter group involving 11 rotorcraft could be leaving in the short term. For planning purposes, however, military operations were forecast to remain constant at around 44,000 annual operations in the future.

TABLE II-Z Military Operations Albuquerque International Sunport			
	Military Operations		
Year	**Itinerant**	**Local**	**Total**
ACTUAL			
1991	27,831	7,483	35,314
1992	23,570	5,928	29,498
1993	23,775	6,540	30,315
1994	23,048	8,066	31,114
1995	19,480	8,416	27,896
1996	16,466	7,543	24,009
1997	21,436	12,278	33,714
1998	21,879	21,001	42,880
1999	23,413	20,348	43,761
FORECAST			
2005	24,000	20,000	44,000
2010	24,000	20,000	44,000
2025	24,000	20,000	44,000

PEAKING CHARACTERISTICS

Many airport facility needs are related to the levels of activity during peak periods. The periods used in developing facility requirements for this study are as follows:

- **Peak Month** - The calendar month when peak aircraft operations occur.
- **Design Day** - The average day in the peak month. This indicator is easily derived by dividing the peak month operations by the number of days in a month.
- **Busy Day** - The busy day of a typical week in the peak month.
- **Design Hour** - The peak hour within the design day.

It is important to note that only the peak month is an absolute peak within a given year. All other peak periods will be exceeded at various times during the year. However, they do represent reasonable planning standards that can be applied without overbuilding or being too restrictive.

AIRLINE

The peak month for enplanements at ABQ over the past six years has averaged 9.6 percent of annual enplanements with very little fluctuation from year to year. This can be expected to remain relatively constant over the planning period. The peak month varies between July, August and October.

Ideally, hourly enplanements should be used to examine changes in peak hour passengers as a percentage of design day activity. Since this data is not readily available from all the airlines, design hour factors based upon the aircraft seating capacities during the peak departure period were utilized. The peak period was estimated at approximately 11.8 percent of design day enplanements. Since enplanement and deplanement peaks do not occur during the same hour, the design hour percentage of design day for total passengers is less (10.4 percent). Total design hour passengers average 1.75 times the design hour enplaned passengers. **Table II-AA** outlines the design period passenger levels for the forecast period.

TABLE II-AA
Airline Peaking Characteristics

	1999	2005	2010	2025
Airline Enplanements				
Annual	3,131,951	3,900,000	4,700,000	7,100,000
Peak Month	299,599	374,000	451,000	682,000
Design Day	9,987	12,500	15,000	22,700
Design Hour	1,178	1,450	1,690	2,315
Total Passengers				
Design Day	19,974	25,000	30,000	45,400
Design Hour	2,080	2,550	2,970	4,040
Major Airline Operations				
Annual	77,056	91,000	104,800	143,600
Peak Month	6,700	7,900	9,100	12,500
Design Day	222	264	302	416
Design Hour	22	26	29	38
Commuter Operations				
Annual	22,694	22,600	22,800	23,200
Peak Month	2,022	2,010	2,030	2,060
Design Day	84	84	84	86
Design Hour	12	12	12	12

Major airline operations at ABQ have averaged 8.7 percent of annual operations during the peak month in the last five years. Commuter airline operations have maintained a monthly peak of 8.9 percent. According to airline schedules, the major airlines currently conduct approximately 10 percent of their daily operations during the peak hour. The commuter airlines conduct 14 percent of their operations during the peak hour. **Table II-AA** also outlines the peak period airline operations forecasts.

GENERAL AVIATION

The peak month of general aviation operations at Albuquerque International Sunport has averaged 9.4 percent of the yearly total over the last six years. The peak month for general aviation operations at ABQ typically occurs in September or October.

Daily data available from the ABQ air traffic control tower (ATCT) was used to determine a busy day peaking factor for general aviation activity. During the peak month of 1999, the peak day each week averaged 19.0 percent of the week. This equates to a busy day 33 percent higher then the average or design day. This factor can be expected to decrease slightly during the planning period. Based upon analysis of hourly counts, the design hour was calculated as 9.6 percent of the design day operations. **Table II-BB** summarizes the general aviation peak activity forecasts.

TABLE II-BB
General Aviation Peak Operations

	1999	2005	2010	2025
OPERATIONS				
Annual	72,692	83,000	90,300	109,400
Peak Month	6,789	7,800	8,500	10,300
Busy Day	291	330	356	428
Design Day	219	252	274	332
Design Hour	21	24	26	30

TOTAL OPERATIONS

The total operations peak periods are utilized in examining the capacity of the airfield. The peak month of total operations has averaged 9.0 percent of annual operations over the last six years, typically occurring in October. According to the daily operational logs of the Albuquerque Air Traffic Control Tower, peak hour operations averaged 8.0 percent of daily operations. **Table II-CC** outlines the peak period forecasts for total airport operations.

ANNUAL INSTRUMENT APPROACHES

Forecasts of annual instrument approaches provide guidance in determining an airport's requirements for navigational aid facilities. An instrument approach as defined by FAA is "an approach to an airport with intent to land by an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude."

TABLE II-CC Peak Period Airport Operations				
	1999	2005	2010	2025
TOTAL OPERATIONS				
Annual	228,933	256,900	280,500	345,400
Peak Month	20,397	23,100	25,200	31,100
Design Day	658	745	813	1,003
Design Hour	53	59	63	75

Historical data on instrument approaches to Albuquerque International Airport was obtained from **FAA Air Traffic Activity** statistics. For commercial operations, AIA's have averaged 0.8 percent of annual air carrier and commuter operations. The AIA percentage for military activity has averaged 0.3 percent of itinerant military operations. The AIA's for general aviation have been 0.6 percent of itinerant operations. These percentages can be expected to remain relatively constant. **Table II-DD** summarizes the forecast of AIA's.

TABLE II-DD Annual Instrument Approaches				
	1999	2005	2010	2025
Air Carrier	281	780	910	1,260
Air Taxi	151	240	250	270
General Aviation	60	420	460	560
Military	59	70	70	70
Total	551	1,510	1,690	2,160

SUMMARY

This chapter has outlined the various aviation demand levels to be anticipated over the planning period. The next step in the master plan is to reassess the capacity of the existing facilities and determine what facilities will be necessary to meet both existing and future demands. This will be examined in the following two chapters. **Table II-EE** provides a summary of the aviation forecasts for Albuquerque International Sunport. Again, 1999 was the base year for the Master Plan forecasts.

TABLE II-EE
Aviation Forecast Summary
Albuquerque International Sunport

	1999	2005	2010	2025
ANNUAL OPERATIONS				
General Aviation				
Itinerant	62,070	70,700	77,000	93,500
Local	10,622	13,600	14,400	15,900
Total GA	72,692	84,300	91,400	109,400
Air Carrier & Air Taxi				
Majors	77,056	91,000	104,800	143,600
Regionals	22,694	22,600	22,800	23,200
Charters	112	100	200	300
All-Cargo Majors	5,958	7,200	8,600	13,800
All-Cargo Regionals	5,496	6,400	7,200	9,200
Other Air Taxi	1,164	1,300	1,500	1,900
Total Air Carrier & Air Taxi	112,480	128,600	145,100	192,000
Military				
Itinerant	23,413	24,000	24,000	24,000
Local	20,348	20,000	20,000	20,000
Total Military	43,761	44,000	44,000	44,000
Total Annual Operations	228,933	256,900	280,500	345,400
Annual Enplanements				
Majors	3,037,900	3,783,000	4,559,000	6,887,000
Regionals	94,051	117,000	141,000	213,000
Charter	1,775	2,000	3,000	5,000
Total Annual Enplanements	3,133,726	3,902,000	4,703,000	7,105,000
Based Aircraft				
General Aviation	227	247	262	313
Military	58	58	58	58
Air Cargo				
Freight (tons)	67,684	95,000	125,000	258,000
Mail (tons)	23,911	32,000	43,000	77,000
Total Annual Cargo	91,595	127,000	168,000	335,000

U.S. Department
of Transportation

**Federal Aviation
Administration**

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SEP 26 2000

AIRPORTS DISTRICT OFFICE
1601 Randolph, SE Suite 130 S
Albuquerque, NM 87106

September 19, 2000

Mr. James M. Harris, P.E.
Coffman Associates, Inc.
11022 N 28th Drive, Suite 240
Phoenix, AZ 85029

Dear Mr. Harris:

Albuquerque International Sunport, Albuquerque, NM

AIP Project No. 3-35-0003-23 & 24 (Master Plan Update)

We have reviewed a draft of Chapter Two - Aviation Demand Forecasts and we find that the selected annual enplanements and operational forecasts compare favorably with the FAA's Terminal Area Forecasts (TAF). The selected forecasts are therefore approved for use in this Master Plan Update

In addition to the submittals provided me please provide copies of submittals to Joy Porter in our Regional Office at:

DOT/FAA
ASW-640
FTW, TX 76193-0640

Sincerely,

Frederick O. Gurule'

Frederick O. Gurule'.
Program Manager

CC: Jay Czar, Director of Aviation

Chapter Three

Capital Implementation Program

Chapter Three
Financial Plan

INTRODUCTION

This chapter presents financial projections for ABQ based on the Capital Development Program and the aviation activity forecasts presented in Chapter Two. Financial projections were developed for the three planning periods used for the Capital Development Program: short-term (Fiscal Years 2002-2005), intermediate-term (Fiscal Years 2006-2010), and long-term (Fiscal Years 2011- 2025). ABQ's Fiscal Year ends June 30.

AIRPORT FINANCIAL STRUCTURE

The financial operations of ABQ and its reliever, Double Eagle II Airport (together, the Airport System) are accounted for as an enterprise fund of the City of Albuquerque. Audited financial statements for the Airport System are prepared according to generally accepted accounting principles for government entities and the requirements of ABQ's Bond Ordinances.

BOND ORDINANCES

ABQ's Bond Ordinances govern the application of Airport System revenues including passenger facility charge (PFC) and customer facility charge (CFC) revenues to the various funds and accounts established under the Ordinances. The Bond Ordinances require that airline rates and charges be established each year to generate Net Revenues (Gross Airport Revenues less Operation and Maintenance Expenses) sufficient to make the deposits required to the funds and accounts established in the Bond Ordinances and demonstrate 120% debt service coverage for Outstanding Senior

Parity Obligations and 110% debt service coverage for all Outstanding Senior and Subordinate Parity obligations. ABQ's Outstanding Bonds are backed solely by the Net Revenues of the Airport System.

APPLICATION OF REVENUES

Under the Bond Ordinances, all Gross Airport Revenues are deposited to the Revenue Fund and used as follows (and as shown on **Exhibit III-A**):

1. To pay Operation and Maintenance Expenses.

2. As a deposit to the Senior Debt Service Fund to pay debt service on Senior Parity Obligations.

3. As a deposit to the Debt Service Reserve Accounts of the Senior Debt Service Fund to maintain the Reserve Requirement balance, if any, for Senior Parity Obligations.

4. As a deposit to the Subordinate Debt Service Fund to pay debt service on Subordinate Parity Obligations.

5. As a deposit to the Debt Service Reserve Accounts of the Subordinate Debt Service Fund to maintain a balance equal to the Reserve Requirement, if any, for Subordinate Parity Obligations.

6. As a deposit to the Operation and Maintenance Reserve Account to maintain a balance equal to one-sixth of the total annual budgeted Operation and Maintenance Expenses for ABQ (the Operation and Maintenance Reserve Requirement).

7. As a deposit to the Capital Fund to be used for any lawful Airport System purpose.

PASSENGER AIRLINE LEASES

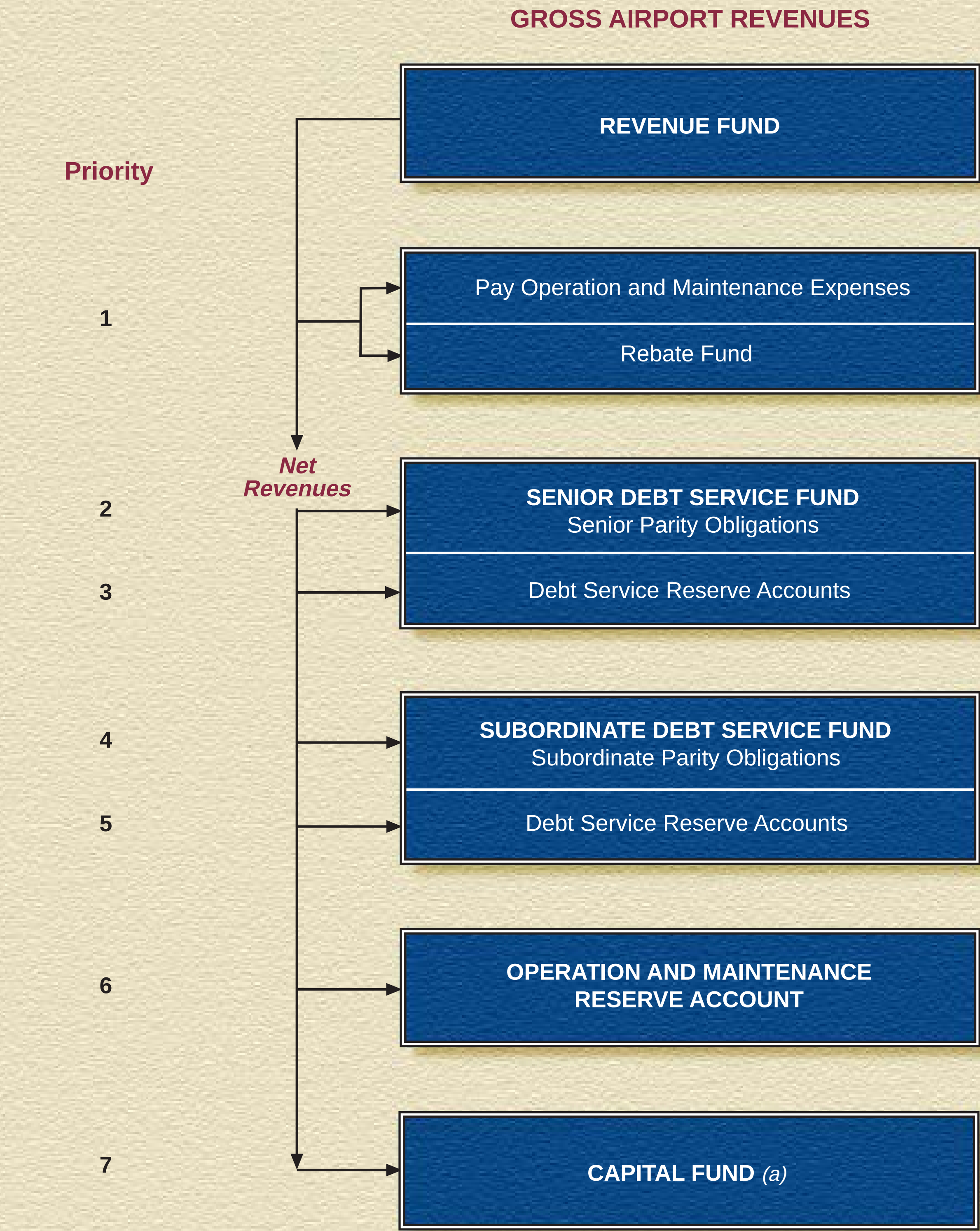
ABQ and eight airlines (the Signatory Airlines) have entered into leases (the Airline Leases) governing the use of Airport System facilities and the payment of costs for such use. The term of the Airline Leases extends through June 30, 2006. The Airline Leases define the following direct cost centers: Terminal Complex, Airfield, Terminal Apron, Reliever Airport, Landside Area, and Other Areas. The Airline Leases also establish procedures for the annual review and adjustment of airline rates and charges. Airport System costs recovered through airline rates and charges include:

- Allocable Operation and Maintenance Expenses.

- The estimated cost of equipment purchases, capital outlays, and unscheduled maintenance (net of the amount funded from the Airline Coverage Account in the Capital Fund).

- 120% of allocable Debt Service Requirements on Senior Parity Obligations and 100% of allocable Debt Service Requirements on the Subordinate Parity Obligations.

98MP19-IIIA-4/19/02



(a) Amounts deposited in the Capital Fund are further applied to the Airline Coverage Account in accordance with the *Scheduled Airline Operating Agreement and Terminal Building Lease*. Remaining moneys in the Capital Fund may be used by the City for any lawful airport purpose.

Source: City of Albuquerque, *Ordinance Authorizing the Issuance of City of Albuquerque, New Mexico, Subordinate Lien Adjustable Rate Governmental Purpose Airport Revenue Bonds, Series 2000A, and Subordinate Lien Adjustable Rate Taxable Airport Revenue Bonds, Series 2000B.*

Exhibit III-A
SUMMARY OF THE APPLICATION
OF GROSS AIRPORT REVENUES

- Amortization of improvements financed by ABQ from sources other than the proceeds of Bonds, federal grants-in-aid, or PFC revenues.

- The Reliever Airport (Double Eagle II) Deficit, which is equal to total operating revenues less expenses at Double Eagle II Airport.

- Fines, assessments, judgments, or settlements.

- Required deposits to reserve accounts established in the Bond Ordinances.

These costs are recovered annually from the airlines through leased space rentals, aircraft landing fees, and other rates and charges.

OTHER LEASES

Other tenants occupy space and operate at ABQ under the terms and conditions of other leases. In general, the business terms of the other leases are based on industry practices and cost-recovery principles. Currently, ABQ has leases covering the following:

- Rental car activities;
- Food and beverage and news and gifts concessions;
- Airport advertising and other terminal concessions;
- Other buildings and grounds;
- General aviation services; and
- Cargo airline operations (the Cargo Airline Leases).

ABQ CAPITAL DEVELOPMENT PROGRAM AND FUNDING SOURCES

Table III-A shows gross project costs for the Capital Development Program by cost center and the estimated sources of funding.

For purposes of projecting the financial results for the Airport System, the project costs shown on **Table III-A** include allowances for: (1) ABQ costs allocable to capital projects and the acquisition of land; (2) design, construction, and program management fees and contingencies; (3) allowances for inflation; and (4) New Mexico gross receipts tax.

Sources of funding for the Capital Development Program are as follows:

- Federal grants-in-aid under the Airport Improvement Program (AIP)

- PFC revenues

  → Pay-as-you-go

  → Proceeds from the sale of PFC-supported bonds

- ABQ internally generated funds

- Proceeds from the sale of airport revenue bonds

The amount of funding available from these sources will depend primarily on future levels of aviation activity at ABQ and future federal reauthorizations.

FEDERAL GRANTS-IN-AID

The Airport Improvement Program is authorized by the Airport and Airway Improvement Act of 1982 (the Act). The Act authorized funding for the AIP from the Airport and Airway Trust Fund for airport development, airport planning, and noise compatibility planning and programs. The Airport and Airway Trust Fund is funded through several aviation user taxes on airline fares, air freight, and aviation gasoline.

Under the AIP, ABQ receives annual entitlement grants based on numbers of enplaned passengers and cargo tonnage and is eligible to receive discretionary grants. Other sources of funds under the AIP are also available to ABQ; however, entitlement and discretionary funds are the primary sources. In general, AIP grants can be used for land acquisition, noise mitigation, airfield improvements, on-airport roadways, public areas of terminal buildings, and safety and security systems and equipment. In allocating its discretionary funds, the FAA gives priority to projects that enhance airport capacity where capacity constraints have been demonstrated.

On April 5, 2000, the U.S. Congress approved passage of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21). Among several provisions, AIR-21 provided for 4 years of AIP authorization (Federal Fiscal Years [FFY] 2000-2003), ranging from \$2.475 billion in FFY 2000 to \$3.4 billion in FFY 2003. Under AIR-21, if appropriated AIP funds equal or exceed \$3.2 billion in a single year, resulting entitlement grants to airport operators would be double the amount that would have been received under an appropriation lower than \$3.2 billion. Currently, large- and medium-hub airports that levy a \$3.00 or \$4.50 PFC forego 50% or 75% of AIP entitlement grants, respectively.

Major federal grant programs began in the 1940s with successive authorization acts, including the Federal-aid Airport Program (FAAP) in 1946, the Airport Development Aid Program (ADAP) in 1970, and the AIP in 1982. The PFC program was established in 1990. For purposes of this analysis, it was assumed that federal programs similar to the AIP and the PFC program would continue throughout the planning period.

The federal grants-in-aid shown on **Table III-A** and assumed for purposes of this analysis reflect the following assumptions: (1) annual entitlement funds would be available beginning in FY 2003 through the long-term (FY 2025), and would be used to finance projects in the Capital Development Program, and (2) ABQ would receive discretionary grants for certain eligible projects (e.g., construction of new passenger aprons) up to 75% of project costs.

PASSENGER FACILITY CHARGES

PFCs are authorized by Title 14 of the Code of Federal Regulations, Part 158, and the PFC program is administered by the FAA. PFCs are collected from qualified enplaned passengers and PFC revenues are used to fund eligible

DRAFT FINAL-98MP19-T3A-4/18/02

	Project costs (a)				Estimated sources of funding				
	Short term 2002-2005	Intermediate term 2006-2010	Long term 2011-2025	Total project costs	Federal grants (b)	PFC revenues (c)	Internally generated funds (d)	Airport revenue bonds (e)	Total funding sources
TERMINAL COMPLEX									
Existing Terminal & Concourse Projects	$ 41,244,000	$ -	$ -	$ 41,244,000	-	$ -	$ -	$ 41,244,000	$ 41,244,000
Aircraft Loading Bridge Systems	1,267,000	-	-	1,267,000	-	-	-	1,267,000	1,267,000
Second Terminal and Concourse - Phase I	-	256,186,000	-	256,186,000	-	64,046,000	-	192,140,000	256,186,000
Existing Terminal/Concourse Upgrades - Phase I	-	68,908,000	-	68,908,000	-	17,227,000	4,000,000	47,681,000	68,908,000
Second Terminal Loading Bridges - Phase I	-	6,653,000	-	6,653,000	-	6,653,000	-	-	6,653,000
SecondTerminal/Concourse - Phase II	-	-	112,329,000	112,329,000	-	28,082,000	80,000,000	4,247,000	112,329,000
Existing Terminal/Concourse Upgrades - Phase II	-	-	79,833,000	79,833,000	-	19,958,000	-	59,875,000	79,833,000
Second Terminal Loading Bridges - Phase II	-	-	6,387,000	6,387,000	-	6,387,000	-	-	6,387,000
	$ 42,511,000	**$ 331,747,000**	**$ 198,549,000**	**$ 572,807,000**	**-**	**$ 142,353,000**	**$ 84,000,000**	**$ 346,454,000**	**$ 572,807,000**
AIRFIELD									
Close/Remove Runway 17-35	$ -	$ 4,879,000	$ -	$ 4,879,000	$ 3,659,000	$ -	$ 1,220,000	$ -	$ 4,879,000
Connecting Taxiway between C & D	-	1,191,000	-	1,191,000	893,000	298,000	-	-	1,191,000
Extend Runway 3-21 1,000 feet SE	-	3,295,000	-	3,295,000	2,471,000	824,000	-	-	3,295,000
Taxiway Exit on Runway 3-21	-	840,000	-	840,000	630,000	210,000	-	-	840,000
Eastside Partial Parallel Taxiway	-	-	14,476,000	14,476,000	10,857,000	3,619,000	-	-	14,476,000
	$ -	**$ 10,205,000**	**$ 14,476,000**	**$ 24,681,000**	**$ 18,510,000**	**$ 4,951,000**	**$ 1,220,000**	**$ -**	**$ 24,681,000**
TERMINAL APRON									
Terminal Apron Rehabilitation	$ 19,817,000	$ -	$ -	$ 19,817,000	$ 5,792,000	$ -	$ -	$ 14,025,000	$ 19,817,000
Terminal Apron Improvements	2,831,000	-	-	2,831,000	2,123,000	-	-	708,000	2,831,000
Second Terminal Apron - Phase I	-	27,880,000	-	27,880,000	6,188,000	21,692,000	-	-	27,880,000
Second Terminal Apron - Phase II	-	-	30,656,000	30,656,000	15,661,000	14,995,000	-	-	30,656,000
	$ 22,648,000	**$ 27,880,000**	**$ 30,656,000**	**$ 81,184,000**	**$ 29,764,000**	**$ 36,687,000**	**$ -**	**$ 14,733,000**	**$ 81,184,000**
LANDSIDE AREA									
Second Terminal Parking - Phase I	$ -	$ 67,863,000	$ -	$ 67,863,000	-	$ -	$ 67,863,000	$ -	$ 67,863,000
Expand Employee Parking	-	1,331,000	-	1,331,000	-	-	1,331,000	-	1,331,000
Second Terminal Parking - Phase II	-	-	88,902,000	88,902,000	-	-	88,902,000	-	88,902,000
	$ -	**$ 69,194,000**	**$ 88,902,000**	**$ 158,096,000**	**-**	**$ -**	**$ 158,096,000**	**$ -**	**$ 158,096,000**

Table III-A
ESTIMATED PROJECT COST AND SOURCES OF FUNDING
2002 THROUGH 2025

	Project costs (a) Short term 2002-2005	Intermediate term 2006-2010	Long term 2011-2025	Total project costs
OTHER AREAS				
Cargo				
Remove Existing Belly Freight Facility	$ 703,000	$ -	$ -	$ 703,000
Construct Belly Freight Building	3,207,000	-	-	3,207,000
Construct Belly Freight Parking/Truck Court	714,000	-	-	714,000
Construct Belly Freight Airside Access	890,000	-	-	890,000
Air Cargo Apron North	3,828,000	-	-	3,828,000
Extend Cargo Building North	2,567,000	-	-	2,567,000
Extend Cargo Truck Court North	422,000	-	-	422,000
Add Cargo Building North	2,605,000	-	-	2,605,000
Add Cargo Parking/Truck Court North	981,000	-	-	981,000
Extend Cargo Building South	-	3,158,000	-	3,158,000
Extend Cargo Truck Court South	-	1,090,000	-	1,090,000
Construct North Belly Freight Building	-	-	4,850,000	4,850,000
Construct North Belly Freight Parking/Truck Court	-	-	3,066,000	3,066,000
Construct North Belly Freight Access Road	-	-	511,000	511,000
Construct North Belly Freight Airside Access	-	-	2,129,000	2,129,000
Cargo Buildings South End of Ramp	-	-	4,850,000	4,850,000
South Cargo Access Road/Utilities Phase I	-	-	852,000	852,000
South Parking/Truck Court Phase I	-	-	3,066,000	3,066,000
South Cargo Apron	-	-	8,720,000	8,720,000
South Cargo Buildings	-	-	9,701,000	9,701,000
South Cargo Access Road/Utilities Phase II	-	-	852,000	852,000
South Parking/Truck Court Phase II	-	-	1,490,000	1,490,000
Existing Cargo Apron Rehabilitation	-	-	383,000	383,000
Existing Parking/Truck Court Rehabilitation	-	-	43,000	43,000
	$ 15,917,000	**$ 4,248,000**	**$ 40,513,000**	**$ 60,678,000**
Other				
Airline Fuel Farm	$ 13,511,000	$ -	$ -	$ 13,511,000
New Maintenance Area Civil and Utilities	2,426,000	-	-	2,426,000
New Maintenance Area Buildings	5,685,000	-	-	5,685,000
Relocate Existing T-Hangars	642,000	-	-	642,000
South GA Apron Rehabilitation	9,233,000	-	-	9,233,000
GA Auto Parking Rehabilitation	-	634,000	-	634,000
	$ 31,497,000	**$ 634,000**	**$ -**	**$ 32,131,000**
	$ 47,414,000	**$ 4,882,000**	**$ 40,513,000**	**$ 92,809,000**
ROADWAYS				
Connect Spirit Drive and Access Road B	$ 1,486,000	$ -	$ -	$ 1,486,000
Terminal Area Property Acquisition-Phase I	14,850,000	-	-	14,850,000
Terminal Area Property Acquisition-Phase II	-	16,713,000	-	16,713,000
Second Terminal Road System	-	62,096,000	-	62,096,000
Clark Carr Road Rehabilitation	-	95,000	-	95,000
	$ 16,336,000	**$ 78,904,000**	**$ -**	**$ 95,240,000**
Total project costs and sources of funding	**$ 128,909,000**	**$ 522,812,000**	**$ 373,096,000**	**$ 1,024,817,000**

	Estimated sources of funding Federal grants (b)	PFC revenues (c)	Internally generated funds (d)	Airport revenue bonds (e)	Total funding sources
OTHER AREAS					
Cargo					
Remove Existing Belly Freight Facility	$ 527,000	$ -	$ -	$ 176,000	$ 703,000
Construct Belly Freight Building	-	-	-	3,207,000	3,207,000
Construct Belly Freight Parking/Truck Court	535,000	-	-	179,000	714,000
Construct Belly Freight Airside Access	667,000	-	-	223,000	890,000
Air Cargo Apron North	2,871,000	-	-	957,000	3,828,000
Extend Cargo Building North	-	-	-	2,567,000	2,567,000
Extend Cargo Truck Court North	-	-	-	422,000	422,000
Add Cargo Building North	-	-	-	2,605,000	2,605,000
Add Cargo Parking/Truck Court North	-	-	-	981,000	981,000
Extend Cargo Building South	-	-	3,158,000	-	3,158,000
Extend Cargo Truck Court South	-	-	1,090,000	-	1,090,000
Construct North Belly Freight Building	-	-	4,850,000	-	4,850,000
Construct North Belly Freight Parking/Truck Court	-	-	3,066,000	-	3,066,000
Construct North Belly Freight Access Road	383,000	128,000	-	-	511,000
Construct North Belly Freight Airside Access	1,597,000	-	532,000	-	2,129,000
Cargo Buildings South End of Ramp	-	-	4,850,000	-	4,850,000
South Cargo Access Road/Utilities Phase I	639,000	213,000	-	-	852,000
South Parking/Truck Court Phase I	-	-	3,066,000	-	3,066,000
South Cargo Apron	6,540,000	2,180,000	-	-	8,720,000
South Cargo Buildings	-	-	9,701,000	-	9,701,000
South Cargo Access Road/Utilities Phase II	639,000	213,000	-	-	852,000
South Parking/Truck Court Phase II	-	-	1,490,000	-	1,490,000
Existing Cargo Apron Rehabilitation	287,000	96,000	-	-	383,000
Existing Parking/Truck Court Rehabilitation	-	-	43,000	-	43,000
	$ 14,685,000	**$ 2,830,000**	**$ 31,846,000**	**$ 11,317,000**	**$ 60,678,000**
Other					
Airline Fuel Farm	- $	$ -	$ -	$ 13,511,000	$ 13,511,000
New Maintenance Area Civil and Utilities	1,820,000	-	606,000	-	2,426,000
New Maintenance Area Buildings	2,842,000	-	2,843,000	-	5,685,000
Relocate Existing T-Hangars	481,000	-	161,000	-	642,000
South GA Apron Rehabilitation	6,925,000	-	2,308,000	-	9,233,000
GA Auto Parking Rehabilitation	-	-	634,000	-	634,000
	$ 12,068,000	**$ -**	**$ 6,552,000**	**$ 13,511,000**	**$ 32,131,000**
	$ 26,753,000	**$ 2,830,000**	**$ 38,398,000**	**$ 24,828,000**	**$ 92,809,000**
ROADWAYS					
Connect Spirit Drive and Access Road B	$ 1,115,000	$ -	$ 371,000	$ -	$ 1,486,000
Terminal Area Property Acquisition-Phase I	-	-	14,850,000	-	14,850,000
Terminal Area Property Acquisition-Phase II	-	-	16,713,000	-	16,713,000
Second Terminal Road System	-	62,096,000	-	-	62,096,000
Clark Carr Road Rehabilitation	-	95,000	-	-	95,000
	$ 1,115,000	**$ 62,191,000**	**$ 31,934,000**	**$ -**	**$ 95,240,000**
Total project costs and sources of funding	**$ 76,142,000**	**$ 249,012,000**	**$ 313,648,000**	**$ 386,015,000**	**$ 1,024,817,000**

(a) Reflects a capital development program of $746,226,000, escalated for inflation at 3.0% per year; New Mexico Gross Receipts Tax of 5.8125%; and CIP Overhead Charge of 1.9% for construction projects and 1.4% for land acquisition.
(b) Includes AIP entitlement grants and $15 million in discretionary grants.
(c) Includes PFC pay-as-you-go and bond-funded amounts. Reflects PFC revenues available upon completion of current PFC program and collection of a $4.50 PFC.
(d) Reflects investment of 100% of year-end remaining revenues. Also includes reimbursed equity from PFC revenues associated with the second PFC application of $44.5 million from FY 2003 to FY 2007.
(e) Assuming bond issuance every 5-8 years, as needed, with a 20-year term, 2-year capitalized interest period, 15% cost of issuance, and allowances for increases in interest rates for future bonds.

Table III-A (continued)
ESTIMATED PROJECT COST AND SOURCES OF FUNDING
2002 THROUGH 2025

projects (as more fully discussed below). A PFC of up to $4.50 per eligible enplaned passenger can be imposed by an airport operator, and more than 85% of the nation's large-, medium-, and small-hub airport operators impose a PFC. Once a PFC is imposed, it is included as part of the ticket price paid by passengers enplaning at the airport, collected by the airlines, and remitted to the airport operator, less an allowance for airline processing expenses. ABQ currently imposes a $3.00 PFC and foregoes 50% of its annual AIP entitlement funds. The amount foregone by ABQ is significantly less than the annual PFC revenues earned by imposing the $3.00 PFC. If a $4.50 PFC were imposed, ABQ would forego 75% of its annual AIP entitlement funds.

Projects that are eligible for PFC funding are those that (1) preserve or enhance the capacity, safety, or security of the air transportation system, (2) reduce noise or mitigate noise effects, or (3) furnish opportunities for enhanced competition between or among air carriers. PFCs cannot be used for commercial facilities at airports, such as restaurants and other concession space, rental car facilities, public parking facilities, or construction of exclusively leased space or facilities.

ABQ has been collecting a $3.00 PFC since July 1996 and is authorized by the FAA under its first PFC application to collect $49.6 million. ABQ expects that the first PFC authorization will expire in FY 2002. ABQ's second PFC application was approved by the FAA in FY 2002 and allows ABQ to increase its collection authority by $44.5 million. Under the second PFC application, PFC revenues are to be used to paydown the unamortized cost of certain Airfield projects. Based on the projections of aviation activity presented in Chapter Two, ABQ will reach its $44.5 million authorized collections level by FY 2007.

For purpose of this analysis, it was assumed that PFC revenues would not be available to fund the Capital Development Program until FY 2007, when the second PFC authorization is projected to expire. In FY 2007 and beyond, it was assumed that ABQ would (1) receive authorization to increase its PFC to $4.50 per enplaned passenger; (2) issue PFC-supported bonds in FY 2008 to finance costs associated with the second terminal building, roadways, and other projects, such as new aprons; and (3) use any PFC revenues available after paying debt service to fund PFC- and AIP-eligible project costs in the Capital Development Program. The use of PFC revenues as a major funding source for capital projects that enhance capacity, safety, and airline competition is consistent with FAA funding guidelines.

ABQ INTERNALLY GENERATED FUNDS

The Airport System's financial operations are accounted for as an enterprise fund of the City. In the past, ABQ has used internally generated funds to finance projects in the Airport System. Under the Bond Ordinances, internally generated funds are deposited in the Capital Fund at the end of each year (after such funds have been used for all other purposes) and can be used for any lawful Airport System purpose.

The internally generated funds shown on **Table III-A** include (1) projected deposits to the Capital Fund from FY 2003 through FY 2025 and (2) funds reimbursed from PFC revenues to ABQ under the second PFC program from FY 2003 through FY 2007.

It was assumed that the projected ABQ internally generated funds and the reimbursements from the second PFC application would be available to fund a portion of the projects in the Capital Development Program, as shown on **Table III-A**.

AIRPORT REVENUE BONDS

ABQ has four series of outstanding Senior Parity Obligations (the 1995 Bonds, 1997 Refunding Bonds, 1998 Refunding Bonds, and 2001 Refunding Bonds) and four series of outstanding Subordinate Party Obligations (the 1995 Refunding Bonds, 1996A Bonds, 2000A Bonds, and 2000B Bonds).

As shown on **Table III-A**, ABQ may have to issue revenue bonds to finance the remaining costs (after applying the other funding sources discussed above) for the projects in the Capital Development Program within the three planning periods. Assumptions used to determine annual principal and interest payments on those future revenue bonds are described in the next section.

PROJECTED FINANCIAL RESULTS

DEBT SERVICE

Table III-B presents Debt Service Requirements, beginning in FY 1999, on Outstanding Bonds, including bonds that may be issued by ABQ in the future to fund certain Capital Development Program costs in the three planning periods (Future Bonds).

Estimated Debt Service Requirements on Future Bonds issued for the Capital Development Program were based on the following allowances and assumptions:

- 20-year maturities (which is consistent with past practices at ABQ).
- Allowances for increases in bond interest rates through the long term.
- Allowances for capitalized interest.
- Funding of the Debt Service Reserve Account.
- Allowances for costs of issuance.

As shown on **Table III-B** and consistent with ABQ's Bond Ordinances, the interest earnings on certain Debt Service Accounts and Debt Service Reserve Accounts are either (1) included as Gross Airport Revenues or (2) applied to reduce the Debt Service

The estimates presented in this table were prepared using information from the sources indicated and assumptions provided by, or reviewed with and agreed to by, Airport management, as described in the accompanying text. Inevitably, some of the assumptions used to develop the estimates will not be realized and unanticipated events and circumstances may occur. Therefore, there are likely to be differences between the estimated and actual results, and those differences may be material.

	Historical (a)			Estimated					
	1999	2000	2001	2002	2003	2004	2005	Intermediate term (b)	Long term (c)
DEBT SERVICE REQUIREMENTS									
1987 Tax Bonds (junior lien)	$ 1,045,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1989 Bonds	539,738	-	-	-	-	-	-	-	-
1995 Bonds (d)	5,139,322	5,049,924	5,029,000	3,561,000	3,184,000	3,842,000	4,479,000	4,994,000	-
1995 Refunding Bonds (subordinate)	6,146,069	6,149,252	6,343,000	6,382,000	6,407,000	6,418,000	6,516,000	6,787,000	-
1996A Bonds (subordinate)	1,058,308	1,162,287	883,000	1,044,000	-	-	-	-	-
1997 Refunding Bonds (1987B Bonds)	2,679,359	3,016,109	3,029,000	3,023,000	3,023,000	3,025,000	3,021,000	3,022,000	-
1998 Refunding Bonds (1989 Bonds)	1,600,794	1,980,364	2,905,000	2,920,000	3,547,000	3,547,000	3,552,000	3,568,000	-
2000A Bonds (subordinate)	-	51,984	484,000	508,000	600,000	586,000	573,000	593,000	-
2000B Bonds (subordinate)	-	186,278	1,195,000	2,639,000	2,639,000	2,639,000	3,041,000	4,508,000	-
Future Bonds for projects (e)	-	-	-	-	-	-	9,267,000	52,140,000	50,661,000
Total Debt Service Requirements	$ 18,208,857	$ 17,596,198	$ 19,868,000	$ 20,077,000	$ 19,400,000	$ 20,057,000	$ 30,449,000	$ 75,612,000	$ 50,661,000
NET DEBT SERVICE REQUIREMENTS									
1989 Bonds	$ 539,738	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
less: Interest on Debt Service Reserve Account (f)	(64,001)	-	-	-	-	-	-	-	-
	$ 475,737	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1987 Tax Bonds (junior lien)	1,045,267	-	-	-	-	-	-	-	-
1995 Bonds	$ 5,139,322	$ 5,049,924	$ 5,029,000	$ 3,561,000	$ 3,184,000	$ 3,842,000	$ 4,479,000	$ 4,994,000	$ -
less: Interest on Debt Service Reserve Account	(647,156)	(311,775)	(311,775)	(67,000)	(67,000)	(67,000)	(67,000)	(67,000)	-
	$ 4,492,166	$ 4,738,149	$ 4,717,225	$ 3,494,000	$ 3,117,000	$ 3,775,000	$ 4,412,000	$ 4,927,000	$ -
1995 Refunding Bonds (subordinate)	$ 6,146,069	$ 6,149,252	$ 6,343,000	$ 6,382,000	$ 6,407,000	$ 6,418,000	$ 6,516,000	$ 6,787,000	$ -
less: Interest on Debt Service Reserve Account	(695,365)	(335,000)	(335,000)	(335,000)	(335,000)	(335,000)	(335,000)	(335,000)	-
	$ 5,450,704	$ 5,814,252	$ 6,008,000	$ 6,047,000	$ 6,072,000	$ 6,083,000	$ 6,181,000	$ 6,452,000	$ -
1996A Bonds (subordinate)	$ 1,058,308	$ 1,162,287	$ 883,000	$ 1,044,000	$ -	$ -	$ -	$ -	$ -
less: Interest on Debt Service Reserve Account	(322,229)	(155,237)	(140,000)	(140,000)	-	-	-	-	-
	$ 736,079	$ 1,007,050	$ 743,000	$ 904,000	$ -	$ -	$ -	$ -	$ -
1997 Refunding Bonds (1987B Bonds)	2,679,359	3,016,109	3,029,000	3,023,000	3,023,000	3,025,000	3,020,000	3,022,000	-
1998 Refunding Bonds (1989 Bonds)	1,600,794	1,980,364	2,905,000	2,920,000	3,547,000	3,547,000	3,552,000	3,568,000	-

Table III-B-1
DEBT SERVICE REQUIREMENTS
FOR FISCAL YEARS ENDING JUNE 30

	Historical (a)			Estimated					
	1999	2000	2001	2002	2003	2004	2005	Intermediate term (b)	Long term (c)
NET DEBT SERVICE REQUIREMENTS (cont'd)									
2000A Bonds (subordinate)	-	51,984	484,000	508,000	600,000	586,000	573,000	593,000	-
2000B Bonds (subordinate)	-	186,278	1,195,000	2,639,000	2,639,000	2,639,000	3,041,000	4,508,000	-
Future Bonds for projects (e)	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,267,000	$ 52,140,000	$ 50,661,000
less: Interest on Debt Service Reserve Account	-	-	-	-	-	-	(463,000)	(2,607,000)	(2,533,000)
	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,804,000	$ 49,533,000	$ 48,128,000
Total Net Debt Service Requirements	$ 16,480,106	$ 16,794,186	$ 19,081,225	$ 19,535,000	$ 18,998,000	$ 19,655,000	$ 29,583,000	$ 72,603,000	$ 48,128,000
NET DEBT SERVICE FUNDING REQUIREMENTS									
120% of Annual Net Debt Service Requirements									
1989 Bonds	$ 570,884	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1995 Bonds (d)	5,390,599	5,685,779	5,661,000	4,193,000	3,740,000	4,530,000	5,294,000	5,912,000	-
1997 Refunding Bonds (1987Bs)	3,215,231	3,619,331	3,635,000	3,628,000	3,628,000	3,630,000	3,624,000	3,626,000	-
1998 Refunding Bonds (1989 Bonds)	1,920,953	2,376,437	3,486,000	3,504,000	4,256,000	4,256,000	4,262,000	4,282,000	-
Future Bonds for projects	-	-	-	-	-	-	10,565,000	59,440,000	57,754,000
	$ 11,097,667	$ 11,681,547	$ 12,782,000	$ 11,325,000	$ 11,624,000	$ 12,416,000	$ 23,745,000	$ 73,260,000	$ 57,754,000
100% of Annual Net Debt Service Requirements									
1987 Tax Bonds	$ 1,045,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1995 Refunding Bonds	5,450,704	5,814,252	6,008,000	6,047,000	6,072,000	6,083,000	6,181,000	6,452,000	-
1996A Bonds	736,079	1,007,050	743,000	904,000	-	-	-	-	-
2000A Bonds	-	51,984	484,000	508,000	600,000	586,000	573,000	593,000	-
2000B Bonds	-	186,278	1,195,000	2,639,000	2,639,000	2,639,000	3,041,000	4,508,000	-
	$ 7,232,050	$ 7,059,564	$ 8,430,000	$ 10,098,000	$ 9,311,000	$ 9,308,000	$ 9,795,000	$ 11,553,000	$ -
Total net debt service funding requirements	$ 18,329,717	$ 18,741,111	$ 21,212,000	$ 21,423,000	$ 20,935,000	$ 21,724,000	$ 33,540,000	$ 84,813,000	$ 57,754,000

(a) Source: Airport management records, except as noted. The amount of interest income shown by series of bonds has been allocated to each series based on Debt Service Reserve Account balances.
(b) Assumed to be FY 2010.
(c) Assumed to be FY 2025.
(d) Includes the 2001 Refunding Bonds beginning in FY 2001.
(e) Based on capital project costs assumed to be funded with Airport Revenue Bonds. See text for more detailed assumptions.
(f) The 1989 Bonds were refunded in FY 1999. As such, interest income in FY 1999 has been prorated to reflect the refunding.

Sources: Smith Barney Inc. and Dain Rauscher, except as noted.

Table III-B-1 (continued)
DEBT SERVICE REQUIREMENTS
FOR FISCAL YEARS ENDING JUNE 30

Requirements funded from Net Revenues. Debt service coverage equal to 120% of annual Debt Service Requirements is included in the calculation of annual airline rates and charges.

Debt Service Requirements on Outstanding and Future Bonds are allocated to Airport System cost centers on the basis of the project costs financed with such Bonds as shown on **Table III-B**.

OPERATION AND MAINTENANCE EXPENSES

Table III-C presents historical and projected Operation and Maintenance (O&M) Expenses by object type and cost center for FY 1999 through the long-term planning period. The projections of O&M Expenses include allowances for additional expenses associated with certain projects in the Capital Development Program, such as the terminal expansion, roadways, and public parking projects. O&M Expenses were assumed to increase with the assumed level of inflation of 3.0% and the forecast rate of increase in numbers of enplaned passengers.

O&M Expenses include direct and indirect expenses of the Airport System. Direct expenses are expenses directly charged to one of the Airport System cost centers – the Terminal Complex, Airfield, Terminal Apron, Reliever Airport, Landside Area, and Other Areas. Indirect expenses include expenses for roadways, general maintenance and administration, and security and are all allocated to Airport System cost centers according to procedures established byABQ, agreed to by the Signatory Airlines, and applied consistently each Fiscal Year.

GROSS AIRPORT REVENUES

Table III-D presents historical Gross Airport Revenues from FY 1999 through FY 2001 and projected Gross Airport Revenues for the three planning periods. Gross Airport Revenues include revenues from airline rates and charges, nonairline revenues from concessions and parking, nonairline space rentals, certain interest income, Reliever Airport revenues, rental car CFC revenues, and PFC revenues. The following is a brief discussion of the assumptions used to project passenger and cargo airline rates and charges and nonairline revenues. Only the projections through the intermediate term are discussed below.

Passenger and Cargo Airline Revenues

As stated earlier, the Airline Leases and Cargo Airline Leases provide the basis for the annual recalculation of passenger and cargo airline rates and charges, which are based on cost-recovery principles. Both Leases expire on June 30, 2006. For purposes of this analysis, it was assumed that similar methodologies for recalculating airline rates and charges would be used by ABQ following expiration of the Leases at the end of FY 2006.

In general, the projections of passenger and cargo airline revenues shown on

Table III-D were based on the following assumptions:

- The calculation of airline rates and charges in the future would include the additional Debt Service Requirements, O&M Expenses, and amortization of internally generated cash flow associated with projects in the Capital Development Program.

- Current amounts of airline rented space and gate use would form the basis for the use of existing facilities.

- Additional space leased by the passenger airlines would be based on assumptions regarding (1) existing gate use, (2) the ratio of space leased – on average – to the number of gates leased, and (3) the forecasts of aviation activity presented in Chapter Two.

- Additional cargo building and apron space leased by the cargo airlines at ABQ would increase over time based on projected cargo tonnage and aviation activity levels.

As shown on **Table III-D**, passenger and cargo airline rates and charges are projected to increase from $24,002,371 in FY 2001 (the latest historical year) to $66,516,000 in the intermediate-term planning period. **Table III-D** also shows the total of all passenger airline payments (terminal rentals, landing fees, and other charges) expressed on a per enplaned passenger basis for the same period. Projected financial results were discounted to FY 2001 dollars for purposes of comparison with recent historical results. Airline payments per enplaned passenger are projected to increase from $7.05 in FY 2001 to $13.21 in the intermediate-term planning period (from $7.05 to $10.12 in FY 2001 dollars.)

Nonairline Revenues

In FY 2001, the three largest sources of nonairline revenues at ABQ, constituting over 75% of total nonairline revenues (excluding PFC and CFC revenue), were (1) public parking fees, (2) rental car privilege fees, and (3) leased site rentals, which include rentals associated with the hotel at ABQ.

Nonairline revenues are projected to increase 5.9% per year through the intermediate-term planning period, reflecting an increase in the number of enplaned passengers and price increases. In general, it was assumed that ABQ would renegotiate leases that expire during the planning period with substantially similar terms and conditions and would implement changes in rate structures and business practices, as necessary, to maintain positive financial performance.

DEBT SERVICE COVERAGE

Table III-E presents debt service coverage from FY 1999 through the three planning periods. The calculations of the two tests that show debt service coverage compliance in accordance with ABQ's Bond Ordinances are shown in the table.

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The estimates presented in this table were prepared using information from the sources indicated and assumptions provided by, or reviewed with and agreed to by, Airport management, as described in the accompanying text. Inevitably, some of the assumptions used to develop the estimates will not be realized and unanticipated events and circumstances may occur. Therefore, there are likely to be differences between the estimated and actual results, and those differences may be material.

	Historical (a)			Estimated					
	1999	2000	2001	2002	2003	2004	2005	Intermediate term (b)	Long term (c)
TERMINAL COMPLEX									
Terminal building									
1987 Tax Bonds (junior lien)	$ 509,045	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1995 Refunding Bonds (subordinate)	3,789,542	4,042,000	4,177,000	4,204,000	4,221,000	4,229,000	4,297,000	4,486,000	-
1995 Bonds (d)	705,297	760,377	763,000	581,000	518,000	626,000	732,000	818,000	-
1997 Refunding Bonds	2,510,400	2,824,800	2,837,000	2,832,000	2,832,000	2,834,000	2,830,000	2,831,000	-
Future Bonds for projects	-	-	-	-	-	-	5,237,000	45,272,000	48,794,000
	$ 7,514,284	$ 7,627,177	$ 7,777,000	$ 7,617,000	$ 7,571,000	$ 7,689,000	$ 13,096,000	$ 53,407,000	$ 48,794,000
Loading bridges									
1997 Refunding Bonds	$ 427,200	$ 481,200	$ 482,000	$ 482,000	$ 482,000	$ 482,000	$ 481,000	$ 481,000	$ -
Future Bonds for projects	-	-	-	-	-	-	163,000	163,000	-
	$ 427,200	$ 481,200	$ 482,000	$ 482,000	$ 482,000	$ 482,000	$ 644,000	$ 644,000	$ -
Bag claim devices									
1997 Refunding Bonds	$ 93,600	$ 105,600	$ 107,000	$ 106,000	$ 106,000	$ 107,000	$ 106,000	$ 106,000	$ -
Future Bonds for projects	-	-	-	-	-	-	72,000	619,000	667,000
	$ 93,600	$ 105,600	$ 107,000	$ 106,000	$ 106,000	$ 107,000	$ 178,000	$ 725,000	$ 667,000
Subtotal Terminal Complex	$ 8,035,084	$ 8,213,977	$ 8,366,000	$ 8,205,000	$ 8,159,000	$ 8,278,000	$ 13,918,000	$ 54,776,000	$ 49,461,000
AIRFIELD									
1995 Bonds (d)	$ 4,685,302	$ 4,925,402	$ 4,899,000	$ 3,613,000	$ 3,224,000	$ 3,904,000	$ 4,563,000	$ 5,095,000	$ -
1996A Bonds (subordinate)	736,079	1,007,050	743,000	904,000	-	-	-	-	-
Future Bonds for projects	-	-	-	-	-	-	-	-	-
Subtotal Airfield	$ 5,421,381	$ 5,932,452	$ 5,642,000	$ 4,517,000	$ 3,224,000	$ 3,904,000	$ 4,563,000	$ 5,095,000	$ -
TERMINAL APRON									
1997 Refunding Bonds	$ 156,000	$ 175,200	$ 176,000	$ 175,000	$ 175,000	$ 176,000	$ 175,000	$ 175,000	$ -
1995 Refunding Bonds (subordinate)	732,869	782,000	808,000	815,000	818,000	819,000	831,000	867,000	-
1987 Tax Bonds (junior lien)	259,226	-	-	-	-	-	-	-	-
Future Bonds for projects	-	-	-	-	-	-	1,896,000	1,896,000	-
Subtotal Terminal Apron	$ 1,148,095	$ 957,200	$ 984,000	$ 990,000	$ 993,000	$ 995,000	$ 2,902,000	$ 2,938,000	$ -

Table III-B-2
COST CENTER ALLOCATION OF ESTIMATED
NET DEBT SERVICE FUNDING REQUIREMENTS
FOR FISCAL YEARS ENDING JUNE 30

		Historical (a)			Estimated					
		1999	2000	2001	2002	2003	2004	2005	Intermediate term (b)	Long term (c)
LANDSIDE AREA										
1987 Tax Bonds (junior lien)		$ 4,181	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1989 Bonds		375,687	-	-	-	-	-	-	-	-
1995 Refunding Bonds (subordinate)		118,265	126,000	130,000	131,000	132,000	132,000	134,000	140,000	-
1998 Refunding Bonds		1,263,372	1,563,885	2,294,000	2,306,000	2,801,000	2,801,000	2,805,000	2,818,000	-
Future Bonds for projects		-	-	-	-	-	-	-	-	-
Subtotal Parking Area		$ 1,761,505	$ 1,689,885	$ 2,424,000	$ 2,437,000	$ 2,933,000	$ 2,933,000	$ 2,939,000	$ 2,958,000	$ -
OTHER AREAS										
Cargo Building--Future Bonds		$ -	$ -	$ -	$ -	$ -	$ -	$ 1,305,000	$ 1,305,000	$ -
Cargo Apron--Future Bonds		-	-	-	-	-	-	152,000	152,000	-
Airline Fuel Farm--Future Bonds		-	-	-	-	-	-	1,739,000	1,739,000	-
Other										
1987 Tax Bonds (junior lien)		236,230	-	-	-	-	-	-	-	-
1995 Refunding Bonds (subordinate)		103,111	110,000	114,000	114,000	115,000	115,000	117,000	122,000	-
2000A Bonds (subordinate)		-	18,153	169,000	177,000	210,000	205,000	200,000	207,000	-
2000B Bonds (subordinate)		-	186,278	1,195,000	2,639,000	2,639,000	2,639,000	3,041,000	4,508,000	-
Future Bonds for projects		-	-	-	-	-	-	-	-	-
Subtotal Other Areas		$ 339,341	$ 314,431	$ 1,478,000	$ 2,930,000	$ 2,964,000	$ 2,959,000	$ 6,554,000	$ 8,033,000	$ -
ROADWAYS (INDIRECT COST CENTER)										
1987 Tax Bonds (junior lien)		$ 36,584	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1989 Bonds		195,197	-	-	-	-	-	-	-	-
1997 Refunding Bonds		28,800	32,400	32,000	32,000	32,000	32,000	32,000	32,000	-
1998 Refunding Bonds		656,812	812,551	1,192,000	1,198,000	1,455,000	1,455,000	1,457,000	1,464,000	-
1995 Refunding Bonds (subordinate)		706,918	754,000	779,000	784,000	787,000	789,000	802,000	837,000	-
2000A Bonds (subordinate)		-	33,831	315,000	331,000	390,000	381,000	373,000	386,000	-
Future Bonds for projects		-	-	-	-	-	-	-	8,293,000	8,293,000
Subtotal roadways indirect cost center		$ 1,624,311	$ 1,632,782	$ 2,318,000	$ 2,345,000	$ 2,664,000	$ 2,657,000	$ 2,664,000	$ 11,012,000	$ 8,293,000
Total net debt service funding requirements		$ 18,329,717	$ 18,740,728	$ 21,212,000	$ 21,424,000	$ 20,937,000	$ 21,726,000	$ 33,540,000	$ 84,812,000	$ 57,754,000
Allocation of roadway costs to cost centers	**Percent**									
Terminal Complex	45.0%	$ 730,940	$ 734,752	$ 1,043,000	$ 1,055,000	$ 1,199,000	$ 1,196,000	$ 1,199,000	$ 4,955,000	$ 3,732,000
Airfield	--	-	-	-	-	-	-	-	-	-
Landside Area	45.0%	730,940	734,752	1,043,000	1,055,000	1,199,000	1,196,000	1,199,000	4,955,000	3,732,000
Other Areas	10.0%	162,431	163,278	232,000	235,000	266,000	265,000	266,000	1,102,000	829,000
	100.0%	$ 1,624,311	$ 1,632,782	$ 2,318,000	$ 2,345,000	$ 2,664,000	$ 2,657,000	$ 2,664,000	$ 11,012,000	$ 8,293,000

Note: Allocated on the basis of an analysis of project cost expenditures by bond issue by Airport cost center.

(a) Source: Airport management records, unless otherwise noted.
(b) Assumed to be FY 2010.
(c) Assumed to be FY 2025.
(d) Includes the 2001 Refunding Bonds beginning in FY 2001.

Table III-B-2 (continued)
COST CENTER ALLOCATION OF ESTIMATED
NET DEBT SERVICE FUNDING REQUIREMENTS
FOR FISCAL YEARS ENDING JUNE 30

The projections presented in this table were prepared using information from the sources indicated and assumptions provided by, or reviewed with and agreed to by, Airport management, as described in the accompanying text. Inevitably, some of the assumptions used to develop the projections will not be realized and unanticipated events and circumstances may occur. Therefore, there are likely to be differences between the projected and actual results, and those differences may be material.

	Historical (a)			Budget (b)	Projected				
	1999	2000	2001	2002	2003	2004	2005	Intermediate term (c)	Long term (d)
BY OBJECT TYPE									
Salaries and benefits	$ 8,632,511	$ 9,610,099	$ 10,763,281	$ 11,507,000	$ 12,505,000	$ 13,589,000	$ 14,785,000	$ 22,940,000	$ 56,006,000
Professional services	320,264	142,423	171,105	250,000	272,000	296,000	322,000	452,000	1,069,000
Utilities	1,886,693	1,970,844	2,242,553	2,203,000	2,394,000	2,602,000	2,844,000	5,632,000	14,546,000
Supplies	511,603	590,122	567,481	520,000	565,000	614,000	669,000	1,211,000	3,094,000
Travel	37,823	32,119	44,646	74,000	80,000	87,000	95,000	134,000	316,000
Repairs and maintenance	2,027,278	2,152,239	2,149,524	2,298,000	2,497,000	2,713,000	2,953,000	4,421,000	10,636,000
Contractual services	967,122	1,028,319	1,902,302	3,660,000	3,977,000	4,322,000	4,699,000	6,860,000	16,427,000
Other operating expenses	1,691,724	1,509,716	1,701,879	2,073,000	2,253,000	2,448,000	2,661,000	3,892,000	9,304,000
	$ 16,075,018	$ 17,035,881	$ 19,542,772	$ 22,585,000	$ 24,543,000	$ 26,671,000	$ 29,028,000	$ 45,542,000	$ 111,398,000
BY COST CENTER									
Terminal Complex	$ 8,899,563	$ 9,837,782	$ 10,578,783	$ 10,969,000	$ 11,920,000	$ 12,953,000	$ 14,116,000	$ 23,824,000	$ 58,465,000
Airfield	2,769,443	2,816,832	3,195,490	3,495,000	3,798,000	4,127,000	4,486,000	6,295,000	14,823,000
Terminal Apron	419,933	439,354	487,485	531,000	577,000	627,000	682,000	956,000	2,252,000
Reliever Airport	578,397	425,384	335,290	490,000	532,000	579,000	629,000	883,000	2,078,000
Landside Area	2,929,850	3,013,915	3,008,326	3,279,000	3,563,000	3,872,000	4,210,000	6,696,000	17,552,000
Other Areas									
Cargo Apron	92,472	93,929	106,823	117,000	127,000	138,000	150,000	211,000	496,000
Cargo Building	59,892	63,305	67,466	71,000	77,000	84,000	91,000	128,000	303,000
Consolidated Rental Car Facility	-	-	147,000	93,000	101,000	109,000	118,000	163,000	374,000
Common rental car shuttle bus	-	-	1,014,000	2,546,000	2,767,000	3,007,000	3,268,000	4,587,000	10,803,000
All other areas	325,466	345,380	602,110	994,000	1,081,000	1,175,000	1,278,000	1,799,000	4,252,000
	$ 16,075,018	$ 17,035,881	$ 19,542,772	$ 22,585,000	$ 24,543,000	$ 26,671,000	$ 29,028,000	$ 45,542,000	$ 111,398,000
Average annual percent increase	8.6%	6.0%	14.7%	15.6%	8.7%	8.7%	8.8%	9.4%	6.1%

(a) Source: Aviation Department audited financial statements.
(b) Source: Aviation Department FY 2002 Budget.
(c) Assumed to be FY 2010.
(d) Assumed to be FY 2025.

Table III-C
OPERATION AND MAINTENANCE EXPENSES
FOR FISCAL YEARS ENDING JUNE 30

The projections presented in this table were prepared using information from the sources indicated and assumptions provided by, or reviewed with and agreed to by, Airport management, as described in the accompanying text. Inevitably, some of the assumptions used to develop the projections will not be realized and unanticipated events and circumstances may occur. Therefore, there are likely to be differences between the projected and actual results, and those differences may be material.

		Historical (a)			Projected					
		1999	2000	2001	2002	2003	2004	2005	Intermediate term (b)	Long term (c)
AIRLINE REVENUES										
Signatory Passenger Airlines										
Terminal Complex										
Rentals		$ 8,762,708	$ 10,142,293	$ 9,452,427	$ 9,279,000	$ 10,466,000	$ 11,353,000	$ 17,977,000	$ 43,490,000	$ 63,437,000
Loading bridge fees (d)		878,696	962,377	952,061	1,013,000	1,052,000	1,093,000	1,302,000	1,693,000	2,353,000
Baggage claim device charges (e)		-	206,405	207,000	318,000	325,000	334,000	484,000	1,621,000	1,754,000
Terminal Apron fees		1,268,486	964,098	1,250,615	1,190,000	1,368,000	1,480,000	3,339,000	2,425,000	1,710,000
Landing fees		8,289,726	7,880,194	8,596,691	10,344,000	9,228,000	9,611,000	10,157,000	12,124,000	15,124,000
Commuter ramp fees		-	34,647	43,486	42,000	38,000	39,000	40,000	48,000	73,000
	[A]	$ 19,199,616	$ 20,190,014	$ 20,502,280	$ 22,186,000	$ 22,477,000	$ 23,910,000	$ 33,299,000	$ 61,401,000	$ 84,451,000
Nonsignatory Passenger Airlines										
Terminal Complex rentals		$ 61,176	$ 92,179	$ 110,440	$ 88,000	$ 89,000	$ 90,000	$ 90,000	$ 95,000	$ 112,000
Nonpreferential gate use fees		588,998	664,156	750,320	369,000	390,000	412,000	435,000	526,000	795,000
Landing fees		708,171	741,257	737,661	344,000	292,000	288,000	289,000	285,000	235,000
Overnight aircraft parking fees		99,550	100,688	92,886	100,000	100,000	100,000	100,000	100,000	100,000
	[B]	$ 1,457,895	$ 1,598,280	$ 1,691,307	$ 901,000	$ 871,000	$ 890,000	$ 914,000	$ 1,006,000	$ 1,242,000
Cargo Airlines										
Landing fees		$ 1,309,431	$ 1,342,045	$ 1,288,255	$ 1,209,000	$ 1,077,000	$ 1,119,000	$ 1,175,000	$ 1,496,000	$ 2,764,000
Cargo Apron fees		254,737	167,328	254,605	219,000	229,000	251,000	311,000	329,000	539,000
Cargo Building rentals		265,532	238,984	265,924	277,000	282,000	296,000	536,000	545,000	927,000
		$ 1,829,700	$ 1,748,357	$ 1,808,784	$ 1,705,000	$ 1,588,000	$ 1,666,000	$ 2,022,000	$ 2,370,000	$ 4,230,000
Total airline revenues		$ 22,487,211	$ 23,536,651	$ 24,002,371	$ 24,792,000	$ 24,936,000	$ 26,466,000	$ 37,974,000	$ 66,516,000	$ 89,923,000
Enplaned passengers	[C]	3,092,096	3,160,245	3,149,964	3,323,000	3,506,000	3,699,000	3,903,000	4,725,000	7,141,000
Airline payments										
per enplaned passenger	[(A+B)/C]	$6.68	$6.89	$7.05	$6.95	$6.66	$6.70	$8.77	$13.21	$12.00
Discounted to FY 2001 dollars (f)				$7.05	$6.75	$6.28	$6.14	$7.79	$10.12	$5.90

Table III-D
AIRPORT REVENUES FOR
FISCAL YEARS ENDING JUNE 30

	Historical (a)			Projected					
	1999	2000	2001	2002	2003	2004	2005	Intermediate term (b)	Long term (c)
NONAIRLINE REVENUES									
Concessions									
Rental cars (g)	$ 5,784,986	$ 6,532,045	$ 6,678,018	$ 7,614,000	$ 8,152,000	$ 8,731,000	$ 9,352,000	$ 12,196,000	$ 23,042,000
News/gifts	1,287,702	1,355,337	1,337,969	1,454,000	1,580,000	1,717,000	1,866,000	2,619,000	6,166,000
Food/beverage	1,188,019	1,280,108	1,390,295	1,511,000	1,642,000	1,784,000	1,939,000	2,721,000	6,407,000
Advertising	316,248	321,621	280,169	304,000	331,000	360,000	391,000	548,000	1,291,000
Pay telephone	199,223	201,606	205,605	224,000	243,000	264,000	287,000	402,000	947,000
Baggage lockers	2,832	2,916	2,284	3,000	3,000	3,000	3,000	3,000	3,000
Space rentals	363,104	398,000	350,544	351,000	351,000	351,000	351,000	351,000	351,000
	$ 9,142,114	$ 10,091,633	$ 10,244,884	$ 11,461,000	$ 12,302,000	$ 13,210,000	$ 14,189,000	$ 18,840,000	$ 38,207,000
Landside Area									
Public parking	$ 7,459,222	$ 7,548,681	$ 7,418,152	$ 7,504,000	$ 7,996,000	$ 8,521,000	$ 9,082,000	$ 15,022,000	$ 34,260,000
Employee parking	57,036	56,205	54,895	57,000	58,000	60,000	62,000	72,000	112,000
Commercial vehicle lane	441,082	532,087	393,023	380,000	392,000	403,000	415,000	482,000	750,000
	$ 7,957,340	$ 8,136,973	$ 7,866,070	$ 7,941,000	$ 8,446,000	$ 8,984,000	$ 9,559,000	$ 15,576,000	$ 35,122,000
Airfield	328,830	361,389	376,917	386,000	396,000	406,000	416,000	471,000	696,000
Reliever Airport	39,612	57,937	47,669	49,000	51,000	52,000	54,000	62,000	97,000
Other Areas									
Building and ground rentals	$ 1,211,606	$ 1,436,689	$ 1,351,416	$ 1,372,000	$ 1,392,000	$ 1,413,000	$ 1,434,000	$ 1,545,000	$ 1,932,000
Rental car facility rentals (h)	237,774	318,981	563,983	1,445,000	1,461,000	1,467,000	1,652,000	2,344,000	527,000
Other leased sites	332,034	284,135	272,780	271,000	271,000	271,000	271,000	271,000	271,000
General aviation	166,730	168,129	162,457	165,000	165,000	165,000	165,000	165,000	165,000
Repayment of fuel farm debt service	-	-	-	-	-	-	1,739,000	1,739,000	-
	$ 1,948,144	$ 2,207,934	$ 2,350,636	$ 3,253,000	$ 3,289,000	$ 3,316,000	$ 5,261,000	$ 6,064,000	$ 2,895,000
Miscellaneous revenues	1,355,175	1,309,447	850,799	1,299,000	1,321,000	1,344,000	1,389,000	2,114,000	3,737,000
	$ 20,771,215	$ 22,165,313	$ 21,736,975	$ 24,389,000	$ 25,805,000	$ 27,312,000	$ 30,868,000	$ 43,127,000	$ 80,754,000
CFC revenues	-	-	1,840,909	3,861,000	4,086,000	4,325,000	4,807,000	6,932,000	10,803,000
PFC revenues	8,258,458	8,289,634	8,544,558	9,014,000	9,510,000	10,034,000	10,587,000	19,401,000	29,321,000
Total nonairline revenues	$ 29,029,673	$ 30,454,947	$ 32,122,442	$ 37,264,000	$ 39,401,000	$ 41,671,000	$ 46,262,000	$ 69,460,000	$ 120,878,000
Total revenues	$ 51,516,884	$ 53,991,598	$ 56,124,813	$ 62,056,000	$ 64,337,000	$ 68,137,000	$ 84,236,000	$ 135,976,000	$ 210,801,000

(a) Source: Aviation Department records, except as noted.
(b) Assumed to be FY 2010.
(c) Assumed to be FY 2025.
(d) Includes fixed and operating loading bridge fees.
(e) For FY 1999, baggage claim revenues are included in Terminal Complex rentals.
(f) Assuming annual inflation of 3.0%.
(g) Reflects the privilege fee of 9% of rental car gross revenues.
(h) Includes ready/return space rentals in the public parking structure and surface lot, and ground rentals for service facilities.

Table III-D (continued)
AIRPORT REVENUES FOR
FISCAL YEARS ENDING JUNE 30

The projections presented in this table were prepared using information from the sources indicated and assumptions provided by, or reviewed with and agreed to by, Airport management, as described in the accompanying text. Inevitably, some of the assumptions used to develop the projections will not be realized and unanticipated events and circumstances may occur. Therefore, there are likely to be differences between the projected and actual results, and those differences may be material.

		Table reference	Historical (a) 1999	2000	2001	Projected 2002	2003	2004	2005	Intermediate term (b)	Long term (c)
GROSS AIRPORT REVENUES											
Airline and nonairline revenues		D	$ 43,258,426	$ 45,701,964	$ 45,739,346	$ 49,181,000	$ 50,741,000	$ 53,778,000	$ 68,842,000	$ 109,643,000	$ 170,677,000
CFC revenues			-	-	1,840,909	3,861,000	4,086,000	4,325,000	4,807,000	6,932,000	10,803,000
PFC revenues			8,258,458	8,289,634	8,544,558	9,014,000	9,510,000	10,034,000	10,587,000	19,401,000	29,321,000
			$ 51,516,884	$ 53,991,598	$ 56,124,813	$ 62,056,000	$ 64,337,000	$ 68,137,000	$ 84,236,000	$ 135,976,000	$ 210,801,000
Less: Operation and Maintenance Expenses		C	16,075,018	17,035,881	19,542,772	22,585,000	24,543,000	26,671,000	29,028,000	45,542,000	111,398,000
Net Revenues			$ 35,441,866	$ 36,955,717	$ 36,582,041	$ 39,471,000	$ 39,794,000	$ 41,466,000	$ 55,208,000	$ 90,434,000	$ 99,403,000
RATE COVENANT TEST 1											
Net Revenues	[A]		$ 35,441,866	$ 36,955,717	$ 36,582,041	$ 39,471,000	$ 39,794,000	$ 41,466,000	$ 55,208,000	$ 90,434,000	$ 99,403,000
Senior Parity Debt Service Requirements	[B]	B-1	9,248,056	9,734,622	10,651,225	9,437,000	9,687,000	10,347,000	19,788,000	61,050,000	48,128,000
Demonstrated coverage	[A/B]		3.83	3.80	3.43	4.18	4.11	4.01	2.79	1.48	2.07
Required coverage			1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
RATE COVENANT TEST 2											
Net Revenues			$ 35,441,866	$ 36,955,717	$ 36,582,041	$ 39,471,000	$ 39,794,000	$ 41,466,000	$ 55,208,000	$ 90,434,000	$ 99,403,000
Plus: Debt Service Reserve Account interest earnings		B-1	1,728,751	802,012	802,012	557,009	401,771	401,771	865,129	3,008,787	2,533,056
	[C]		$ 37,170,617	$ 37,757,729	$ 37,384,053	$ 40,028,009	$ 40,195,771	$ 41,867,771	$ 56,073,129	$ 93,442,787	$ 101,936,056
Debt Service Requirements	[D]	B-1	$ 18,208,857	$ 17,596,198	$ 19,868,000	$ 20,077,000	$ 19,400,000	$ 20,057,000	$ 30,449,000	$ 75,612,000	$ 50,661,000
Demonstrated coverage	[C/D]		2.04	2.15	1.88	1.99	2.07	2.09	1.84	1.24	2.01
Required coverage			1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10

(a) Source: Aviation Department records.
(b) Assumed to be FY 2010.
(c) Assumed to be FY 2025.

Table III-E
DEBT SERVICE COVERAGE
FOR FISCAL YEARS ENDING JUNE 30

As shown on **Table III-E**, Net Revenues (Gross Revenues less Operation and Maintenance Expenses) are projected to increase from $36,582,041 in FY 2001 to $90,434,000 in the intermediate-term planning period, resulting in debt service coverage ratios that exceed the requirements of both tests in the Bond Ordinances.

SUMMARY

Table III-A presents the Capital Development Program and funding sources. As previously indicated, it was assumed that project costs would be funded with a combination of federal grants-in-aid, PFC revenues, internally generated cash flow, and future revenue bonds. Beyond the short-term planning period, the Airport System will continue to be developed as required to meet the needs of increasing passenger demand, consistent with future funding sources available to ABQ at the time of project implementation. The financial feasibility of future projects will be determined by the provisions of existing or future leases, funding levels and participation rates of federal grant-in-aid programs, the availability of PFC revenues (pay-as-you-go and leveraged), bonding capacity, and the ability to generate internal cash flow from Airport System operations.

The financial projections were prepared on the basis of available information and assumptions as set forth in this chapter. It is believed that such information and assumptions provide a reasonable basis for the projections to the level of detail appropriate for an airport master plan. Based on these assumptions, the Capital Development Program could be financed in the future by ABQ and result in key financial indicators that are consistent with the historical results of the Airport System and industry comparables. However, some of the assumptions used to develop the projections will not be realized, and unanticipated events and circumstances may occur. Therefore, the actual results will vary from those projected, and such variations could be material.

Chapter Four
Airport Plans

Chapter Four
Airport Plans

Per Federal Aviation Administration (FAA) requirements, a set of plans, referred to as Airport Layout Plans, have been prepared to graphically depict the ultimate airfield layout, facility development, and airspace. The airport layout plan set was actually an update to the previous airport layout plan that was prepared on a computer-aided drafting (CAD) system. The computerized plan set provides detailed information of existing and future facility layouts on multiple layers that permits the user to focus in on any section of the airport at a desirable scale. The plan can be used as base information for design, and can continue to be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys. The airport layout plan set includes a number of technical drawings. The following discussion describes each drawing:

Airport Layout Drawing (Sheet 2): The Airport Layout Drawing (ALD) graphically presents the existing and ultimate airport layout. For this

drawing, all development within the airport boundaries is depicted. The ALD is used, in part, by the FAA to determine funding eligibility for future development projects. This is one of the primary reference documents for the FAA and airport.

Airport Data Sheet (Sheet 1): Provides supporting detail for the ALD. This includes airport and runway details, as well as the wind rose.

Airport Airspace Drawing (Sheet 3): This drawing depicts the Federal Aviation Regulation (F.A.R.) Part 77, *Objects Affecting Navigable Airspace*, plan for the airport. The Airport Airspace Drawing is intended to aid local authorities in determining if proposed development could present a hazard to the airport and obstruct the approach path to a runway end. This plan should be coordinated with local land use planners.

The Airport Airspace Drawing assigns three-dimensional imaginary areas to each runway. These imaginary surfaces emanate from the runway centerline and are dimensioned to protect approaching and departing aircraft from the hazard of obstructions. The Part 77 imaginary surfaces include the primary surface, approach surface, transitional surface, horizontal surface, and conical surface. Part 77 imaginary surfaces are described in the following paragraphs.

- **Primary Surface:** The primary surface is an imaginary surface longitudinally centered on the runway. The primary surface extends 200 feet beyond each runway end and its width is determined by the type of approach established for that runway end (i.e., visual, non-precision, precision). The elevation of any point on the primary surface is the same as the elevation along the nearest associated point on the runway centerline.

  The primary surface for Runway 8-26 and Runway 3-21 is 1,000 feet wide. The primary surface for Runways 12-30 and 17-35 is 500 feet wide.

  Situated adjacent to the runway and taxiway system, the primary surface must remain clear of unnecessary objects to allow unobstructed passage of aircraft. Within the primary surface, objects are only permitted if they are no taller than two feet above the ground and if they are constructed on frangible (breakaway) fixtures. The only exception to the two-foot height requirement is for objects whose location is fixed by function. A visual glideslope indicator system is an example of an object which falls within the category of "fixed by function."

- **Approach Surface:** An approach surface is also established for each runway. The approach surface begins at the same width as the primary surface and extends upward and outward from the primary surface end centered along an extended runway centerline. The upward slope and length of the approach surface are again determined by the type of approach (existing and/or planned) to the runway end.

  Due to the existing instrument landing systems (ILS) installed at the Runway 8 and Runway 3 ends, precision approach surfaces have been established for these runway ends. Precision approach surfaces extend for a horizontal distance of 10,000 feet from the end of the primary surface at an upward slope of 50 to 1, then extend an additional 40,000 feet at a slope of 40 to 1 to a width of 16,000 feet. The approach surface for Runways 17, 35, and 30 extends for a horizontal distance of 10,000 feet from the end of the primary surface at an upward slope of 34 to 1 to a width of 3,500 feet. The approach surface for Runways

12 and 26 extend 5,000 feet from the primary surface end at an upward slope of 20 to 1 to a width of 1,500 feet.

- **Transitional Surface:** Each runway has a transitional surface that begins at the outside edge of the primary surface at the same elevation as the runway. The transitional surface also connects with the approach surfaces of each runway. The surface rises at a slope 7 to 1 up to a height which is 150 feet above the highest runway elevation. At that point, the transitional surface is replaced by the horizontal surface. The transitional surface defines the location of the building restriction line.

- **Horizontal Surface**: The horizontal surface is established at 150 feet above the highest elevation of the runway surface (5,504.9 feet mean seal level [MSL]). Having no slope, the horizontal surface connects the transitional and approach surfaces to the conical surface at a distance of 10,000 feet from the primary surfaces of each runway.

- **Conical Surface:** The conical surface begins at the outer edge of the horizontal surface. The conical surface then continues for an additional 4,000 feet horizontally at a slope of 20 to 1. Therefore, at 4,000 feet from the horizontal surface, the elevation of the conical surface is 350 feet above the highest airport elevation.

Airport Inner Surfaces Drawing (Sheet 4): The inner surfaces drawing provides a larger scale depiction of the F.A.R. Part 77 surfaces centered on the airport. This provides more clarity and detail for the identification of these surfaces on the airport.

These are supported by drawings of the extended approach surfaces and profiles for each runway end. The Runway 8-26 approach profiles are shown on Sheet 6. The extended approach profile for Runway 8 is shown on Sheet 7. The Runway 3-21 approach profiles are shown on Sheet 8. The extended approach profile for Runway 3 is shown on Sheet 9. Sheet 10 depicts the Runway 17-35 and Runway 12-30 approach profiles.

Inner Portion of the Approach Surface Drawings (Sheets 11, 12, 13, 14, 15, 16, and 17): The inner portion of the approach surface drawings are scaled depictions of the runway protection zone (RPZ), runway safety area (RSA), obstacle free zone (OFZ), and object free area (OFA) for each runway end. A plan and profile view of each runway end is provided to facilitate identification of obstructions that lie within these safety areas. Detailed obstruction and facility data is provided to identify planned improvements and the disposition of obstructions (as appropriate).

Airline Terminal Area Drawing (Sheet 18): The Airline Terminal Area Drawing provides greater detail concerning landside improvements within the existing commercial passenger terminal area.

General Aviation Drawing (Sheet 19): This drawing provides greater detail concerning the recommended improvements within the existing general aviation area.

Air Cargo Drawing (Sheet 20): This drawing provides greater detail concerning the recommended improvement within the existing air cargo area.

On-Airport Land Use Drawing (Sheet 21): The On-Airport Land Use Drawing is a graphic depiction of the land use recommendations. When development is proposed, it should be directed to the appropriate land use area depicted on this plan.

Several land use categories have been identified. These categories include airfield operations area, passenger terminal area, air cargo operations area, general aviation area, airfield support, airport commercial support, and open space. These categories are discussed in the following subsections:

- **Airfield Operations Area** - The airfield operations area is the most critical category of land use since it includes all areas necessary for the safe operation on the airside of the airport. The included items are runway and taxiway safety areas, runway approach surfaces, and navaid critical areas. At the airport, this includes the existing runways, taxiways, and areas within the building restriction lines and runway protections zones.

- **Passenger Terminal Area -** The passenger terminal area land use category includes all facilities associated with commercial airline activity. This includes the passenger terminal building, aircraft apron, auto parking, and support facilities, such as the air freight building, air mail facility, and catering and provisioning. The passenger terminal area is planned to remain and ultimately be expanded as demand dictates in its present location.

- **Air Cargo Area** - This land use category consists of the area designated for the development of building, apron, auto parking, and truck courts to serve the dedicated all cargo airlines. Air cargo activity is planned to remain and be expanded in its existing location west of Runway 3-21.

- **General Aviation Area** - The general aviation land use category consists of the existing area dedicated for the operation and development of fixed base operator facilities, aircraft storage hangars, aircraft tie-downs, lease parcels, and auto parking and access. General aviation activity and development is planned to remain in its present location.

- **Airport Commercial Support** - This land use category consists of industrial or commercial activities that require, or are attracted to, an airport location. These uses not only provide additional employment opportunities at the airport, but also can maximize the land for revenue generation to support the operation of the airport.

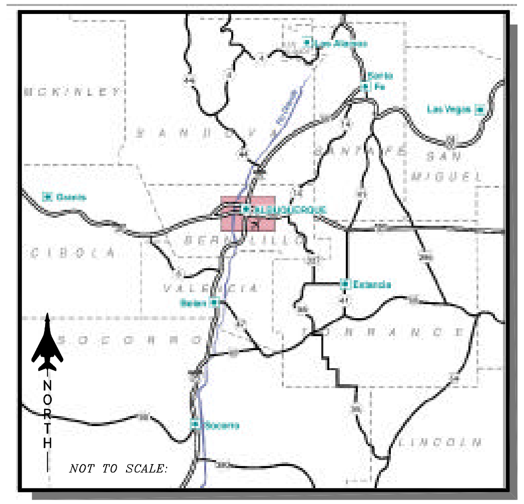
- **Airfield Support** - This land use category includes several land uses that provide support facilities to airfield operations. Support facilities primarily include airport maintenance and aircraft fueling facilities.

- **Open Space** - This land use is provided to eliminate construction or development in the approach areas to runways and other contiguous areas near air operations. It is also provided to discourage development adjacent to waterways, and irregular or uneven terrain. Open space uses should avoid buildings or congregations of people. Uses such as golf courses, roadways, and drainage facilities are permissible in open space designations.

Airport Utilities Plan (**Sheet 22**): This drawing depicts the location of the primary utility services at the airport. Natural gas, communication, aviation fuel, water, electrical, sanitary sewer, and stormwater and natural drainage patterns are depicted on this drawing.

AIRPORT LAYOUT PLANS
FOR
ALBUQUERQUE INTERNATIONAL SUNPORT
ALBUQUERQUE, NEW MEXICO

VICINITY MAP

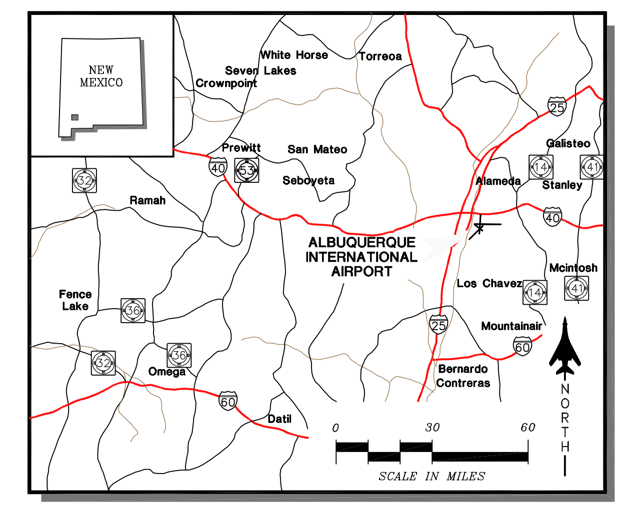


Prepared for the

CITY OF ALBUQUERQUE

INDEX OF DRAWINGS

LOCATION MAP



August 9, 2002

Coffman Associates
Airport Consultants

AIRPORT DATA

ALBUQUERQUE INTERNATIONAL SUNPORT (ABQ)			
CITY: Albuquerque, New Mexico	COUNTY: Bernalillo, New Mexico		
RANGE: 3-4 East TOWNSHIP: 9-10 North	CIVIL TOWNSHIP: Albuquerque		

		EXISTING	ULTIMATE
AIRPORT SERVICE LEVEL		Commercial Service	Commercial Service
AIRPORT REFERENCE CODE		D-V	D-V
AIRPORT ELEVATION		5354.9' MSL	Same
TAXIWAY LIGHTING AND MARKING (See Runway Data)		MITL	MITL
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		92 ° F	92 ° F
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 1983)	Latitude	35° 02' 24.800" N	35° 02' 24.99" N
	Longitude	106° 36' 33.100" W	106° 36' 33.14" W
AIRPORT and TERMINAL NAVIGATIONAL AIDS		ILS (3) ILS (8) VOR or TACAN or GPS (8) NDB os GPS (35) ASR-9 (3, 8, 17, 35) ATCT ROTATING BEACON	ILS (3) ILS (8) VOR or TACAN or GPS (8) CAT I GPS (3) CAT I GPS (8) APV (30) ASR-9 (3, 8) ATCT ROTATING BEACON

RUNWAY END COORDINATES (NAD 1983)

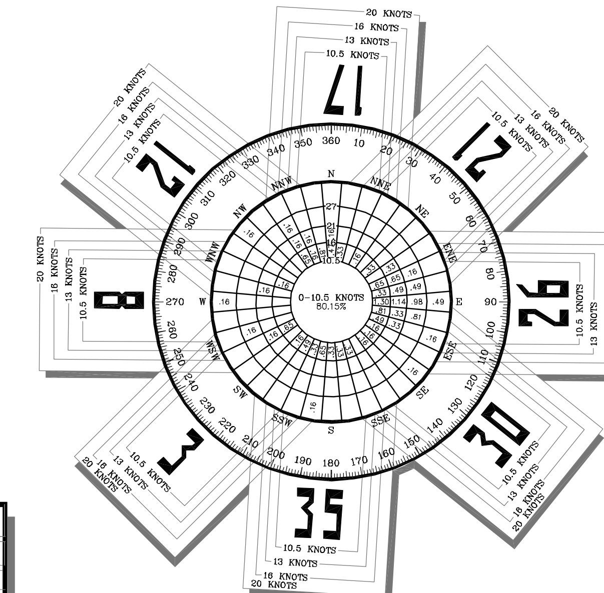
RUNWAY		EXISTING	ULTIMATE
Runway 8 (EL. 5311.8)	Latitude	35° 02' 39.665" N	SAME
	Longitude	106° 37' 17.717" W	
Runway 8 (EL. 5314.7) Displaced Threshold	Latitude	35° 02' 39.592" N	SAME
	Longitude	106° 37' 05.691" W	
Runway 26 (EL. 5354.9)	Latitude	35° 02' 38.627" N	SAME
	Longitude	106° 34' 31.888" W	
Runway 17 (EL. 5319.2)	Latitude	35° 03' 27.830" N	To Be Closed
	Longitude	106° 36' 39.602" W	
Runway 17 (EL. 5320.7) Displaced Threshold	Latitude	35° 03' 19.047" N	To Be Closed
	Longitude	106° 36' 40.232" W	
Runway 35 (EL. 5314.3)	Latitude	35° 01' 49.124" N	To Be Closed
	Longitude	106° 36' 46.682" W	
Runway 3 (EL. 5305.0) ULTIMATE (EL. 5305.0)	Latitude	35° 01' 20.094" N	35° 01' 13.059" N
	Longitude	106° 37' 50.167" W	106° 37' 58.655" W
Runway 21 (EL. 5316.2)	Latitude	35° 02' 30.268" N	SAME
	Longitude	106° 36' 25.464" W	
Runway 12 (EL. 5312.4)	Latitude	35° 02' 36.720" N	SAME
	Longitude	106° 37' 14.706" W	
Runway 30 (EL. 5313.6)	Latitude	35° 01' 59.501" N	SAME
	Longitude	106° 36' 18.531" W	

NORTH

Magnetic Declination
10° 22' 37.92" East
Annual Rate of Change
4.582' West (September 2001)

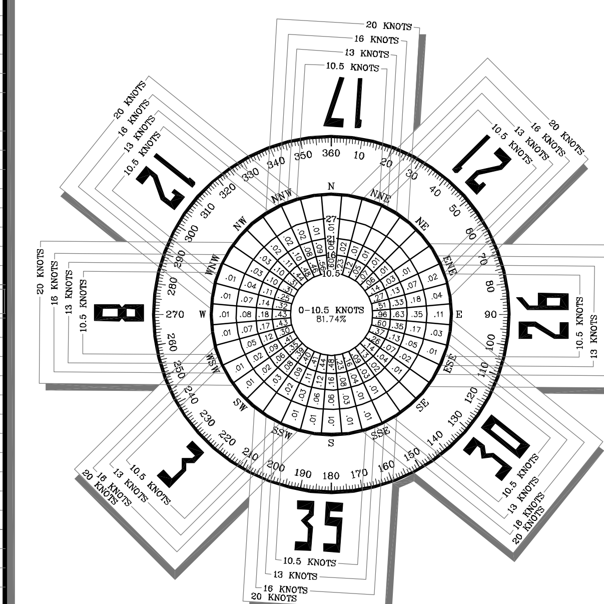
SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Albuquerque International Sunport
Albuquerque, New Mexico

OBSERVATIONS:
87,573 All Weather Observations
614 IFR Observations
1989 – 1998



IFR WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 3-21	88.71%	92.66%	95.77%	97.95%
Runway 8-26	92.83%	95.67%	98.67%	99.54%
Runway 12-30	88.77%	93.28%	96.78%	98.98%
Runway 17-35	87.66%	89.90%	92.53%	95.29%
Runways Combined	99.97%	100.00%	100.00%	100.00%



ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 3-21	90.12%	94.07%	97.43%	99.17%
Runway 8-26	92.98%	95.78%	98.44%	99.46%
Runway 12-30	91.20%	94.97%	97.95%	99.34%
Runway 17-35	89.47%	92.51%	95.67%	97.92%
Runways Combined	99.96%	99.99%	100.00%	100.00%

RUNWAY DATA

RUNWAY DATA	RUNWAY 8-26		RUNWAY 3-21		RUNWAY 12-30		RUNWAY 17-35	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE
AIRCRAFT APPROACH CATEGORY-DESIGN GROUP	D-V	Same	D-IV	Same	B-III	Same	D-IV	To Be Closed
FAR PART-77 APPROACH SURFACES	1,000' x 50,000' x 16,000' (8) 1,000' x 5,000' x 1,500' (26)	Same Same	1,000' x 50,000' x 16,000' (3) 1,000' x 5,000' x 1,500' (21)	Same Same	500' x 5,000' x 1,500' (12) 500' x 5,000' x 1,500' (30)	500' x 5,000' x 1,500' (12) 500' x 10,000' x 3,500' (30)	500' x 10,000' x 3,500' (17) 500' x 10,000' x 3,500' (35)	
RUNWAY WIND COVERAGE (16 KNOTS)	98.44%	Same	97.43%	Same	97.95%	Same	95.67%	
F.A.R. PART-77 CATEGORY	Precision [PIR], Visual [BV]	Same	Precision [PIR], Visual [BV]	Same	Visual [AV], Visual [AV]	Same	NONPRECISION [C], NONPRECISION [C]	
RUNWAY INSTRUMENTATION	Precision, Visual	Same	Precision, Visual	Same	Visual, Visual	Same	NONPRECISION, NONPRECISION	
RUNWAY DIMENSIONS	13,793' x 150'	Same	10,000' x 150'	Same	6000' x 150'	Same	10,000 x 150'	
RUNWAY GEODETIC AZIMUTH	90.4229°/270.4493°	Same	44.7857°/224.8006°	Same	128.8492°, 308.8581°	Same	183.38°, 3.38°	
RUNWAY BEARING (True Bearing)	S 89° 34' 48" E	Same	N 44° 47' 24" E	Same	S 51° 9' 0" E	Same	N 3° 22' 48" E	
RUNWAY LIGHTING	HIRL, TDZ/CL	Same	RCL, TDL, HIRL	Same	MIRL	None	MIRL	
RUNWAY SAFETY AREA (RSA)	14,793' x 500'	Same	12,000' x 500'	Same	7200' x 300'	Same	11,110' x 500'	
RUNWAY OBSTACLE FREE ZONE (OFZ)	14,193' x 400'	Same	10,400' x 400'	Same	6400' x 400'	Same	10,310' x 400'	
RUNWAY OBJECT FREE AREA (OFA)	14,793' x 800'	Same	12,000' x 800'	Same	7200' x 800'	Same	11,110' x 800'	
RUNWAY EFFECTIVE GRADIENT	0.312%	Same	0.112%	0.102%	0.020%	Same	0.0490%	
RUNWAY MAXIMUM ELEVATION Above MSL (NGS Survey 4-21-2000)	5354.9 MSL	Same	5312.2 MSL,	Same	5354.5 MSL	Same	5320.8 MSL	
RUNWAY PAVEMENT MATERIAL	Concrete	Same	Concrete	Same	Concrete	Same	Asphalt/Concrete	
RUNWAY PAVEMENT SURFACE TREATMENT	Grooved	Same	Grooved	Same	Grooved	None	Grooved	
RUNWAY PAVEMENT STRENGTH (in thousand lbs.) [1]	100(S)/210(D)/360(DT)/850(DDT)	Same	100(S)/210(D)/360(DT), 720(DDT)	Same	65(S), 120(D), 155(DT)	Same	100(S), 210(D), 360(DT), 700(DDT)	
RUNWAY PROTECTION ZONE	1000' x 2500' x 1750' (8) 500' x 1700' x 1010' (26)	Same Same	1000' x 2500' x 1750' (3) 500' x 1700' x 1010' (21)	Same Same	500' x 1000' x 700' 500' x 1000' x 700'	Same Same	500' x 1700' x 1010' 500' x 1700' x 1010'	
PRECISION OBJECT FREE AREA (800' x 200')	Runway 8	Same	Runway 3	Same	N/A	N/A	N/A	
TAXIWAY WIDTH	100'	Same	100'	Same	100'	Same	100'	
TAXIWAY LIGHTING	MITL	Same	MITL	Same	MITL	Same	MITL	
TAXIWAY MARKING	CenterLine, Signage, Holding Mrkg	Same	CenterLine, Signage, Holding Mrkg	Same	CenterLine, Signage, Holding Mrkg	Same	CenterLine, Signage, Holding Mrkg	
TAXIWAY SURFACE MATERIAL	Concrete	Same	Concrete	Same	Concrete	Same	Concrete	
TAXIWAY SAFETY AREA WIDTH	214'	Same	214'	Same	118'	Same	214'	
TAXIWAY OBJECT FREE AREA WIDTH	320'	Same	320'	Same	186'	Same	320'	
TAXIWAY HOLDING POSITION MARKING/SIGN	280'	Same	280'	Same	200'	Same	280'	

	RUNWAY 8		RUNWAY 26		RUNWAY 3		RUNWAY 21	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAY THRESHOLD DISPLACEMENT	1000'	Same	None	Same	None	1000'	None	Same
RUNWAY STOPWAY/ARRESTING DEVICE	BAK-14	Same	BAK-9	Same	BAK-12/14	Same	None	Same
RUNWAY APPROACH VISIBILITY MINIMUMS	1/2 mile	Same	Visual	Same	1/2 mile	Same	Visual	Same
F.A.R. PART-77 APPROACH SLOPE	50:1/40:1	Same	20:1	Same	50:1/40:1	Same	20:1	Same
RUNWAY SAFETY AREA (Beyond Runway Threshold)	1000'	Same	1000'	Same	1000'	Same	1000'	Same
RUNWAY OBJECT FREE AREA (Beyond Runway Threshold)	1000'	Same	1000'	Same	1000'	Same	1000'	Same
RUNWAY TOUCHDOWN ZONE ELEVATION	5320.0' MSL	Same	5320.0' MSL	Same	5312.2' MSL	Same	5316.2 MSL	Same
RUNWAY MARKING	Precision	Same	Precision	Same	Precision	Same	Precision	Same
RUNWAY APPROACH LIGHTING	MALSR	Same	None	Same	MALSR	Same	None	None
TAKEOFF RUN AVAILABLE (TORA)	13,793'	Same	13,793'	Same	10,000'	11,000'	10,000'	11,000'
TAKEOFF DISTANCE AVAILABLE (TODA)	13,793'	Same	13,793'	Same	10,000'	11,000'	10,000'	11,000'
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)	13,793'	Same	13,793'	Same	10,000'	11,000'	10,000'	11,000'
LANDING DISTANCE AVAILABLE (LDA)	12,793'	Same	13,793'	Same	10,000'	10,000'	10,000'	11,000'
ELECTRONIC NAVIGATIONAL AIDS	CAT-I ILS/DME GPS VOR or TACAN ASR-9	Same CAT-I GPS Same	None	None	CAT-I ILS/DME GPS VOR or TACAN ASR-9	Same CAT-I GPS Same	None	None
RUNWAY VISUAL NAVIGATIONAL AIDS	VASI-6 –	Same	VASI-6 REIL	Same	PAPI-4 –	Same	PAPI-4 REIL	Same

	RUNWAY 12		RUNWAY 30		RUNWAY 17		RUNWAY 35	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAY THRESHOLD DISPLACEMENT	None	None	None	Same	890'	To Be Closed	None	To Be Closed
RUNWAY STOPWAY/ARRESTING DEVICE	None	None	None	Same	None		None	
RUNWAY APPROACH VISIBILITY MINIMUMS	Visual	Same	Visual	Same	1 mile		1 mile	
F.A.R. PART-77 APPROACH SLOPE	20:1	Same	20:1	Same	34:1		34:1	
RUNWAY SAFETY AREA (Beyond Runway Threshold)	600'	Same	600'	Same	1000'		1000'	
RUNWAY OBJECT FREE AREA (Beyond Runway Threshold)	600'	Same	600'	Same	1000'		1000'	
RUNWAY TOUCHDOWN ZONE ELEVATION	5314.5 MSL	Same	5313.6 MSL	Same	5320.8 MSL		5315.7 MSL	
RUNWAY MARKING	Basic	Nonprecision	Basic	Nonprecision	NonPrecision		Nonprecision	
RUNWAY APPROACH LIGHTING	None	None	None	Same	None		None	
TAKEOFF RUN AVAILABLE (TORA)	6000'	Same	6000'	Same	10,000		9110'	
TAKEOFF DISTANCE AVAILABLE (TODA)	6000'	Same	6000'	Same	10,000'		10110'	
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)	6000'	Same	6000'	Same	10,000'		9110'	
LANDING DISTANCE AVAILABLE (LDA)	6000'	Same	6000'	Same	9110'		9110'	
ELECTRONIC NAVIGATIONAL AIDS	None	None	None	None	ASR-9 NDB or GPS		ASR-9 NDB or GPS	
RUNWAY VISUAL NAVIGATIONAL AIDS	None	VASI-4 REIL	VASI-4 REIL	Same	VASI-4 REIL		VASI-4 REIL	

[1] Pavement strengths are expressed in Single (S), Dual (D), Dual Tandem (DT), and/or Double Dual Tandem (DDT) wheel loading capacities.

No.	REVISIONS	DATE	BY	APP'D.

ALBUQUERQUE INTERNATIONAL SUNPORT

AIRPORT DATA

Albuquerque, New Mexico

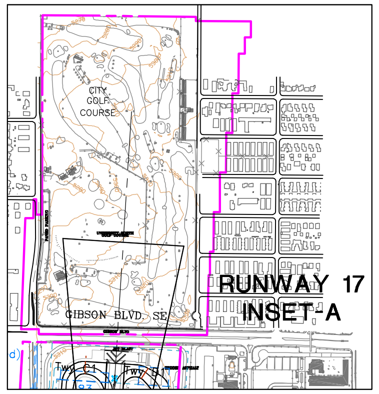
PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

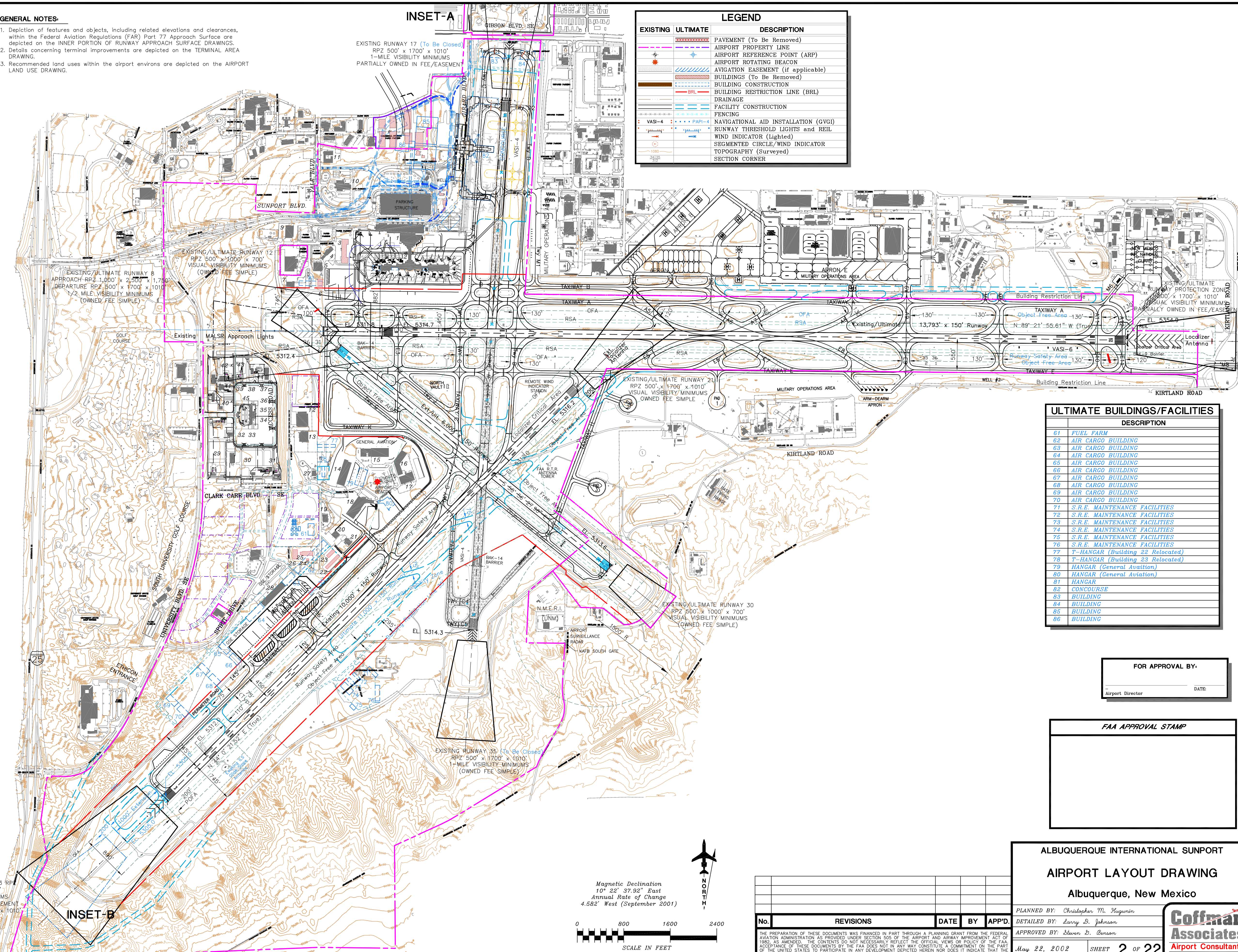
May 22, 2002

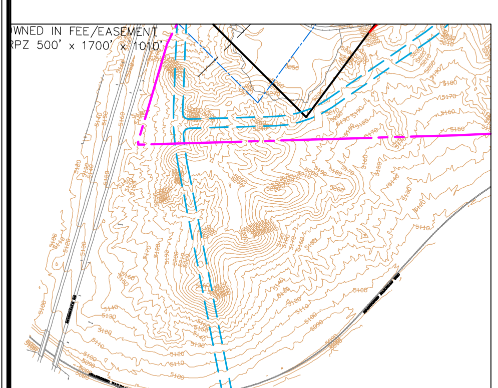
Coffman Associates
Airport Consultants
www.coffmanassociates.com

GENERAL NOTES:

1. Depiction of features and objects, including related elevations and clearances, within the Federal Aviation Regulations (FAR) Part 77 Approach Surface are depicted on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWINGS.
2. Details concerning terminal improvements are depicted on the TERMINAL AREA DRAWING.
3. Recommended land uses within the airport environs are depicted on the AIRPORT LAND USE DRAWING.







EXISTING/ULTIMATE RUNWAY 3 RPZ
1,000' x 2,500' x 1,750'
1/2 MILE VISIBILITY MINIMUMS
PARTIALLY OWNED IN FEE/EASEMENT
DEPARTURE RPZ 500' x 1700' x 1010'

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIGATION EASEMENT (if applicable)
		BUILDINGS (To Be Removed)
		BUILDING CONSTRUCTION
	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
VASI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION (GVGI)
		RUNWAY THRESHOLD LIGHTS and REIL
		WIND INDICATOR (Lighted)
		SEGMENTED CIRCLE/WIND INDICATOR
1080		TOPOGRAPHY (Surveyed)
34 35 / 3 2		SECTION CORNER

EXISTING BUILDINGS/FACILITIES

	DESCRIPTION
1	ADMINISTRATION/TERMINAL BUILDING
2	DEPARTURE CONCOURSE
3	AIR FREIGHT BUILDING
4	ORIGINAL TERMINAL BUILDING
5	FORMER FAA/NWS BUILDING
6	AIRCRAFT SERVICE INTERNATIONAL GROVE
7	PROVISION BUILDING
8	POSTAL FACILITY
9	FLIGHT KITCHEN
10	WYNDAM HOTEL
11	YALE RENTAL
12	CENTURY HANGAR
13	FAA/AANC NDI VALIDATION CENTER
14	CUTTER WEST HANGAR
15	CUTTER FLYING SERVICE
16	FBO HANGAR
17	FBO HANGAR
18	SEVEN BAR AVIATION
19	FAA AUTOMATED FLIGHT SERVICE STATION
20	FOUR SEASONS
21	WESTERN AIR
22	T-HANGAR
23	T-HANGAR
24	AIRPORT MAINTENANCE BUILDING
25	AIRPORT MAINTENANCE BUILDING
26	AIRPORT MAINTENANCE BUILDING
27	NATIONAL WEATHER SERVICE
28	AIR CARGO BUILDING
29	HERTZ SERVICE AREA
30	NATIONAL/ALAMO SERVICE AREA
31	ADVANTAGE SERVICE AREA
32	ADVANTAGE READY/RETURN
33	HERTZ READY/RETURN
34	ALAMO READY/RETURN
35	NATIONAL READY/RETURN
36	BUDGET READY/RETURN
37	DOLLAR READY/RETURN
38	AVIS READY/RETURN
39	THRIFTY/ENTERPRISE READY/RETURN
40	AVIS SERVICE AREA
41	ENTERPRISE SERVICE AREA
42	DOLLAR SERVICE AREA
43	THRIFTY SERVICE AREA
44	BUDGET SERVICE AREA
45	RENTAL CAR TERMINAL

ULTIMATE BUILDINGS/FACILITIES

	DESCRIPTION
61	FUEL FARM
62	AIR CARGO BUILDING
63	AIR CARGO BUILDING
64	AIR CARGO BUILDING
65	AIR CARGO BUILDING
66	AIR CARGO BUILDING
67	AIR CARGO BUILDING
68	AIR CARGO BUILDING
69	AIR CARGO BUILDING
70	AIR CARGO BUILDING
71	S.R.E. MAINTENANCE FACILITIES
72	S.R.E. MAINTENANCE FACILITIES
73	S.R.E. MAINTENANCE FACILITIES
74	S.R.E. MAINTENANCE FACILITIES
75	S.R.E. MAINTENANCE FACILITIES
76	S.R.E. MAINTENANCE FACILITIES
77	T-HANGAR (Building 22 Relocated)
78	T-HANGAR (Building 23 Relocated)
79	HANGAR (General Avaition)
80	HANGAR (General Aviation)
81	HANGAR
82	CONCOURSE
83	BUILDING
84	BUILDING
85	BUILDING
86	BUILDING

FOR APPROVAL BY:

Airport Director DATE:

FAA APPROVAL STAMP

No.	REVISIONS	DATE	BY	APP'D.

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

ALBUQUERQUE INTERNATIONAL SUNPORT

AIRPORT LAYOUT DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002 SHEET 2 OF 22

Coffman Associates
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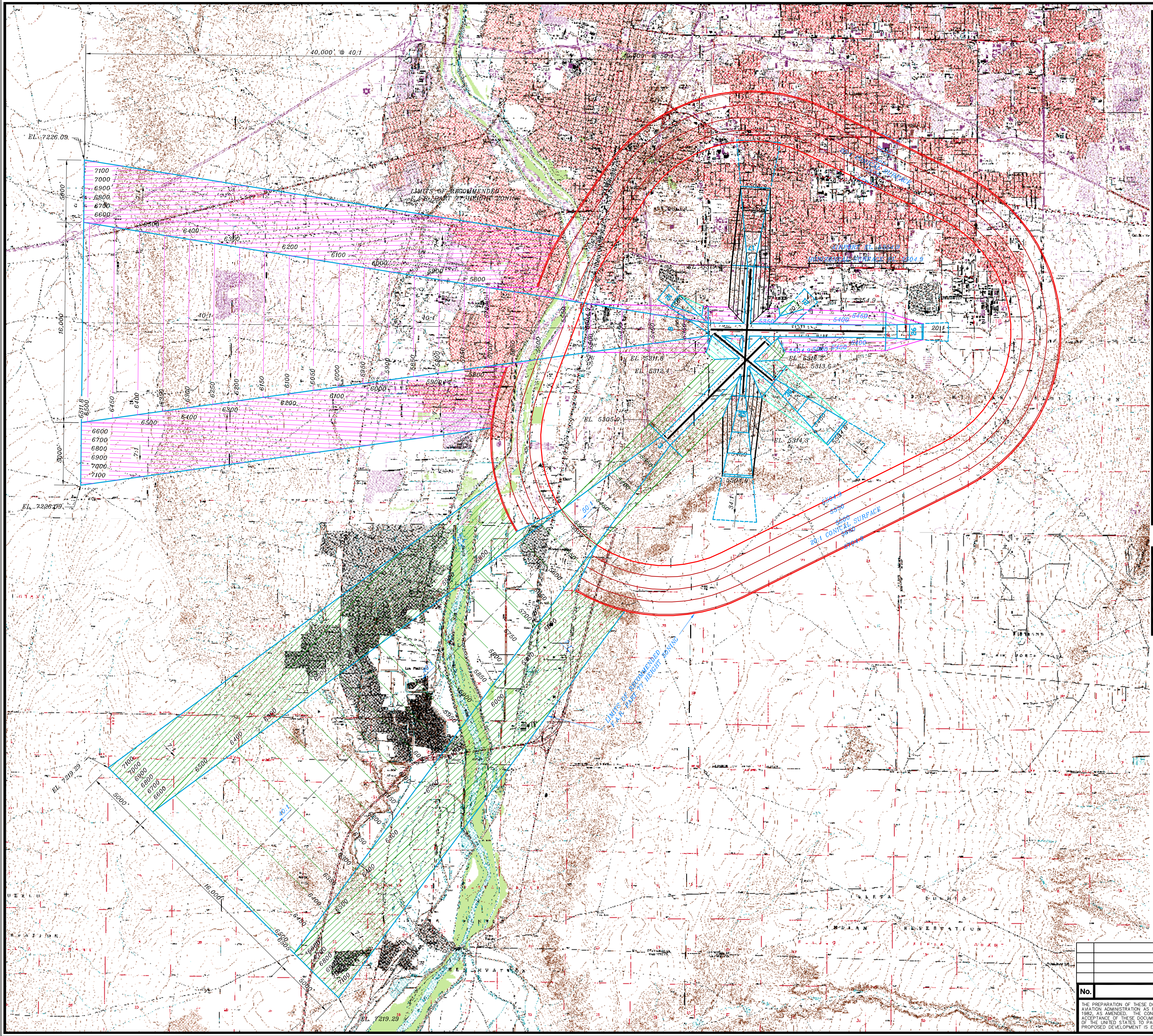

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
1 OL WINDSOCK	5335 MSL	PRIMARY SURFACE	5310 MSL	25'	TO REMAIN LIGHTED
2 RADAR REFLECTOR	5320 MSL	50:1 PRECISION APPROACH	5310 MSL	10'	TO BE LIGHTED
3 MONITOR ANTENNA	5313 MSL	50:1 PRECISION APPROACH	5314 MSL	-1'	TO BE LIGHTED
4 OL GLIDESLOPE	5361 MSL	PRIMARY SURFACE	5313 MSL	48'	TO REMAIN LIGHTED, FIXED BY FUNCTIONAL PURPOSE
5 OL TRANSMISSOMETER	5327 MSL	PRIMARY SURFACE	5313 MSL	14'	TO REMAIN LIGHTED, FIXED BY FUNCTIONAL PURPOSE
6 BUILDING	5316 MSL	PRIMARY SURFACE	5313 MSL	3'	TO REMAIN LIGHTED, FIXED BY FUNCTIONAL PURPOSE
7 OL TRANSMISSOMETER	5327 MSL	PRIMARY SURFACE	5313 MSL	14'	TO REMAIN LIGHTED, FIXED BY FUNCTIONAL PURPOSE
8 OL WINDSOCK	5368 MSL	PRIMARY SURFACE	5352 MSL	16'	TO REMAIN LIGHTED
9 OL POLE	5410 MSL	7:1 TRANSITIONAL SURFACE	5393 MSL	17'	TO REMAIN LIGHTED
10 OL ANTENNA ON TOWER	5348 MSL	7:1 TRANSITIONAL SURFACE	5335 MSL	13'	TO REMAIN LIGHTED
11 OL WINDSOCK	5335 MSL	PRIMARY SURFACE	5310 MSL	25'	TO BE RELOCATED
12 ELECTRICAL BOX	5325 MSL	7:1 TRANSITIONAL SURFACE	5316 MSL	9'	TO BE RELOCATED
13 OL WINDSOCK	5331 MSL	PRIMARY SURFACE	5312 MSL	19'	TO BE RELOCATED
14 ANTENNA ON TOWER	5393 MSL	7:1 TRANSITIONAL SURFACE	5373 MSL	20'	TO BE LIGHTED
15 OL ATCT	5528 MSL	7:1 TRANSITIONAL SURFACE	5485 MSL	43'	TO REMAIN LIGHTED
16 ANTENNA ON BUILDING	5532 MSL	HORIZONTAL SURFACE	5502 MSL	30'	REQUEST AERONAUTICAL STUDY
17 PLATFORM	5502 MSL	HORIZONTAL SURFACE	5502 MSL	0'	REQUEST AERONAUTICAL STUDY
18 VENT ON BUILDING	5529 MSL	HORIZONTAL SURFACE	5502 MSL	27'	REQUEST AERONAUTICAL STUDY
19 ANTENNA ON BUILDING	5528 MSL	HORIZONTAL SURFACE	5502 MSL	26'	REQUEST AERONAUTICAL STUDY
20 OL WATER TANK	5606 MSL	20:1 CONICAL SURFACE	5534 MSL	72'	REQUEST AERONAUTICAL STUDY
21 OL WATER TANK	5539 MSL	20:1 CONICAL SURFACE	5509 MSL	30'	REQUEST AERONAUTICAL STUDY
22 WINDSOCK	5326 MSL	7:1 TRANSITIONAL SURFACE	5311 MSL	15'	RUNWAY TO BE CLOSED
23 WINDSOCK	5335 MSL	7:1 TRANSITIONAL SURFACE	5318 MSL	17'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
24 OL BLAST FENCE	5325 MSL	PRIMARY SURFACE	5316 MSL	9'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
25 GIBSON BLVD.	5317 MSL	34:1 NONPRECISION SURFACE	5317 MSL	15'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
26 TRAFFIC SIGN	5322 MSL	PRIMARY SURFACE	5316 MSL	6'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
27 TREE	5335 MSL	34:1 NONPRECISION SURFACE	5320 MSL	15'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
28 TREE	5333 MSL	34:1 NONPRECISION SURFACE	5326 MSL	7'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
29 TREE	5337 MSL	34:1 NONPRECISION SURFACE	5327 MSL	10'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
30 TREE	5341 MSL	34:1 NONPRECISION SURFACE	5332 MSL	9'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
31 TREE	5360 MSL	7:1 TRANSITIONAL SURFACE	5323 MSL	37'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
32 TREE	5363 MSL	7:1 TRANSITIONAL SURFACE	5341 MSL	22'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
33 TREE	5360 MSL	7:1 TRANSITIONAL SURFACE	5334 MSL	26'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
34 OL WINDSOCK	5320 MSL	PRIMARY SURFACE	5312 MSL	8'	TO REMAIN LIGHTED

OBSTRUCTION LEGEND

- OBSTRUCTION
- GROUP or MULTIPLE OBSTRUCTIONS
- TOPOGRAPHIC OBSTRUCTION

NORTH

Magnetic Declination
10° 22' 37.92" East
Annual Rate of Change
4.582' West (September 2001)

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC 12, AIRPORT OBSTRUCTION CHART.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheets 3 thur 5.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES, sheets 6 thur 10.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING, sheets 11 thur 17.

0 4000 8000 12000
SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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ALBUQUERQUE INTERNATIONAL SUNPORT

AIRPORT AIRSPACE DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

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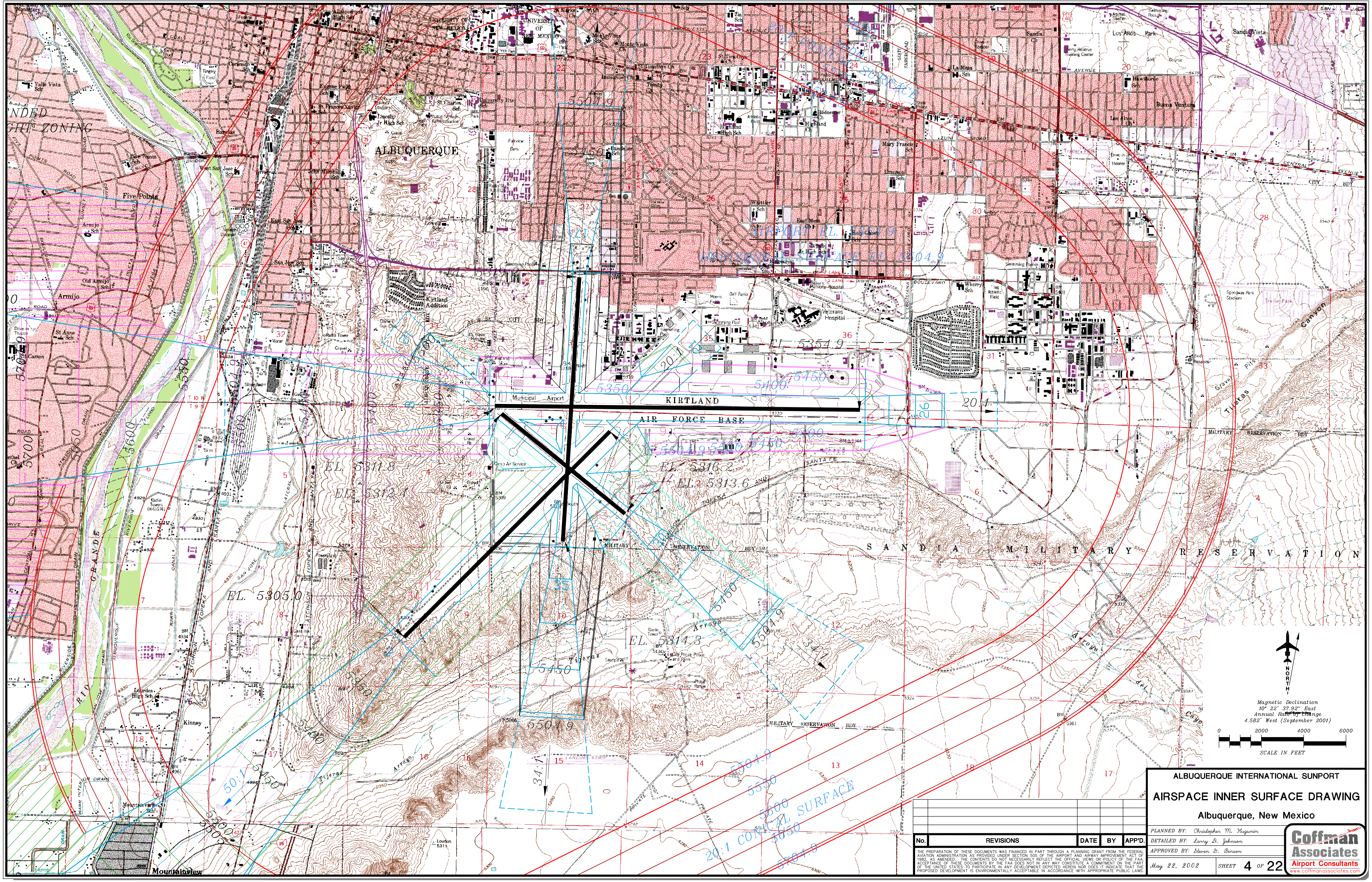

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ALBUQUERQUE INTERNATIONAL SUNPORT

AIRSPACE INNER SURFACE DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

SHEET 4 OF 22

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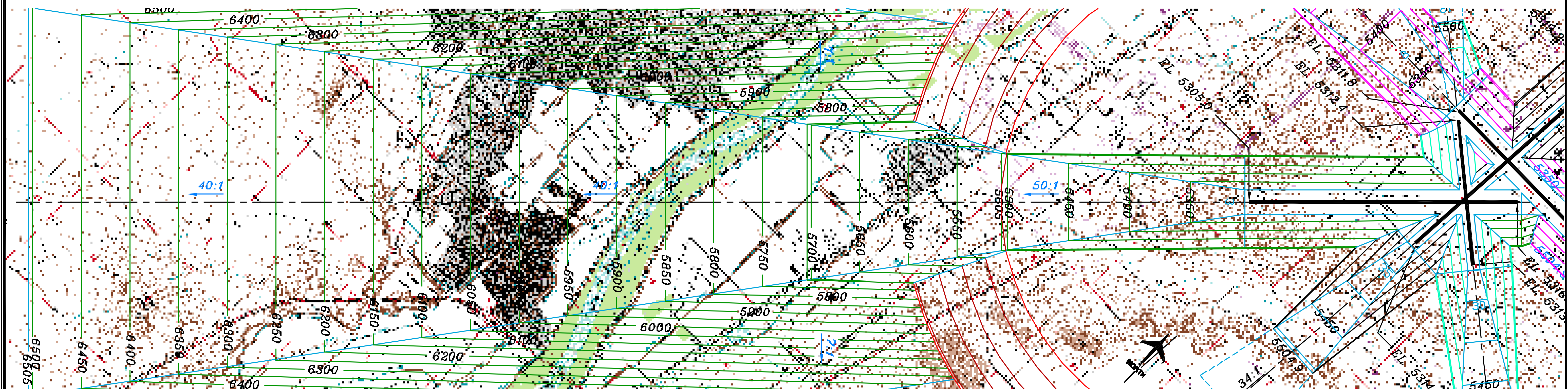
RUNWAY 8 PRECISION APPROACH SURFACE



RUNWAY 3 PRECISION APPROACH SURFACE

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC 12, AIRPORT OBSTRUCTION CHART.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheets 3 thur 5.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES, sheets 6 thur 10.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING, sheets 11 thur 17.

Magnetic Declination
5° 14' 46.89" East
Annual Rate of Change 6.422" West
(August 2001)

0 2000 4000 6000

No.	REVISIONS	DATE	BY	APP'D.

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ALBUQUERQUE INTERNATIONAL SUNPORT
RUNWAY 8 and RUNWAY 3 PRECISION APPROACH SURFACE
Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry B. Johnson
APPROVED BY: [illegible]
May 22, 2002
SHEET 5 OF 22

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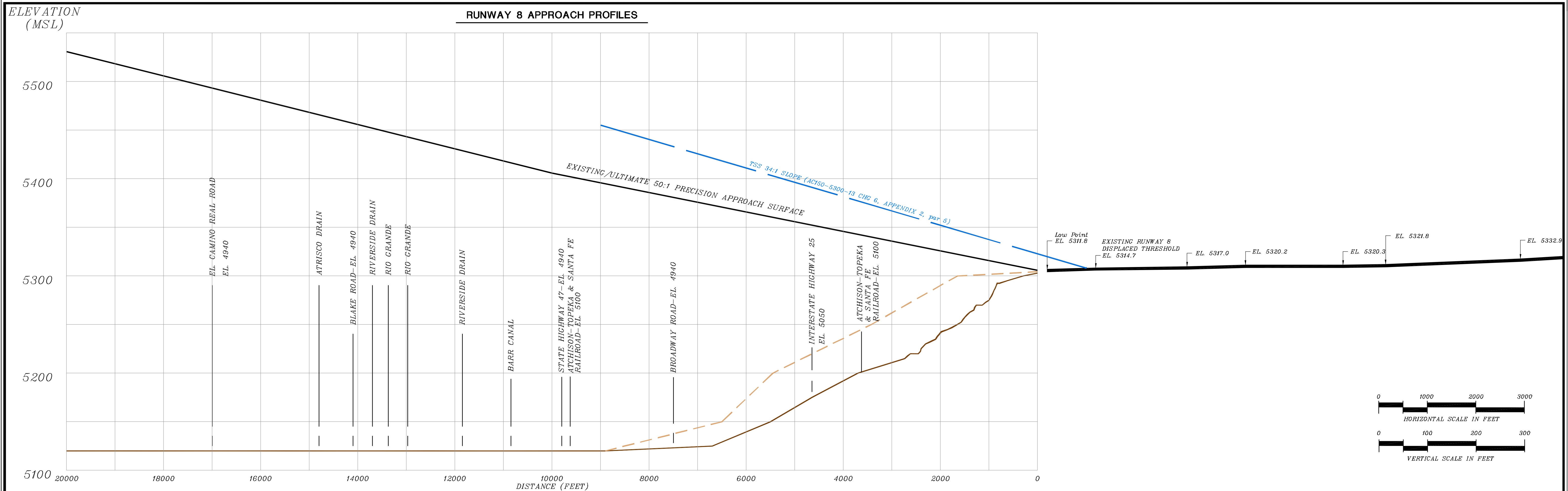
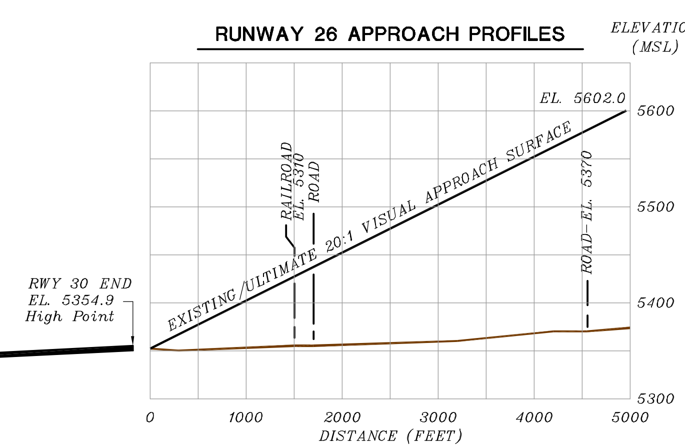
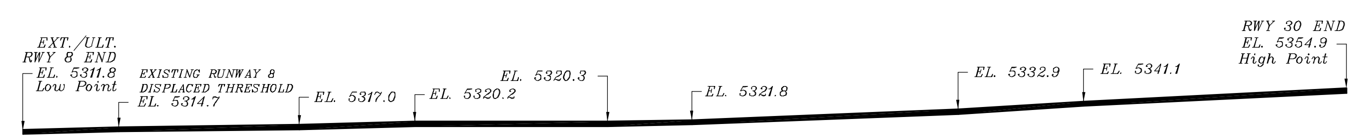
RUNWAY 8 APPROACH PROFILES



RUNWAY 26 APPROACH PROFILES





RUNWAY 8-26 PROFILE

RUNWAY 8 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

RUNWAY 26 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC 12, AIRPORT OBSTRUCTION CHART.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheets 3 thur 5.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES, sheets 6 thur 10.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING, sheets 11 thur 17.

No.	REVISIONS	DATE	BY	APP'D.

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

ALBUQUERQUE INTERNATIONAL SUNPORT

RUNWAY 8-26 APPROACH PROFILES

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

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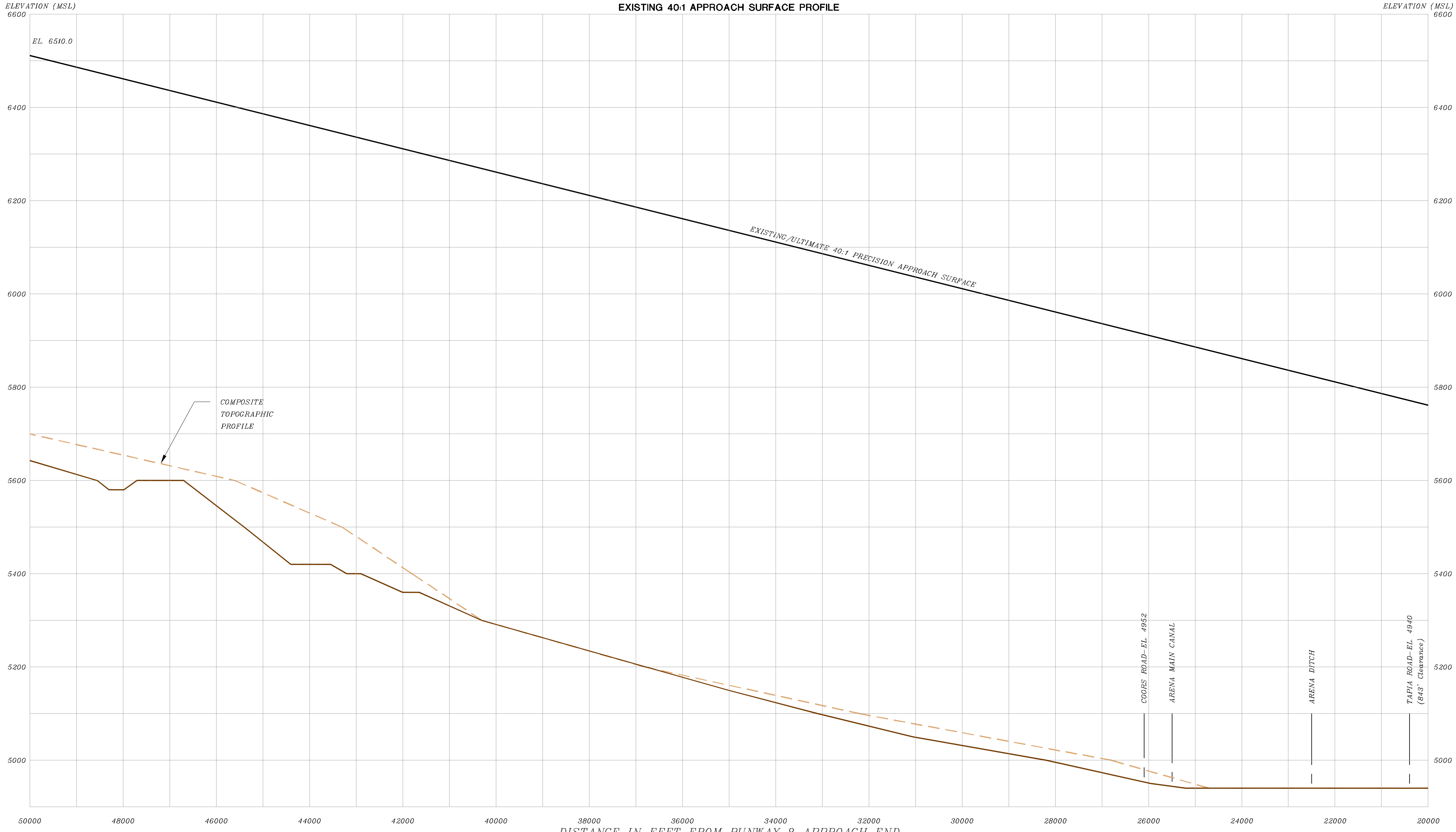

RUNWAY 8 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

GENERAL NOTES:

1. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheets 3 thur 5.
2. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES, sheets 6 thur 10.
3. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING, sheets 11 thur 17.

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ALBUQUERQUE INTERNATIONAL SUNPORT

RUNWAY 8 OUTER APPROACH PROFILES

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

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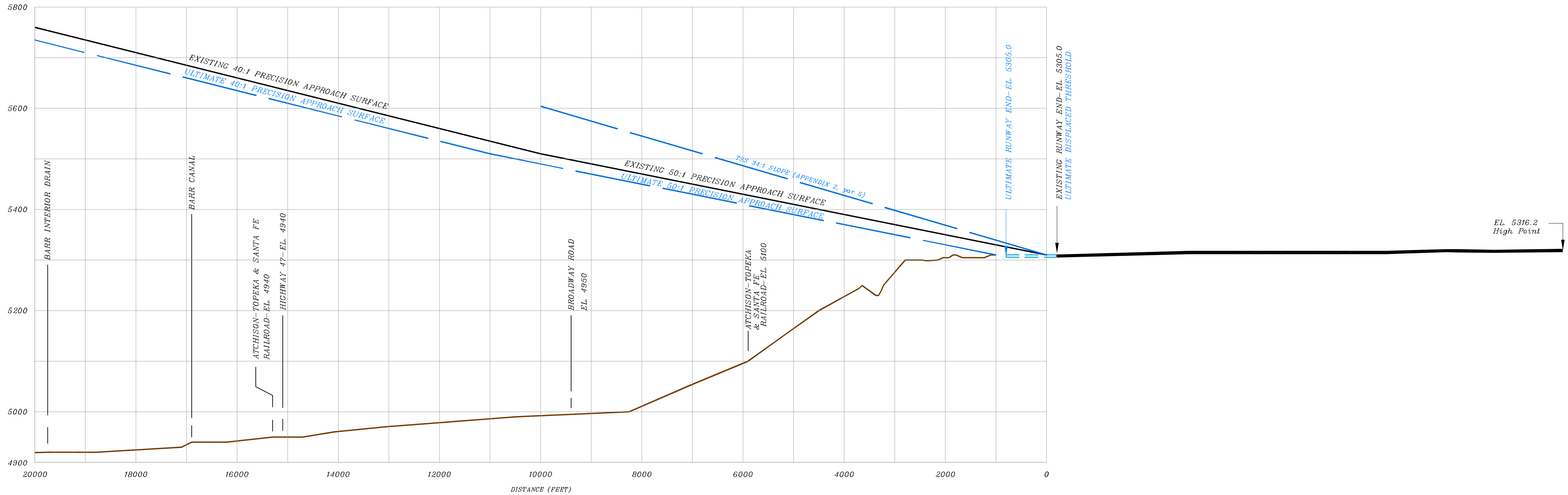
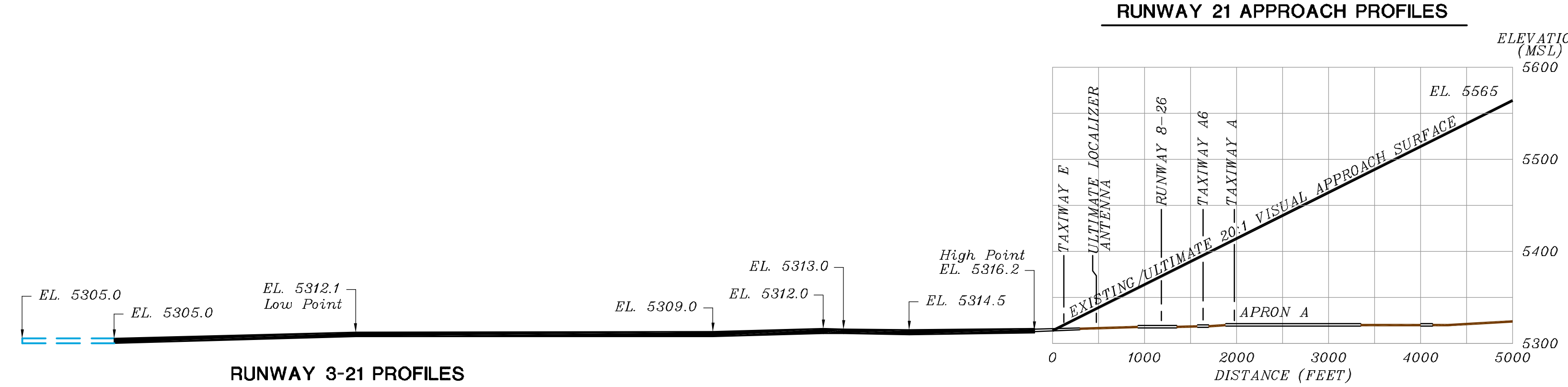
RUNWAY 3 APPROACH PROFILES



RUNWAY 21 APPROACH PROFILES



RUNWAY 3-21 PROFILES

RUNWAY 3 OBSTRUCTION TABLE					
Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

RUNWAY 21 OBSTRUCTION TABLE					
Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC 12, AIRPORT OBSTRUCTION CHART.
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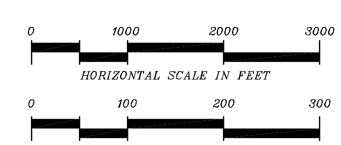

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ALBUQUERQUE INTERNATIONAL SUNPORT

RUNWAY 3-21 APPROACH PROFILES

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002 — SHEET 8 OF 22

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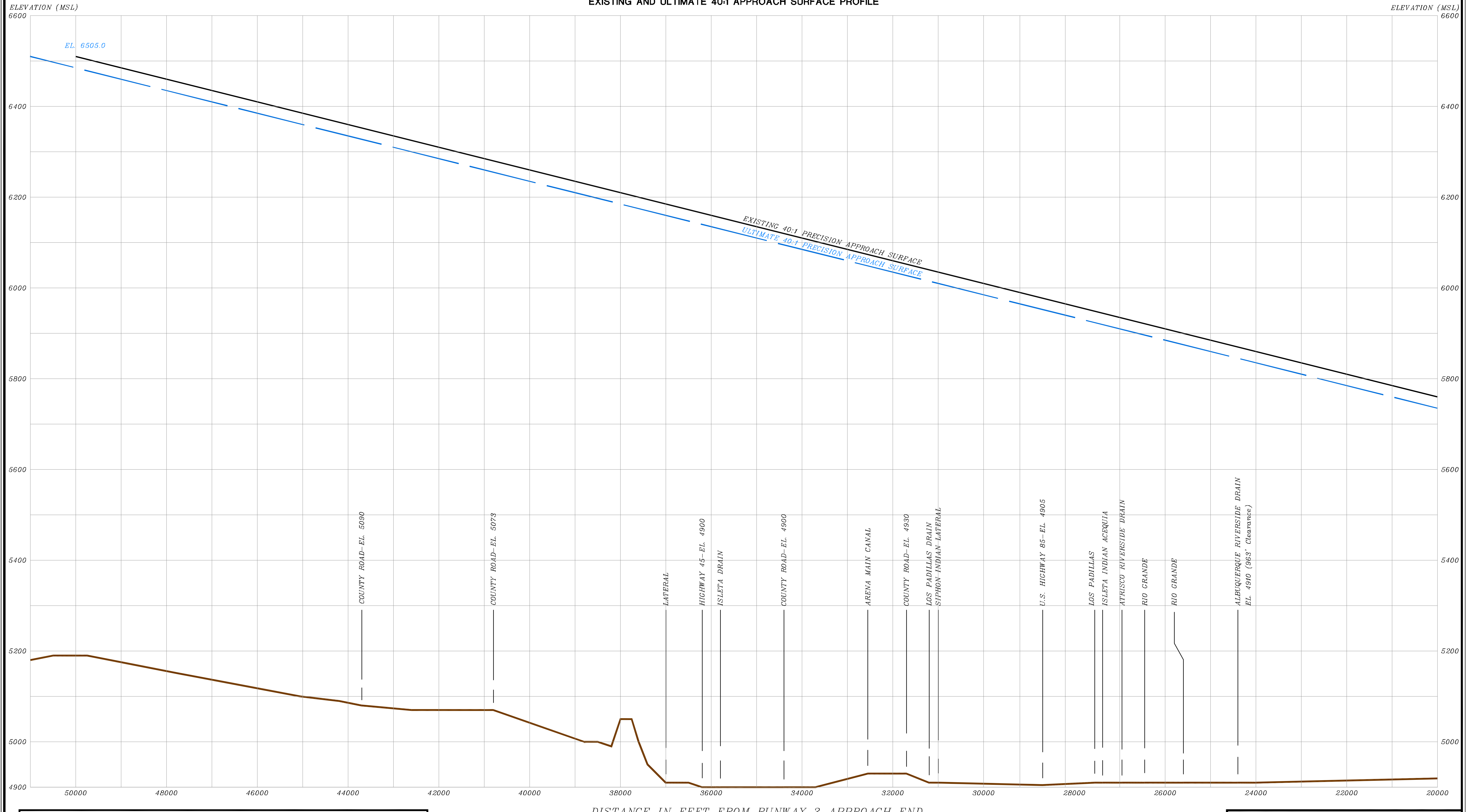
EXISTING AND ULTIMATE 40:1 APPROACH SURFACE PROFILE



RUNWAY 3 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

GENERAL NOTES:

1. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheets 3 thur 5.
2. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES, sheets 6 thur 10.
3. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING, sheets 11 thur 17.

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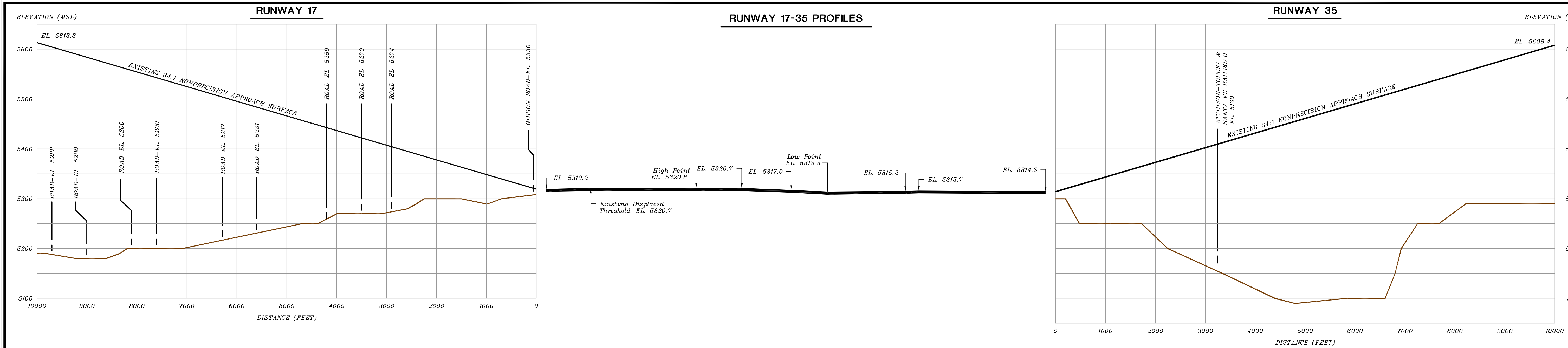
RUNWAY 3

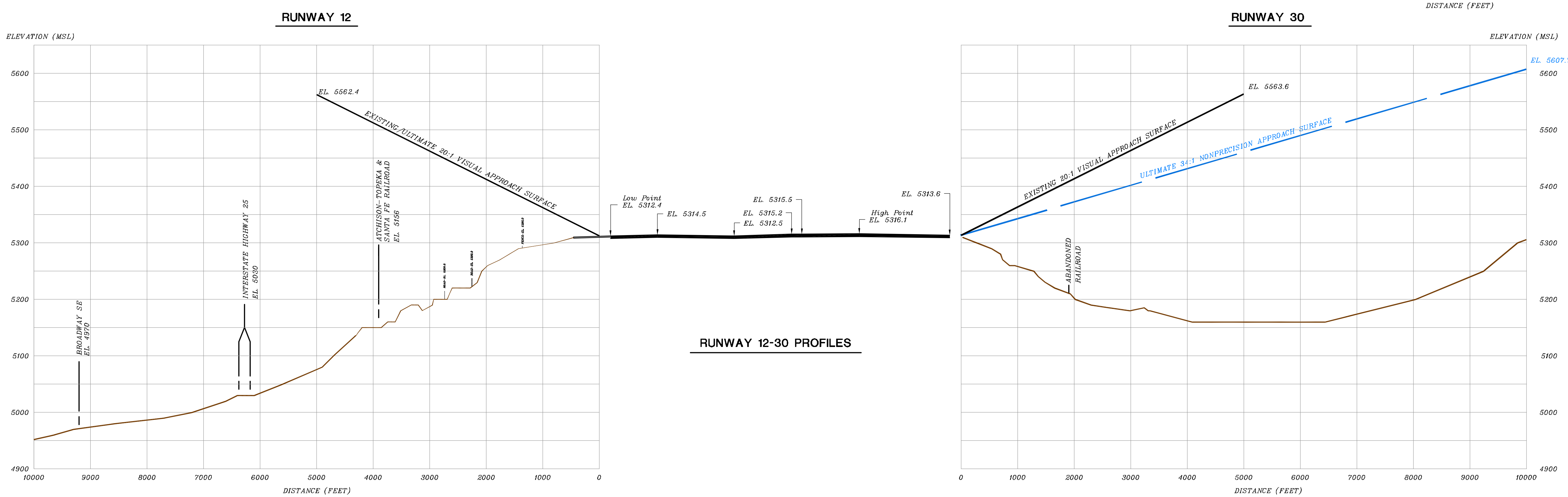
OUTER APPROACH PROFILES

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002 | SHEET 9 OF 22





RUNWAY 17 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

RUNWAY 35 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

RUNWAY 12 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

RUNWAY 30 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

GENERAL NOTES:

1. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheets 3 thur 5.
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3. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF RUNWAY APPROACH SURFACE DRAWING, sheets 11 thur 17.

0 1000 2000 3000
HORIZONTAL SCALE IN FEET

0 100 200 300
VERTICAL SCALE IN FEET

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ALBUQUERQUE INTERNATIONAL SUNPORT

RUNWAY 17-35 and RUNWAY 12-30 APPROACH PROFILES

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven D. Benson

May 22, 2002

SHEET 10 OF 22

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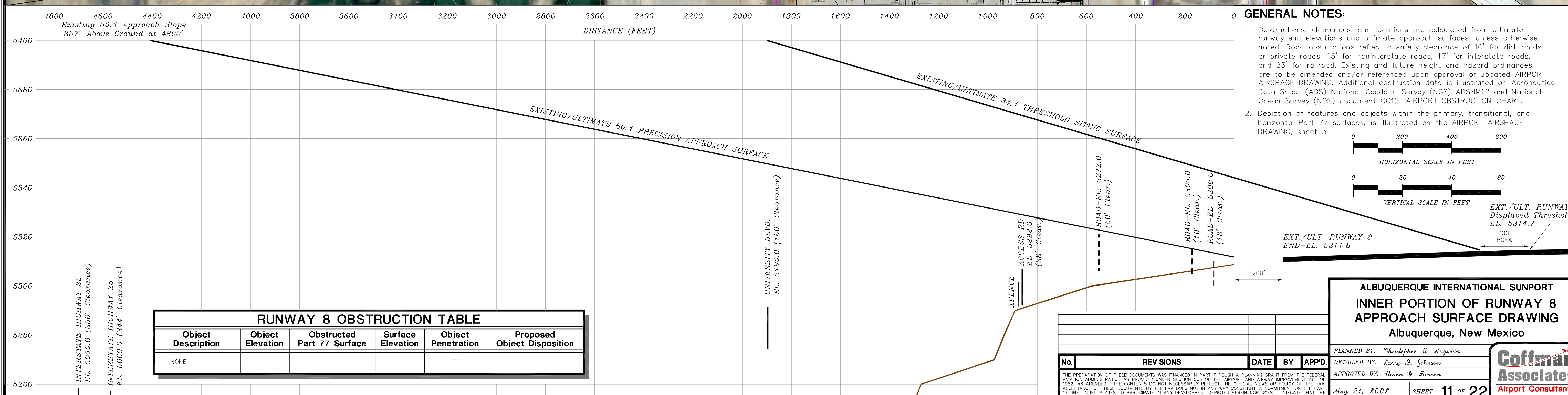

RUNWAY 8 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	–	–	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Road obstructions reflect a safety clearance of 10' for dirt roads or private roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroad. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE DRAWING. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC12, AIRPORT OBSTRUCTION CHART.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3.

0 200 400 600
HORIZONTAL SCALE IN FEET

0 20 40 60
VERTICAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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ALBUQUERQUE INTERNATIONAL SUNPORT

INNER PORTION OF RUNWAY 8 APPROACH SURFACE DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry B. Johnson
APPROVED BY: Steven G. Benson

May 21, 2002 SHEET 11 OF 22

Coffman Associates
Airport Consultants
www.coffmanassociates.com

RUNWAY 3 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	–	–	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Road obstructions reflect a safety clearance of 10' for dirt roads or private roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroad. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE DRAWING. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC12, AIRPORT OBSTRUCTION CHART.
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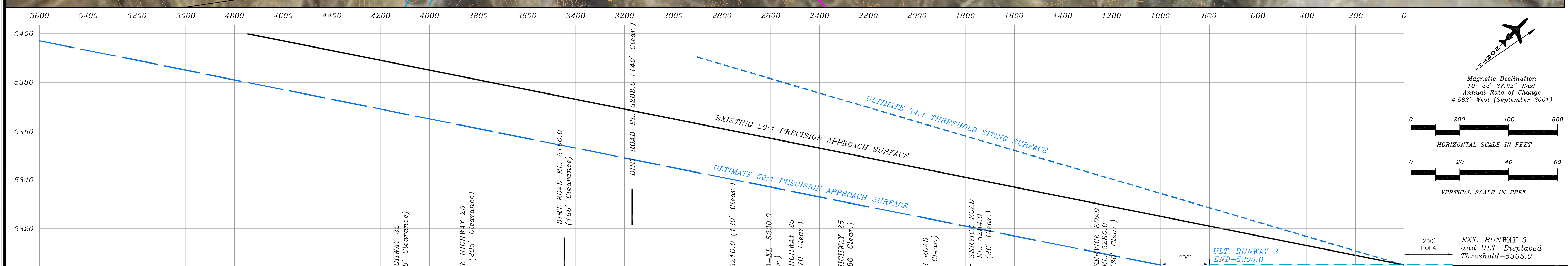

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ALBUQUERQUE INTERNATIONAL SUNPORT

INNER PORTION OF RUNWAY 3 APPROACH SURFACE DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002 — SHEET 12 OF 22

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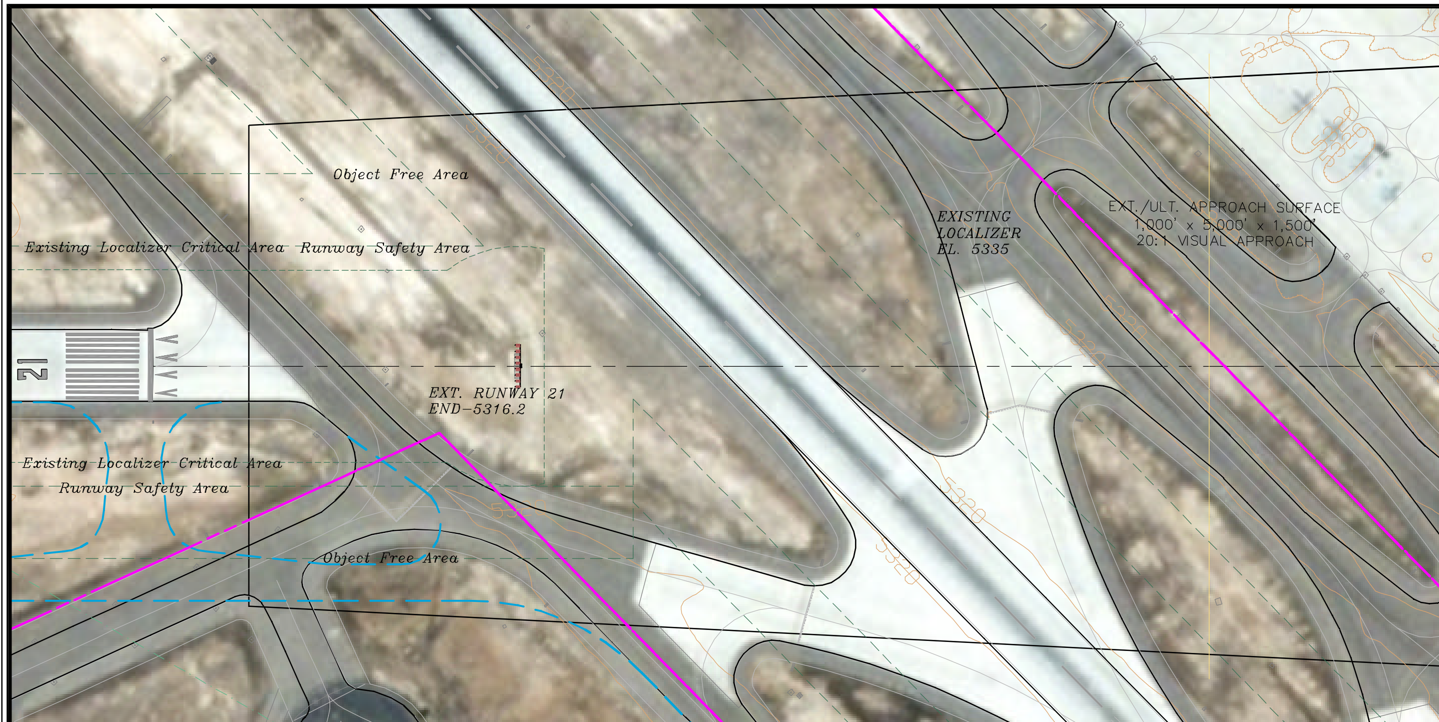
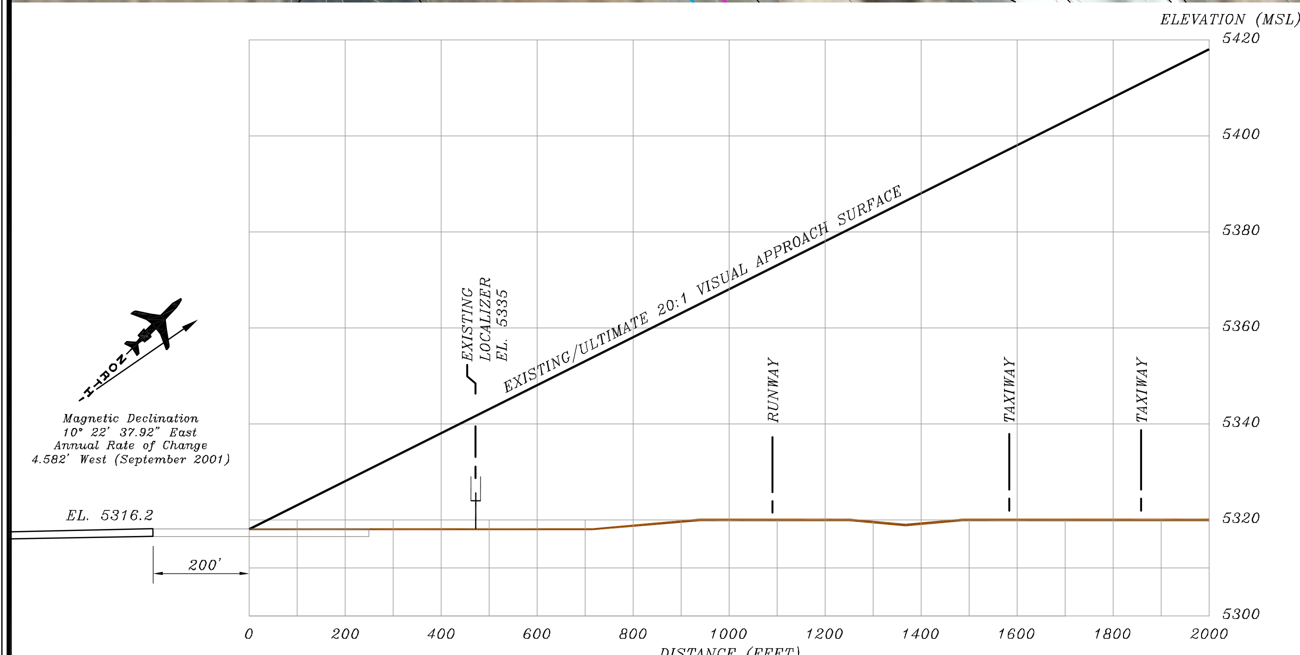
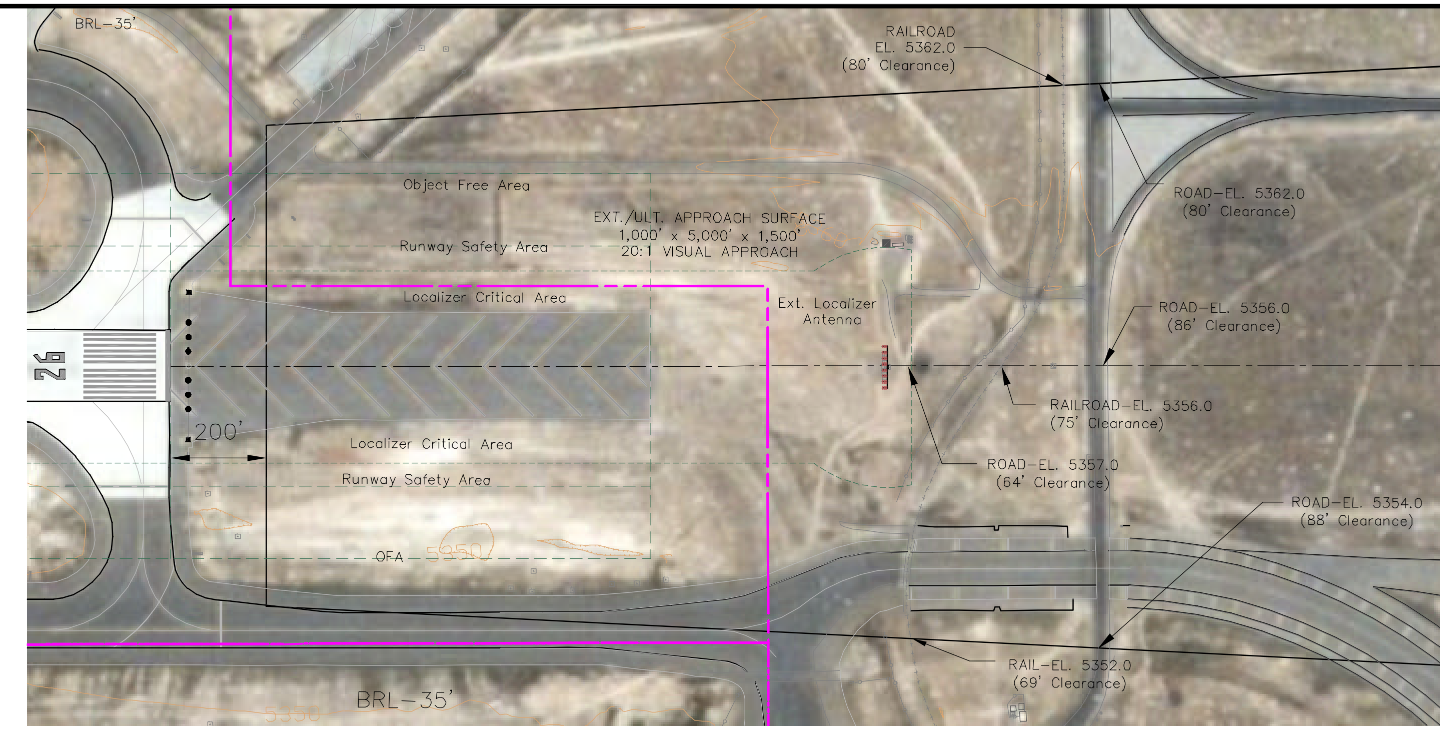
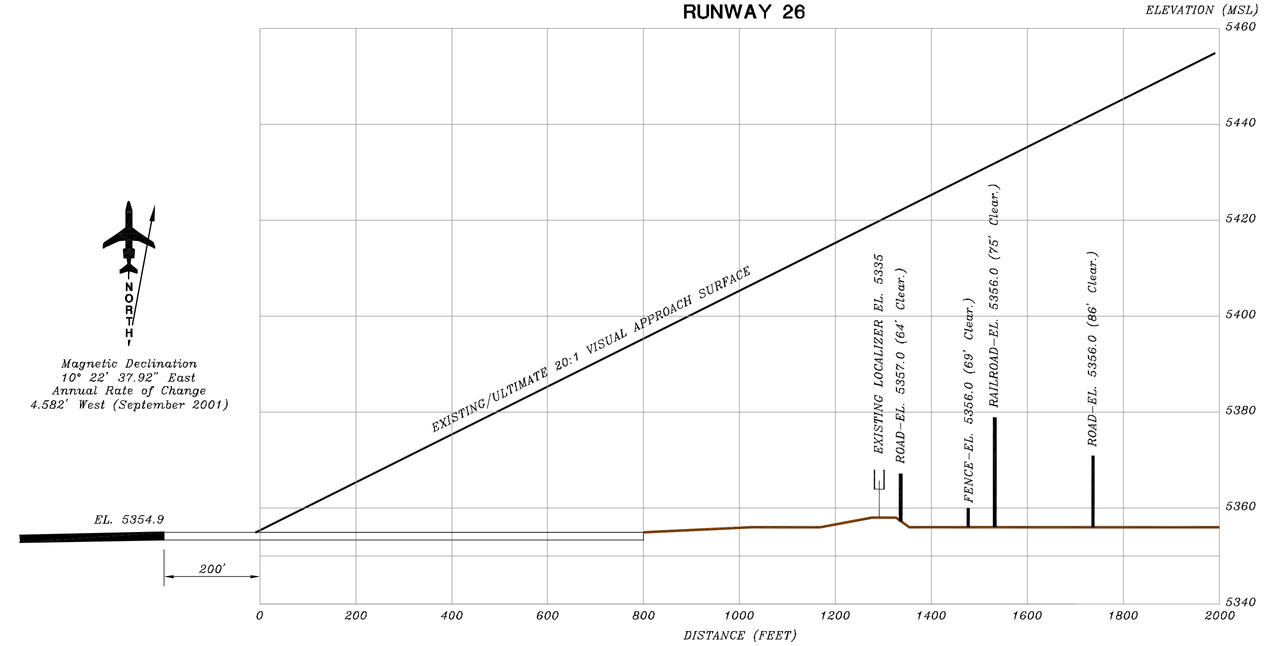






RUNWAY 26



RUNWAY 21 OBSTRUCTION TABLE

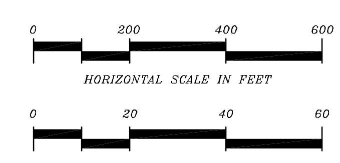
Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	–	–	–	–	–

RUNWAY 26 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	–	–	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Road obstructions reflect a safety clearance of 10' for dirt roads or private roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroad. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE DRAWING. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC12, AIRPORT OBSTRUCTION CHART.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3.



No.	REVISIONS	DATE	BY	APP'D.

ALBUQUERQUE INTERNATIONAL SUNPORT

INNER PORTION OF RUNWAY 21 and 26 APPROACH SURFACE DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

Coffman Associates
Airport Consultants
www.coffmanassociates.com

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Road obstructions reflect a safety clearance of 10' for dirt roads or private roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroad. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE DRAWING. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC12, AIRPORT OBSTRUCTION CHART.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3.

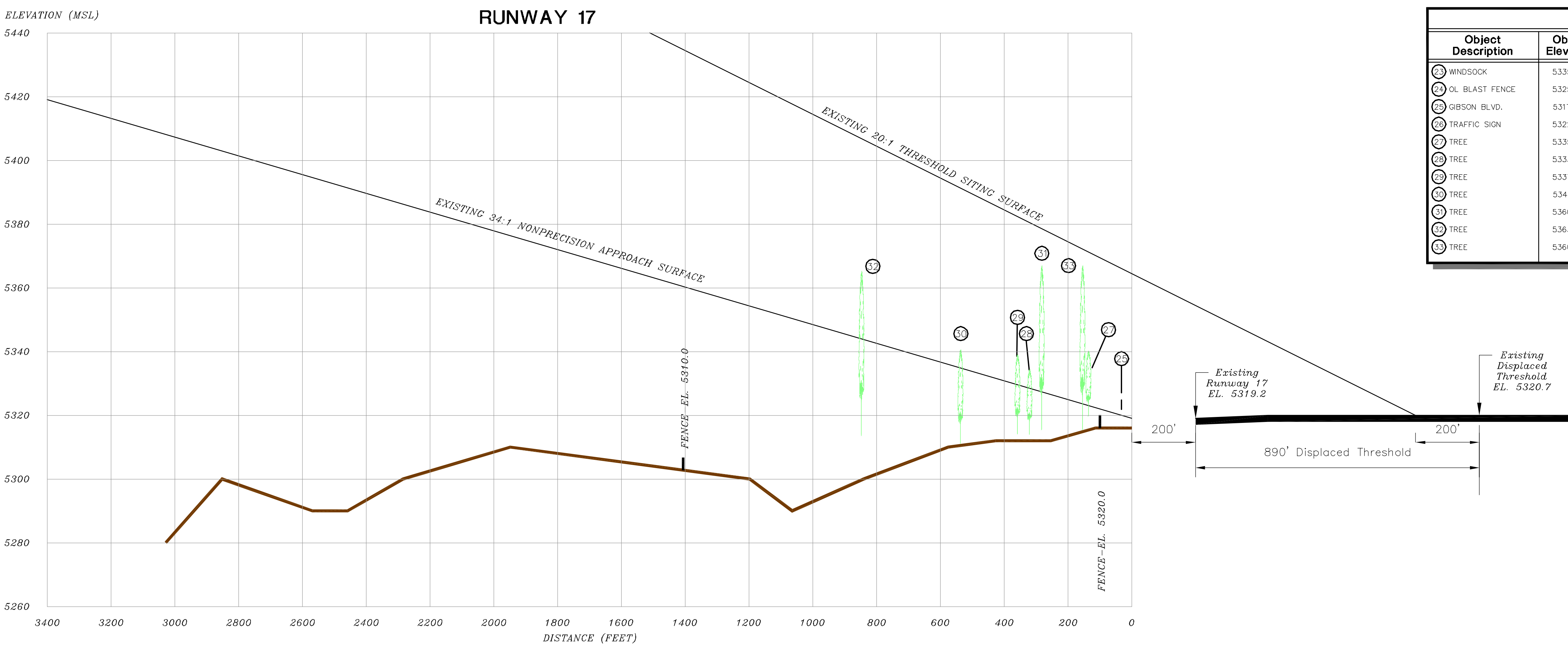
NORTH

Magnetic Declination
10° 22' 37.92" East
Annual Rate of Change
4.582' West (September 2001)

0 200 400 600
HORIZONTAL SCALE IN FEET

0 20 40 60
VERTICAL SCALE IN FEET

RUNWAY 17



RUNWAY 17 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
23 WINDSOCK	5335 MSL	7:1 TRANSITIONAL SURFACE	5318 MSL	17'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
24 OL BLAST FENCE	5325 MSL	PRIMARY SURFACE	5316 MSL	9'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
25 GIBSON BLVD.	5317 MSL	34:1 NONPRECISION SURFACE	5317 MSL	15'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
26 TRAFFIC SIGN	5322 MSL	PRIMARY SURFACE	5316 MSL	6'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
27 TREE	5335 MSL	34:1 NONPRECISION SURFACE	5320 MSL	15'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
28 TREE	5333 MSL	34:1 NONPRECISION SURFACE	5326 MSL	7'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
29 TREE	5337 MSL	34:1 NONPRECISION SURFACE	5327 MSL	10'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
30 TREE	5341 MSL	34:1 NONPRECISION SURFACE	5332 MSL	9'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
31 TREE	5360 MSL	7:1 TRANSITIONAL SURFACE	5323 MSL	37'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
32 TREE	5363 MSL	7:1 TRANSITIONAL SURFACE	5341 MSL	22'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED
33 TREE	5360 MSL	7:1 TRANSITIONAL SURFACE	5334 MSL	26'	DISPLACED THRESHOLD RUNWAY TO BE CLOSED

No.	REVISIONS	DATE	BY	APP'D.

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ALBUQUERQUE INTERNATIONAL SUNPORT

INNER PORTION OF RUNWAY 17 APPROACH SURFACE DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

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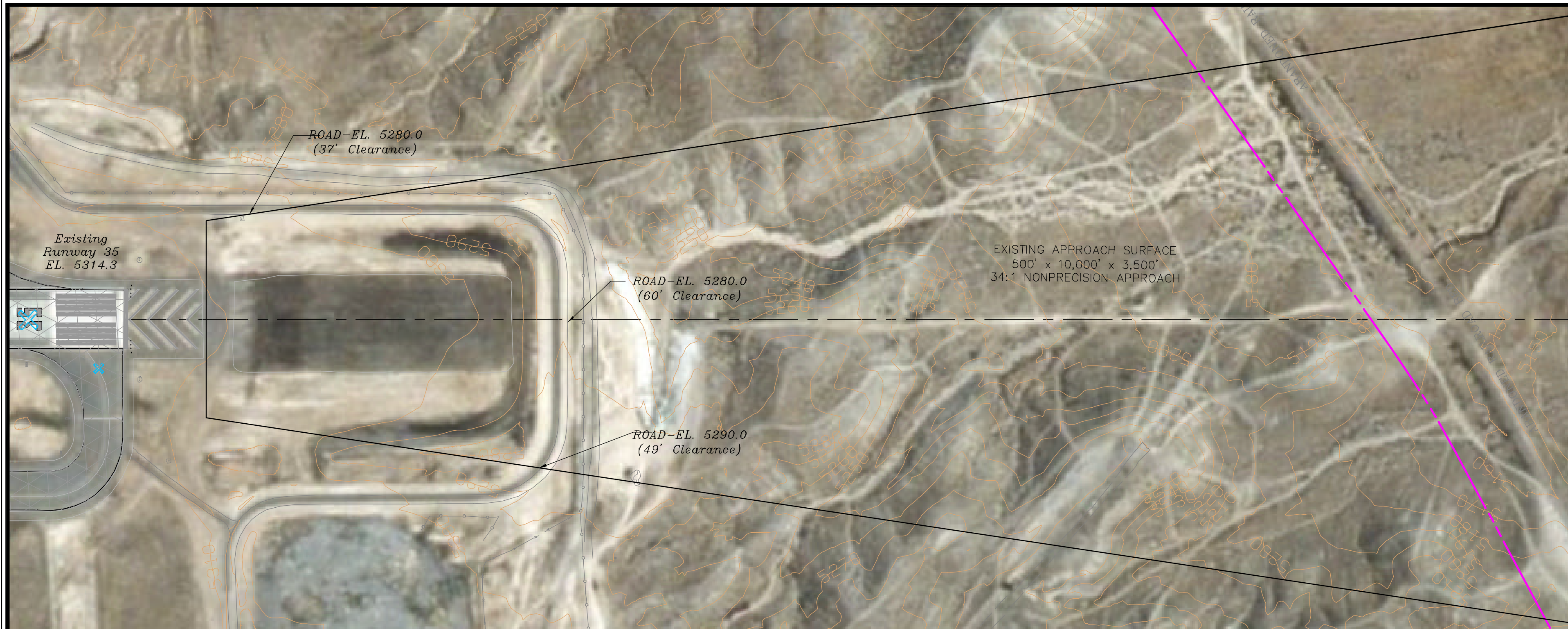

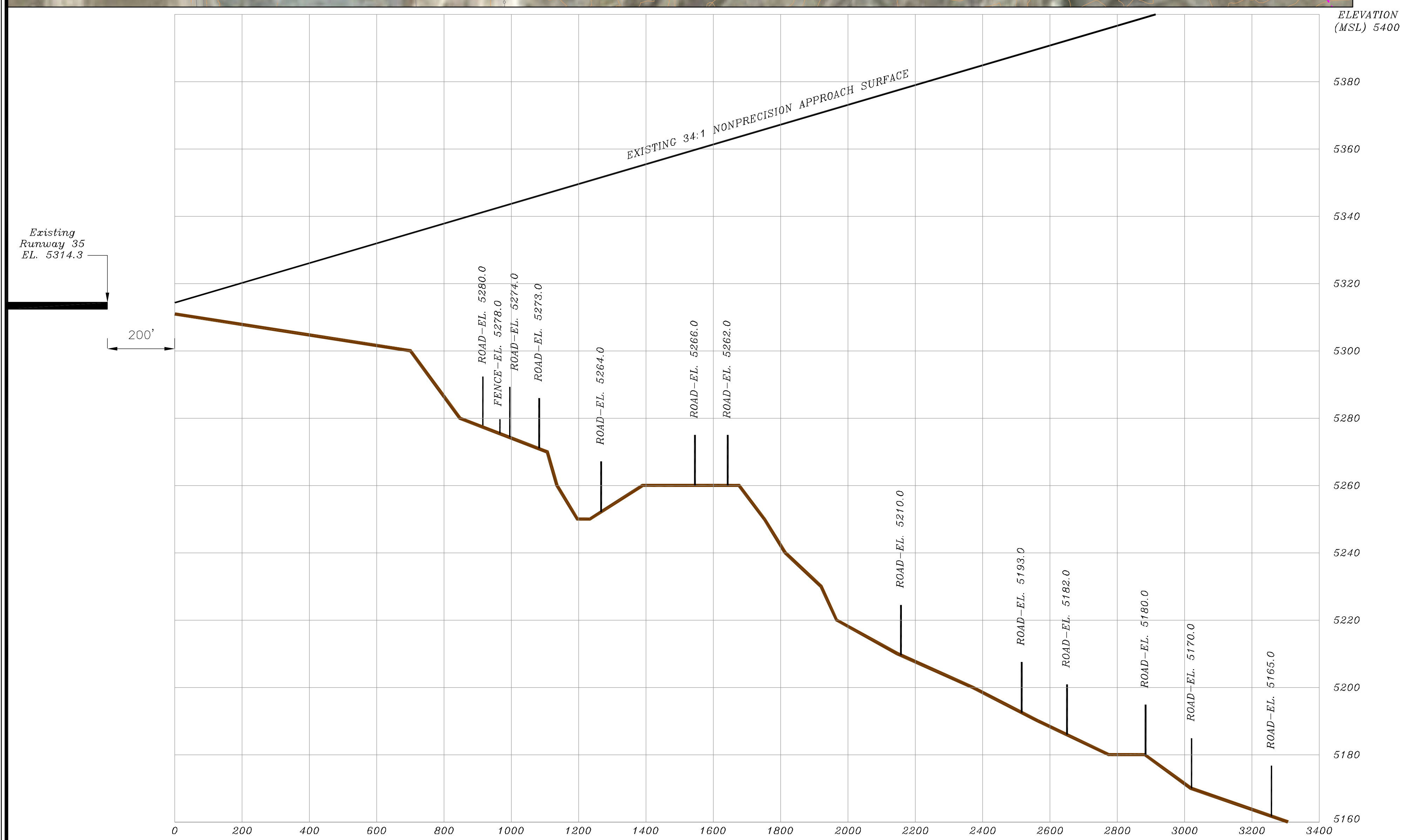

RUNWAY 35 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE					RUNWAY TO BE CLOSED

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Road obstructions reflect a safety clearance of 10' for dirt roads or private roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroad. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE DRAWING. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC12, AIRPORT OBSTRUCTION CHART.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3.

NORTH

Magnetic Declination
10° 22' 37.92" East
Annual Rate of Change
4.582' West (September 2001)

0 200 400 600
HORIZONTAL SCALE IN FEET

0 20 40 60
VERTICAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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ALBUQUERQUE INTERNATIONAL SUNPORT

INNER PORTION OF RUNWAY 35 APPROACH SURFACE DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

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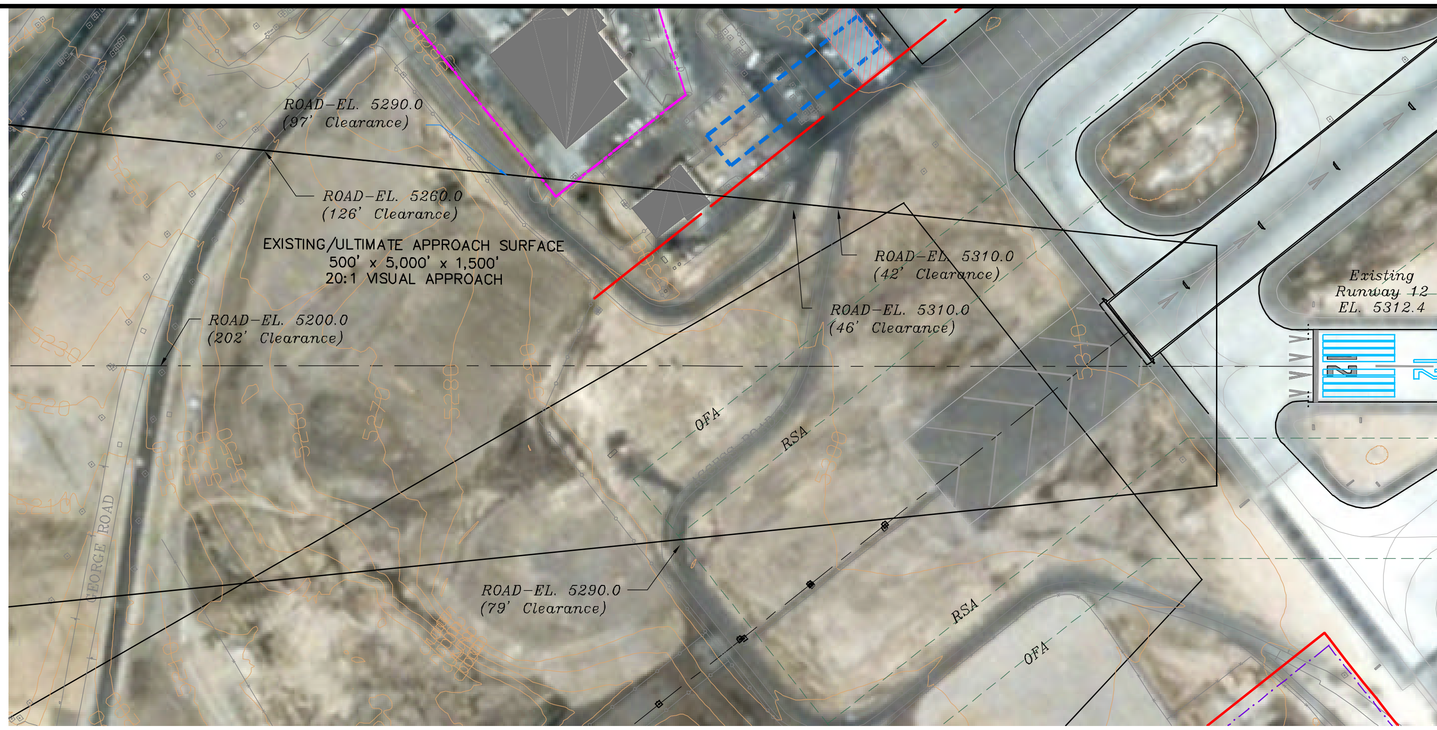
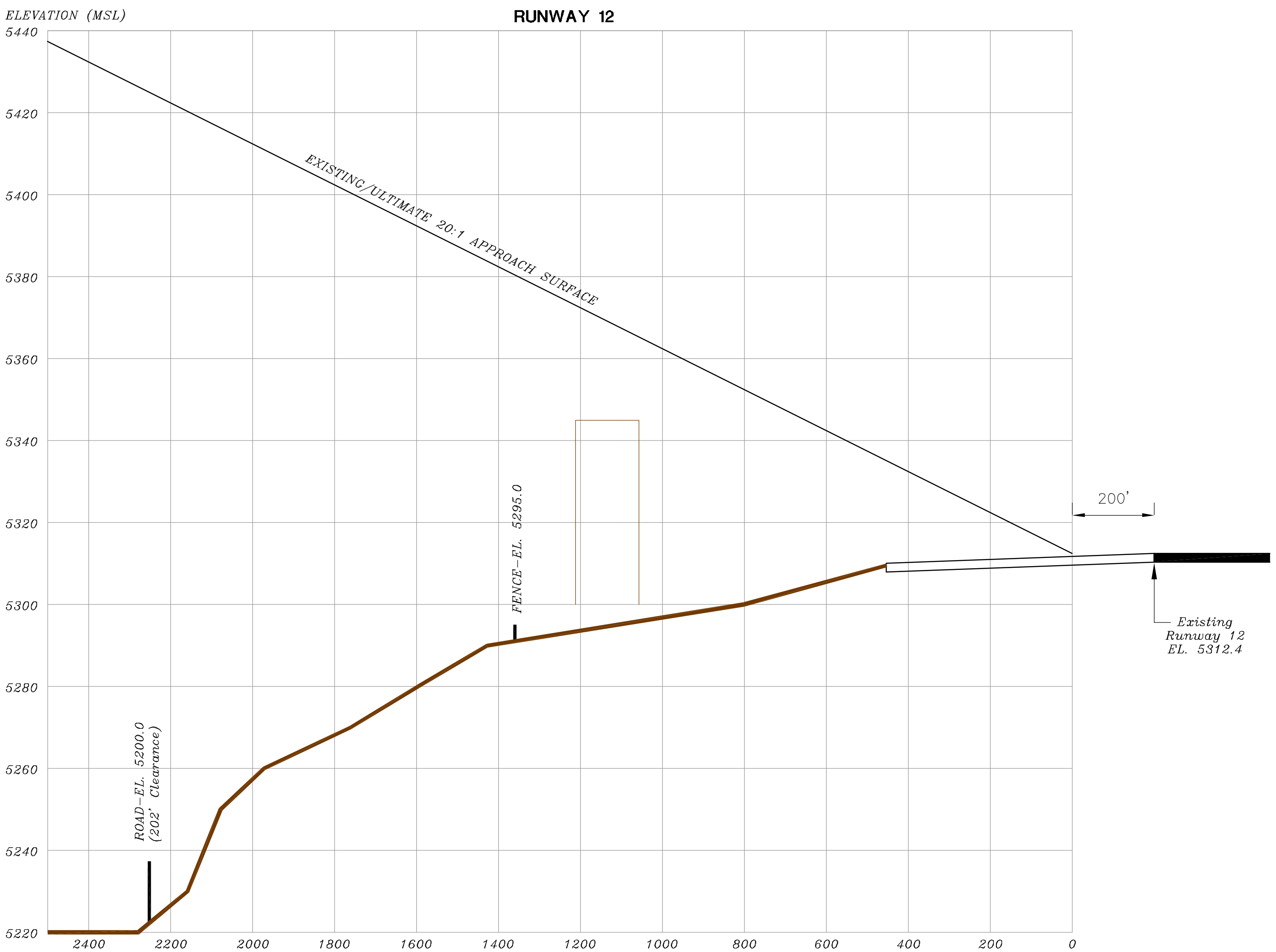




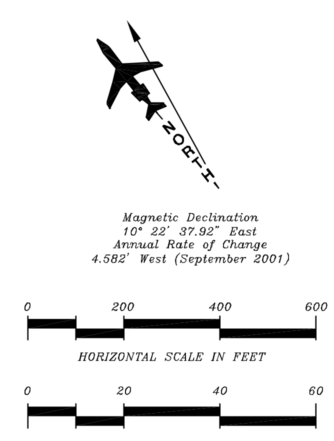
GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Road obstructions reflect a safety clearance of 10' for dirt roads or private roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroad. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE DRAWING. Additional obstruction data is illustrated on Aeronautical Data Sheet (ADS) National Geodetic Survey (NGS) ADSNM12 and National Ocean Survey (NOS) document OC12, AIRPORT OBSTRUCTION CHART.

2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3.

RUNWAY 12 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	–	–	–	–	–



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ALBUQUERQUE INTERNATIONAL SUNPORT

INNER PORTION OF RUNWAY 12 APPROACH SURFACE DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

SHEET 16 OF 22

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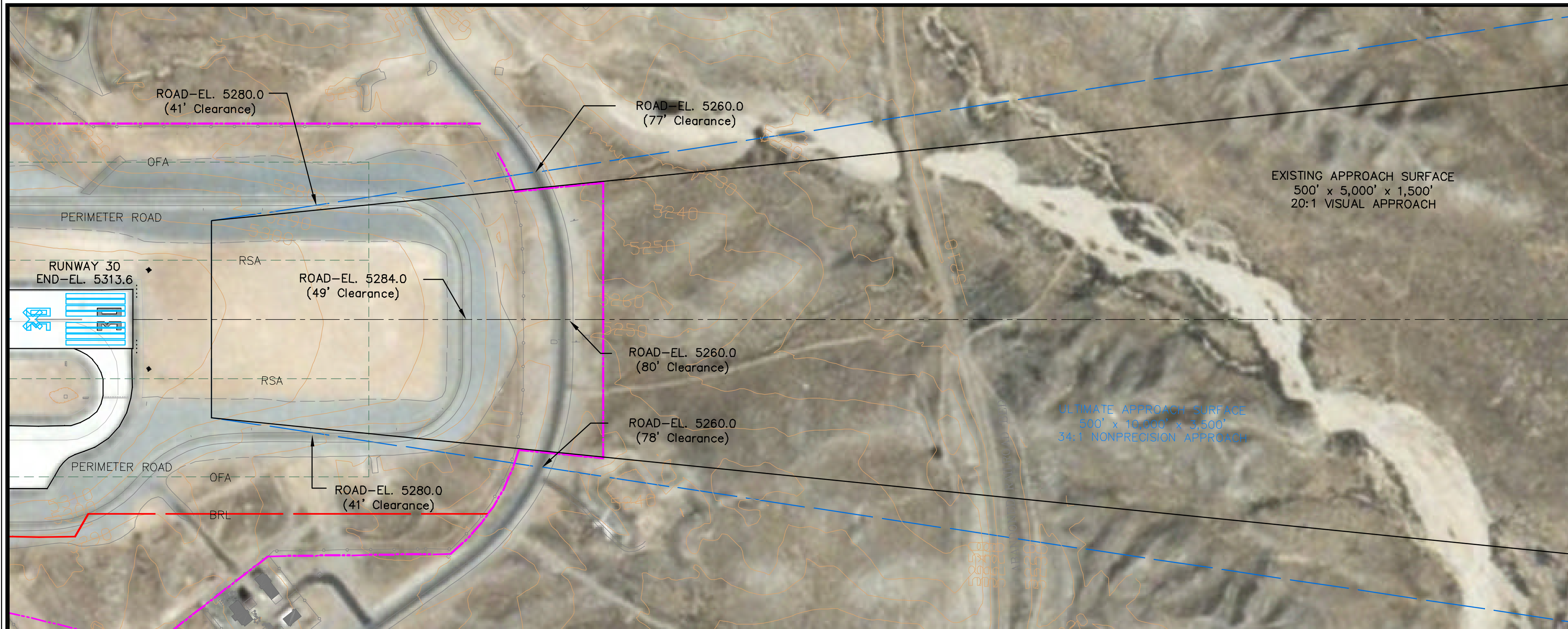

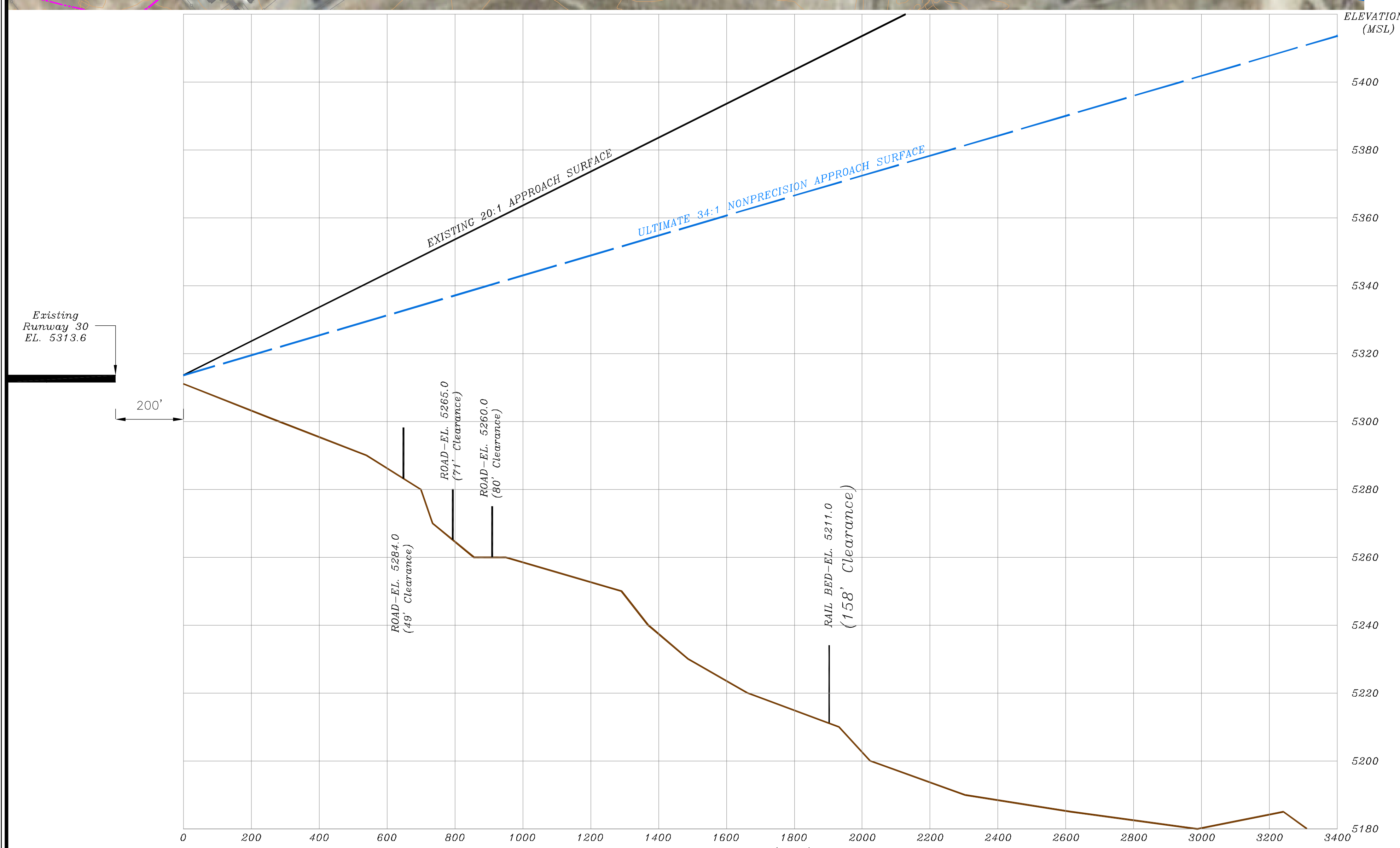

RUNWAY 30 OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE	-	-	-	-	-

GENERAL NOTES:

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2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWING, sheet 3.

NORTH

Magnetic Declination
10° 22' 37.92" East
Annual Rate of Change
4.582' West (September 2001)

0 200 400 600
HORIZONTAL SCALE IN FEET

0 20 40 60
VERTICAL SCALE IN FEET

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ALBUQUERQUE INTERNATIONAL SUNPORT

INNER PORTION OF RUNWAY 30 APPROACH SURFACE DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

SHEET 17 OF 22

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LEGEND

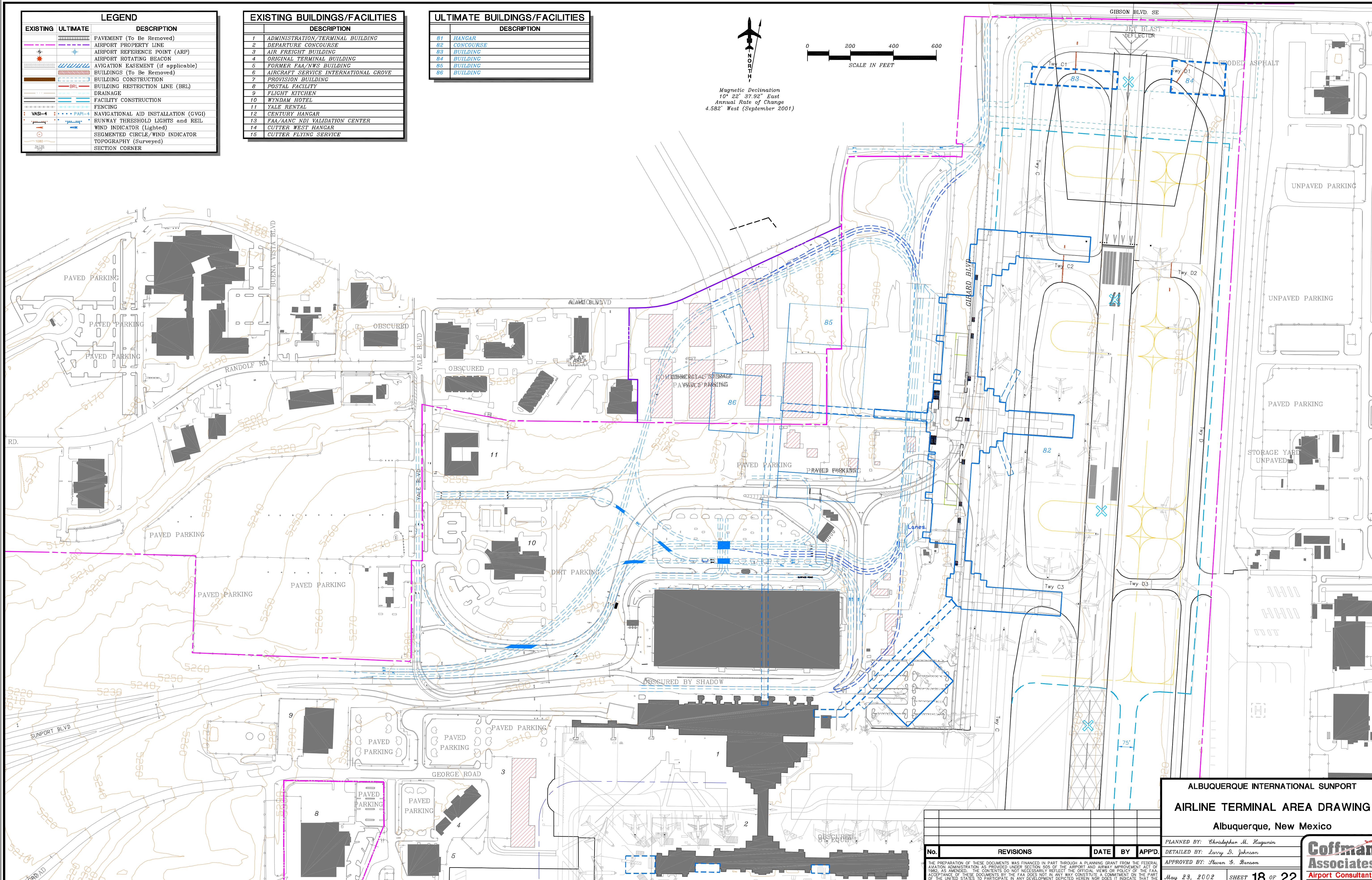
EXISTING	ULTIMATE	DESCRIPTION
		PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIGATION EASEMENT (if applicable)
		BUILDINGS (To Be Removed)
		BUILDING CONSTRUCTION
	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
VASI–4	PAPI–4	NAVIGATIONAL AID INSTALLATION (GVGI)
		RUNWAY THRESHOLD LIGHTS and REIL
		WIND INDICATOR (Lighted)
		SEGMENTED CIRCLE/WIND INDICATOR
1080		TOPOGRAPHY (Surveyed)
34 35 / 3 2		SECTION CORNER

EXISTING BUILDINGS/FACILITIES

	DESCRIPTION
1	ADMINISTRATION/TERMINAL BUILDING
2	DEPARTURE CONCOURSE
3	AIR FREIGHT BUILDING
4	ORIGINAL TERMINAL BUILDING
5	FORMER FAA/NWS BUILDING
6	AIRCRAFT SERVICE INTERNATIONAL GROVE
7	PROVISION BUILDING
8	POSTAL FACILITY
9	FLIGHT KITCHEN
10	WYNDAM HOTEL
11	YALE RENTAL
12	CENTURY HANGAR
13	FAA/AANC NDI VALIDATION CENTER
14	CUTTER WEST HANGAR
15	CUTTER FLYING SERVICE

ULTIMATE BUILDINGS/FACILITIES

	DESCRIPTION
81	HANGAR
82	CONCOURSE
83	BUILDING
84	BUILDING
85	BUILDING
86	BUILDING



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ALBUQUERQUE INTERNATIONAL SUNPORT

AIRLINE TERMINAL AREA DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 23, 2002 SHEET 18 OF 22

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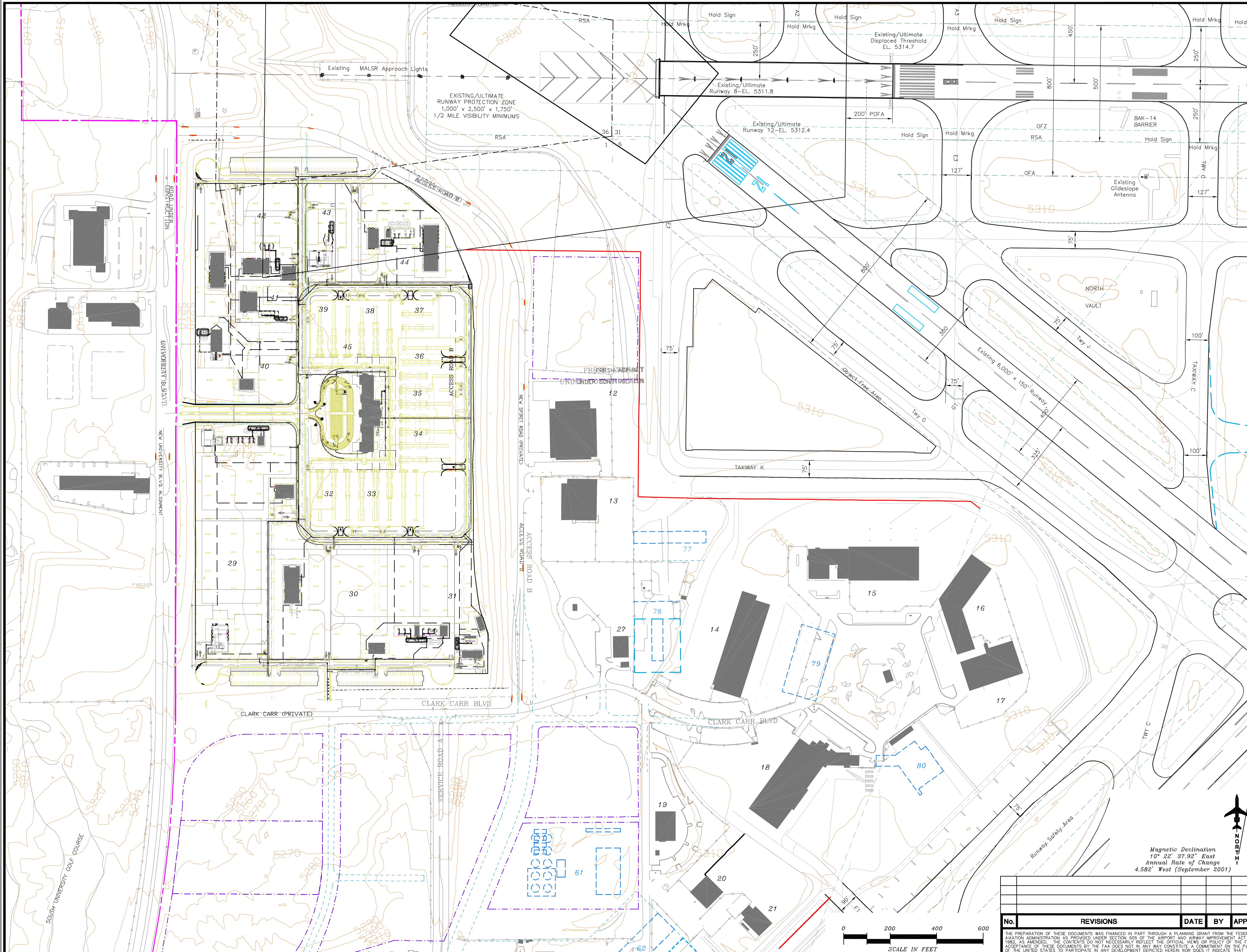

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIGATION EASEMENT (if applicable)
		BUILDINGS (To Be Removed)
		BUILDING CONSTRUCTION
	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
VASI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION (GVGI)
		RUNWAY THRESHOLD LIGHTS and REIL
		WIND INDICATOR (Lighted)
		SEGMENTED CIRCLE/WIND INDICATOR
1080		TOPOGRAPHY (Surveyed)
34 35 / 3 2		SECTION CORNER

ULTIMATE BUILDINGS/FACILITIES

	DESCRIPTION
61	FUEL FARM
62	AIR CARGO BUILDING
63	AIR CARGO BUILDING
64	AIR CARGO BUILDING
65	AIR CARGO BUILDING
66	AIR CARGO BUILDING
67	AIR CARGO BUILDING
68	AIR CARGO BUILDING
69	AIR CARGO BUILDING
70	AIR CARGO BUILDING
71	S.R.E. MAINTENANCE FACILITIES
72	S.R.E. MAINTENANCE FACILITIES
73	S.R.E. MAINTENANCE FACILITIES
74	S.R.E. MAINTENANCE FACILITIES
75	S.R.E. MAINTENANCE FACILITIES
76	S.R.E. MAINTENANCE FACILITIES
77	T-HANGAR (Building 22 Relocated)
78	T-HANGAR (Building 23 Relocated)
79	HANGAR (General Avaition)
80	HANGAR (General Aviation)
81	HANGAR
82	CONCOURSE

EXISTING BUILDINGS/FACILITIES

	DESCRIPTION
1	ADMINISTRATION/TERMINAL BUILDING
2	DEPARTURE CONCOURSE
3	AIR FREIGHT BUILDING
4	ORIGINAL TERMINAL BUILDING
5	FORMER FAA/NWS BUILDING
6	AIRCRAFT SERVICE INTERNATIONAL GROVE
7	PROVISION BUILDING
8	POSTAL FACILITY
9	FLIGHT KITCHEN
10	WYNDAM HOTEL
11	YALE RENTAL
12	CENTURY HANGAR
13	FAA/AANC NDI VALIDATION CENTER
14	CUTTER WEST HANGAR
15	CUTTER FLYING SERVICE
16	FBO HANGAR
17	FBO HANGAR
18	SEVEN BAR AVIATION
19	FAA AUTOMATED FLIGHT SERVICE STATION
20	FOUR SEASONS
21	WESTERN AIR
22	T-HANGAR
23	T-HANGAR
24	AIRPORT MAINTENANCE BUILDING
25	AIRPORT MAINTENANCE BUILDING
26	AIRPORT MAINTENANCE BUILDING
27	NATIONAL WEATHER SERVICE
28	AIR CARGO BUILDING
29	HERTZ SERVICE AREA
30	NATIONAL/ALAMO SERVICE AREA
31	ADVANTAGE SERVICE AREA
32	ADVANTAGE READY/RETURN
33	HERTZ READY/RETURN
34	ALAMO READY/RETURN
35	NATIONAL READY/RETURN
36	BUDGET READY/RETURN
37	DOLLAR READY/RETURN
38	AVIS READY/RETURN
39	THRIFTY/ENTERPRISE READY/RETURN
40	AVIS SERVICE AREA
41	ENTERPRISE SERVICE AREA
42	DOLLAR SERVICE AREA
43	THRIFTY SERVICE AREA
44	BUDGET SERVICE AREA
45	RENTAL CAR TERMINAL

No.	REVISIONS	DATE	BY	APP'D.

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ALBUQUERQUE INTERNATIONAL SUNPORT

GENERAL AVIATION AREA DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002 — SHEET 19 OF 22

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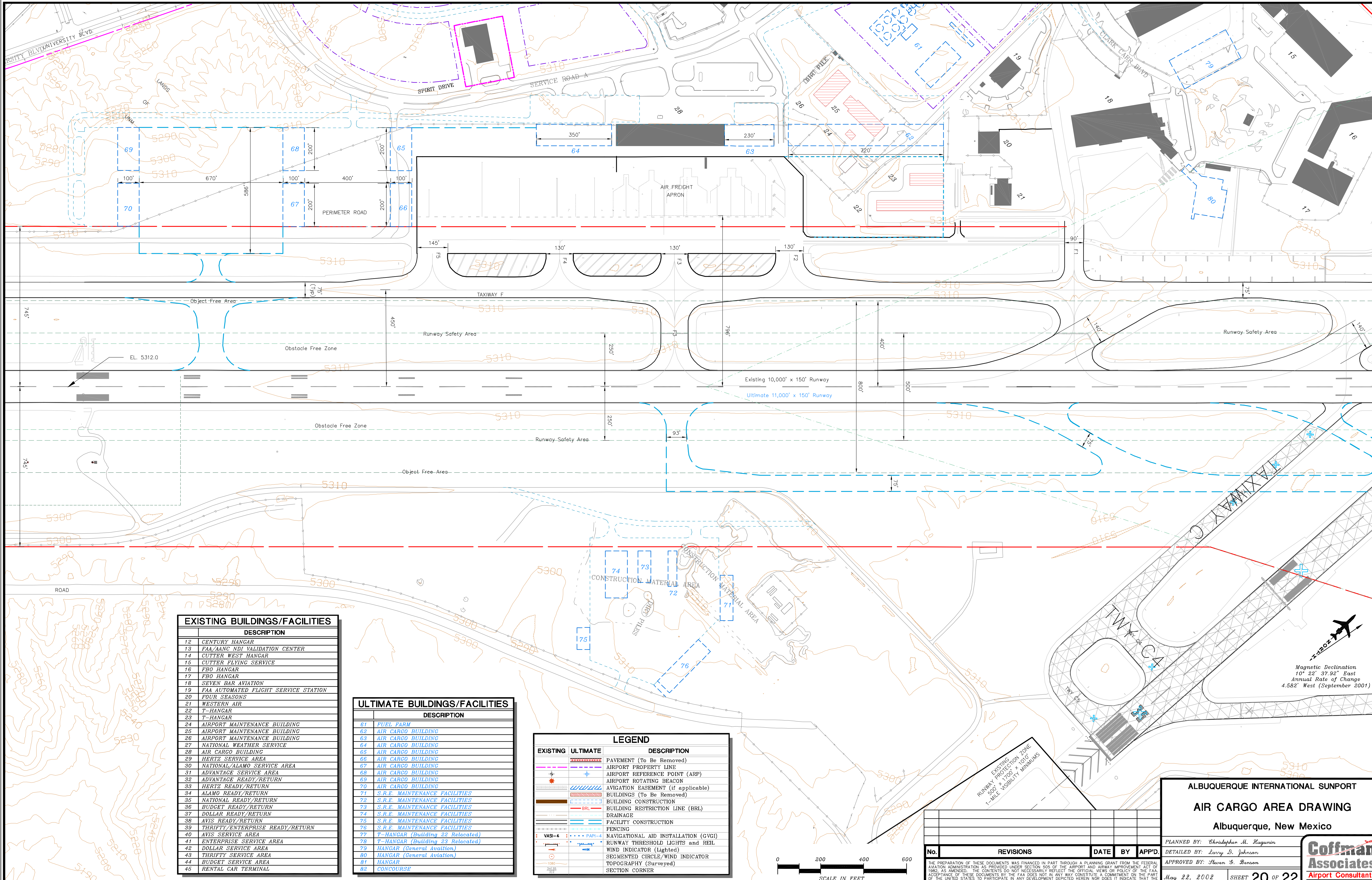

EXISTING BUILDINGS/FACILITIES

	DESCRIPTION
12	CENTURY HANGAR
13	FAA/AANC NDI VALIDATION CENTER
14	CUTTER WEST HANGAR
15	CUTTER FLYING SERVICE
16	FBO HANGAR
17	FBO HANGAR
18	SEVEN BAR AVIATION
19	FAA AUTOMATED FLIGHT SERVICE STATION
20	FOUR SEASONS
21	WESTERN AIR
22	T-HANGAR
23	T-HANGAR
24	AIRPORT MAINTENANCE BUILDING
25	AIRPORT MAINTENANCE BUILDING
26	AIRPORT MAINTENANCE BUILDING
27	NATIONAL WEATHER SERVICE
28	AIR CARGO BUILDING
29	HERTZ SERVICE AREA
30	NATIONAL/ALAMO SERVICE AREA
31	ADVANTAGE SERVICE AREA
32	ADVANTAGE READY/RETURN
33	HERTZ READY/RETURN
34	ALAMO READY/RETURN
35	NATIONAL READY/RETURN
36	BUDGET READY/RETURN
37	DOLLAR READY/RETURN
38	AVIS READY/RETURN
39	THRIFTY/ENTERPRISE READY/RETURN
40	AVIS SERVICE AREA
41	ENTERPRISE SERVICE AREA
42	DOLLAR SERVICE AREA
43	THRIFTY SERVICE AREA
44	BUDGET SERVICE AREA
45	RENTAL CAR TERMINAL

ULTIMATE BUILDINGS/FACILITIES

	DESCRIPTION
61	FUEL FARM
62	AIR CARGO BUILDING
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65	AIR CARGO BUILDING
66	AIR CARGO BUILDING
67	AIR CARGO BUILDING
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69	AIR CARGO BUILDING
70	AIR CARGO BUILDING
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74	S.R.E. MAINTENANCE FACILITIES
75	S.R.E. MAINTENANCE FACILITIES
76	S.R.E. MAINTENANCE FACILITIES
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78	T-HANGAR (Building 23 Relocated)
79	HANGAR (General Avaition)
80	HANGAR (General Aviation)
81	HANGAR
82	CONCOURSE

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIGATION EASEMENT (if applicable)
		BUILDINGS (To Be Removed)
		BUILDING CONSTRUCTION
	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
VASI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION (GVGI)
		RUNWAY THRESHOLD LIGHTS and REIL
		WIND INDICATOR (Lighted)
		SEGMENTED CIRCLE/WIND INDICATOR
1080		TOPOGRAPHY (Surveyed)
34 35 3 2		SECTION CORNER

No.	REVISIONS	DATE	BY	APP'D.

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ALBUQUERQUE INTERNATIONAL SUNPORT

AIR CARGO AREA DRAWING

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

May 22, 2002

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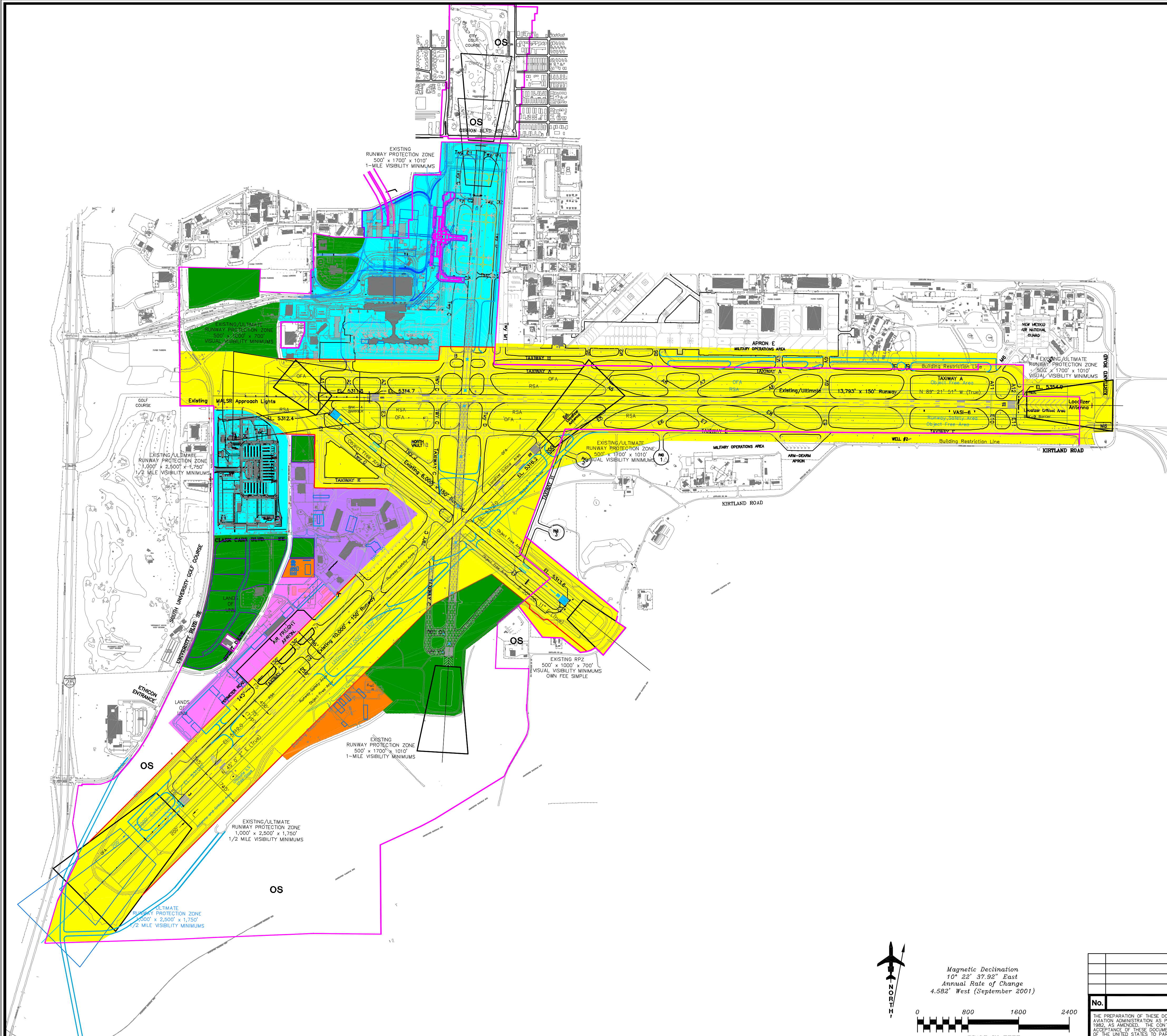

AIRPORT LAND USE LEGEND

AO	AIRFIELD OPERATIONS AREA
TA	PASSENGER TERMINAL AREA (Passenger Related Activities)
AC	AIR CARGO OPERATIONS AREA
GA	GENERAL AVIATION AREA
AS	AIRFIELD SUPPORT
CS	AIRPORT COMMERCIAL SUPPORT
OS	OPEN SPACE

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		ABANDONED PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIGATION EASEMENT (if applicable)
		BUILDING ABANDONMENT (To Be Removed)
		BUILDING CONSTRUCTION
	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
VASI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION (GVGI)
		RUNWAY THRESHOLD LIGHTS and REIL
		WIND INDICATOR (Lighted)
		SEGMENTED CIRCLE/WIND INDICATOR
1080		TOPOGRAPHY (Surveyed)
34 35 3 2		SECTION CORNER

NORTH

Magnetic Declination 10° 22' 37.92" East Annual Rate of Change 4.582' West (September 2001)

0 800 1600 2400

SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.

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ALBUQUERQUE INTERNATIONAL SUNPORT

ON-AIRPORT LAND USE DRAWING

Albuquerque, New Mexico

PLANNED BY: *Christopher M. Hugunin*
DETAILED BY: *Larry D. Johnson*
APPROVED BY: *Steven G. Benson*

May 22, 2002

SHEET 21 OF 22

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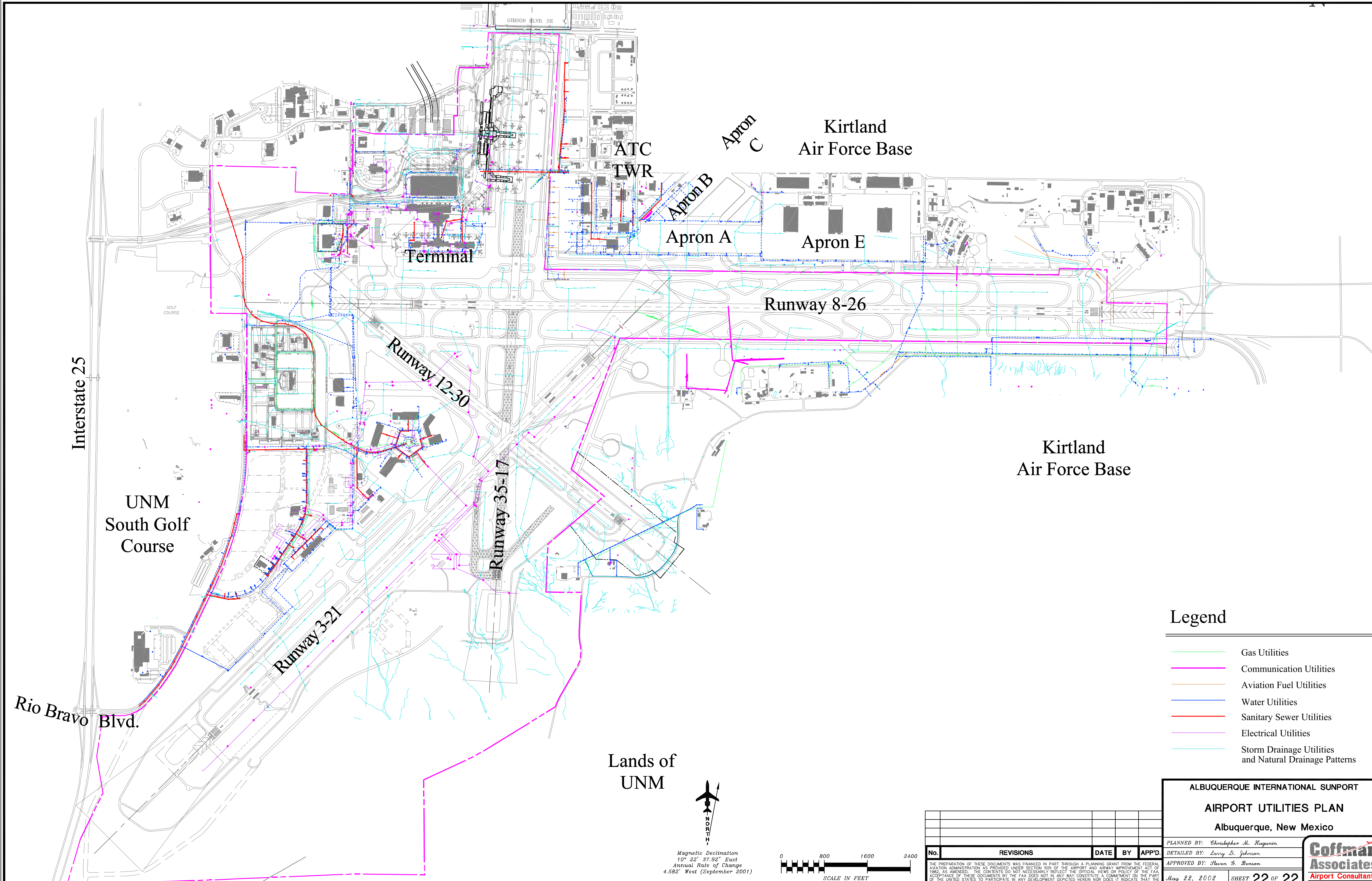

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ALBUQUERQUE INTERNATIONAL SUNPORT

AIRPORT UTILITIES PLAN

Albuquerque, New Mexico

PLANNED BY: Christopher M. Hugunin
DETAILED BY: Larry D. Johnson
APPROVED BY: Steven G. Benson

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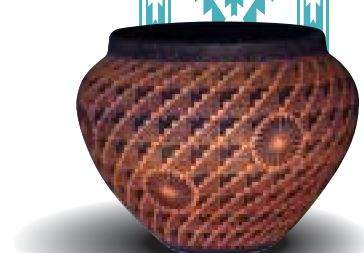
Chapter Five

Airfield Facilities

Section One

INVENTORY



Chapter Five
Airfield Facilities

Section One
INVENTORY

This section summarizes data on existing airfield facilities at Albuquerque International Sunport. Airfield facilities include runways, taxiways, airport lighting and navigational aids. Within this section is a description of the local airspace environment, local aircraft operating procedures, air traffic control and regional airports. The runway and taxiway system at Albuquerque International Sunport is identified on **Exhibit V-1-A**.

This chapter includes five sections: Inventory, Demand/Capacity, Facility Requirements, Alternatives and Recommended Program. Section One is a description of available facilities. Section Two compares forecast demand to the capacity of the available facilities to estimate when new facilities may be needed. Section Three establishes the type and size of facilities needed to accommodate future demand. Section Four evaluates alternatives for future development which will form the basis for recommended airfield development at Albuquerque International Sunport. Section Five will describe the recommended development plan and include the future capital projects required to implement the plan.

RUNWAYS

Table V-1-A summarizes runway data at Albuquerque International Sunport. There are four operational runways at Albuquerque International Sunport: Runway 8-26, Runway 3-21, Runway 12-30 and Runway 17-35. Primary Runway 8-26 is 13,793 feet long, 150 feet wide, and oriented in a east-west direction. The Runway 8 landing threshold is displaced 991 feet. While not available for landing, the 991 feet of runway prior to the displaced landing threshold is available for departures to

TABLE V-1-A
Airfield Facility Data

	Runway 8-26	**Runway 3-21**	**Runway 12-30[3]**	**Runway 17-35**
Runway Length (feet) Runway Width (feet)	13,793[1] 150	10,000 150	6,000 150	10,000[2] 150
Runway Surface Surface Material Surface Treatment Condition	 Concrete Grooved Good	 Concrete Grooved Good	 Concrete Grooved Good	 Asphalt/Concrete Grooved Poor
Load Bearing Strength (lbs.) Single Wheel Loading Dual Wheel Dual Tandem Wheel Double Dual Tandem Wheel	 100,000 210,000 360,000 720,000	 100,000 210,000 360,000 720,000	 65,000 120,000 N/A N/A	 100,000 210,000 360,000 700,000
Runway Pavement Markings Condition	Precision Good	Precision Good	Non-Precision Good	Non-Precision Good
Arresting Device	BAK-9 (26) BAK-12/14 (8)	BAK-12/14 (3)	N/A	N/A
Airfield Lighting	HIRL RCL (8) TDL (8)	HIRL RCL (3) TDL (3)	MIRL	MIRL
Approach Aids	MALSR (8) VASI-6 (8, 26) RVR (8) REIL (26)	MALSR (3) PAPI-4 (3, 21) RVR (3)	PAPI-4 (30) REIL (30)	VASI-4 (17, 35) REIL (17, 35)
Traffic Pattern	Right (8) Left (26)	Right (3) Left (21)	Right (12) Left (30)	Right (17) Left (35)
Instrument Approach Procedures	ILS (8) VOR or TACAN or GPS (8)	ILS (3)	N/A	NDB or GPS (35)
Departure Procedures	Albuquerque One Largo Two			
Weather Reporting	ASOS, ATIS			
Other Facilities	Airport Beacon, Lighted Wind Cone			
Airport Elevation	5,352'			
Taxiway Lighting Aids	MITL, Directional Signs			
Taxiway Markings	Centerline, Hold Positions			

[1] Runway 8 threshold displaced 991'.
[2] Runway 17 threshold displaced 890'.
[3] 155,000 pounds single-tandem (ST).

Source: FAA 5010 Airport Master Record Form, U.S. Terminal Procedures, Southwest Volume 1 of 2, Airport Records.

98MP19-V1A-6/2/00

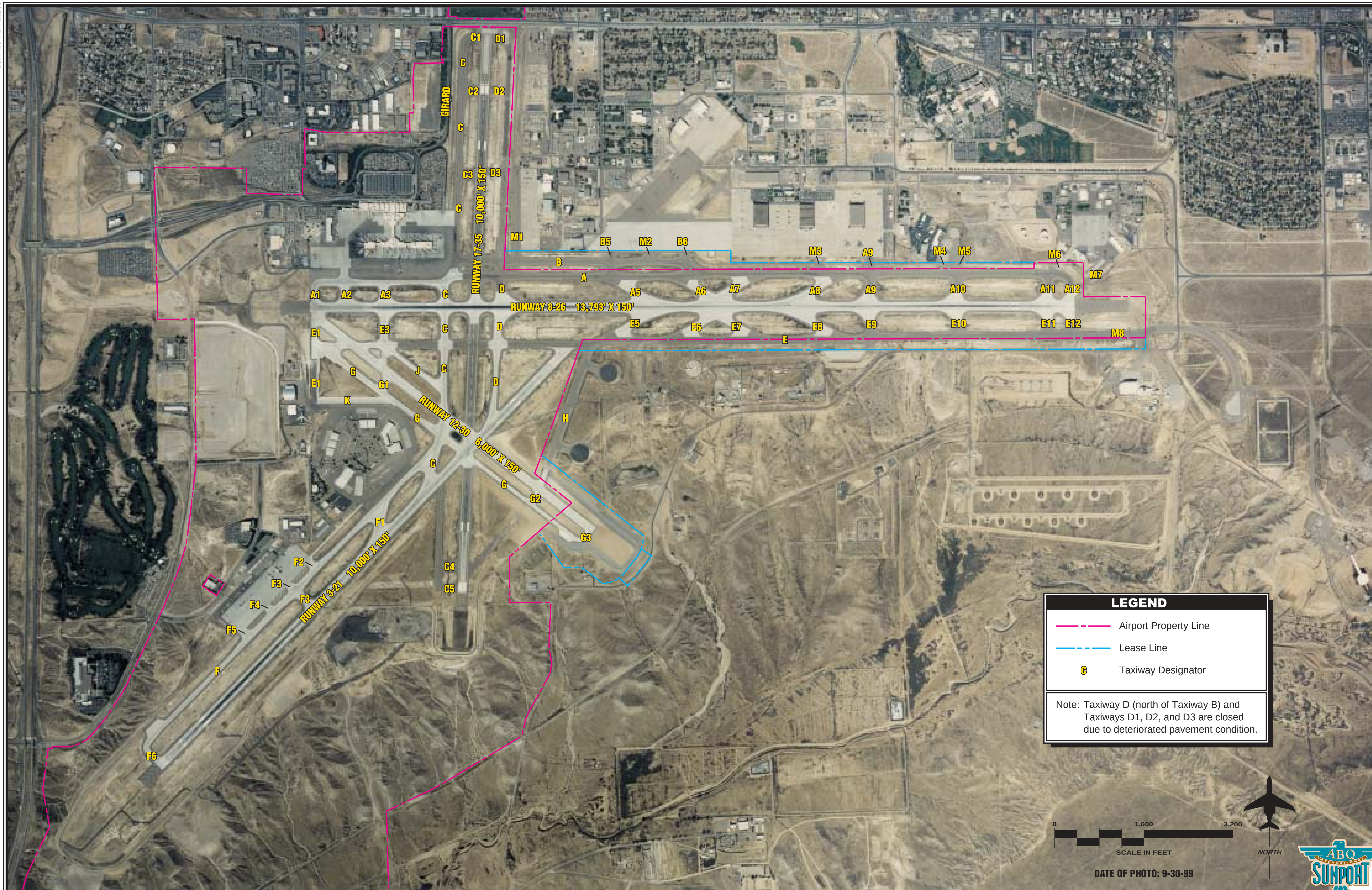


Exhibit V-1-A
RUNWAY/TAXIWAY DESIGNATIONS

the east. Runway 8-26 is constructed of concrete. A 500-foot paved overrun is available at the Runway 8 end. A 1,000-foot paved overrun is available at the Runway 26 end. These paved areas also serves as blast pads for each runway end. Blast pads reduce soil erosion near the runway end by deflecting the initial exhaust blast generated by turbojet aircraft departing the airport.

Secondary Runway 3-21 was recently upgraded in 1995. Runway 3-21 is 10,000 feet long, 150 feet wide, and oriented in a northeast-southwest direction. A paved blast pad extends 750 feet behind the Runway 3 threshold.

Crosswind Runway 12-30 was reconstructed and extended in 1999. Runway 12-30 is 6,000 feet long, 150 feet wide and oriented in a northwest-southeast direction.

Crosswind Runway 17-35 is oriented in a north-south direction and is 10,000 feet long and 150 feet wide. The Runway 17 threshold is displaced 890 feet to provide clearance over Gibson Boulevard. Similar to the Runway 8 end, while the 890 feet of pavement prior to the landing threshold is not available for landing, it is available for departures to the south. A 9-foot high blast fence is located 110 feet from the Runway 17 end to prevent aircraft exhaust and/or propellor blast from extending across Gibson Boulevard. Informal noise abatement procedures at the airport are designed to limit the use of Runway 17-35 to small, non turbine-powered aircraft to minimize noise exposure to adjacent noise sensitive areas. The previous Master Plan recommended closing Runway 17-35 to provide for the expansion of the passenger terminal facilities.

Each runway has a 130-foot wide grooved surface. The grooved surface consists of a series of small channels embedded in the runway surface which extend laterally across the width of the runway. The grooved surface reduces ice formation, promotes water drainage and reduces the risks of hydroplaning.

Each runway and taxiway surface is equipped with paved shoulders. Paved shoulders reduce the effects of jet exhaust blast on the area surrounding the pavement, stabilizing the soil and reducing erosion.

TAXIWAYS

The taxiway system at Albuquerque International Sunport is identified on **Exhibit V-1-A.** The taxiway system at the airport is comprised primarily of parallel taxiways for each runway and a series of connecting taxiways extending between the runway and parallel taxiways and between the parallel taxiways and apron areas.

Taxiway A is a full length parallel taxiway located along the northern side of Runway 8-26. The west portion of the taxiway is located along the southern boundary of the terminal apron, and the east portion fronts Kirtland AFB. The western portion of Taxiway A (from Taxiway C to the Runway 8 threshold) is located 450 feet from Runway 8-26. The eastern portion of Runway 8-26 (from Taxiway C to the

Runway 26 end) is located 550 feet north of Runway 8-26. Taxiway A is 75 feet wide.

Taxiways A1 through A3 and Taxiways A5 through A12 are connecting taxiways extending between Runway 8-26 and Taxiway A. Taxiways A5, A6, A7 and A8 are acute-angled, or "high speed"connecting taxiways. The design of these taxiways enables aircraft to exit the runway at higher speeds, which serves to increase airfield capacity by reducing the amount of time an aircraft occupies the runway. Taxiways A2 and A11 are by-pass taxiways. By-pass taxiways allow aircraft ready for departure to pass aircraft awaiting departure clearances. This serves to increase airfield capacity as well by reducing the amount of time that aircraft must wait for departure clearance. Each connecting taxiway varies in width from 100 feet to 130 feet.

Taxiway B is a partial parallel taxiway located 267 feet north of Taxiway A. Taxiway B extends from Taxiway C to the main Kirtland Air Force Base apron. Taxiways B5 and B6 connect Taxiway B with the main Kirtland Air Force Base apron. Taxiway B is 75 feet wide. Taxiway B5 is 90 feet wide, while Taxiway B6 is 130 feet wide.

Taxiway C is located west of Runway 17-35, extending the full length of the runway. The distance Taxiway C is located from Runway 17-35 varies from 400 feet (north of Runway 8-26 and south of Runway 3-21) to 480 feet (south of Runway 8-26 to Runway 3-21). Taxiway C varies in width from 75 feet to 130 feet.

Along with portions of Taxiway A, B and E, Taxiways C1 through C5 connect Taxiway C and Runway 8-26. Taxiway C4 serves as a by-pass taxiway at the Runway 17 end. During the reconstruction of Runway 3-21, the portion of Taxiway C between Taxiway G and Runway 3-21 was reconstructed to serve as a high speed exit for aircraft landing Runway 3. Therefore, this portion of Taxiway C does not extend parallel to Runway 17-35. However, access is still provided to the Runway 35 end. Taxiways C1 through C5 vary in width from 75 feet to 130 feet.

Taxiway D lies parallel to Runway 17-35, approximately 420 feet east of the runway centerline. Taxiway D does not extend the entire length of Runway 17-35, extending only from the Runway 17 end to Runway 3-21. Taxiways D1, D2 and D3 connect Taxiway D with Runway 17-35. Taxiways A, B and E also connect Runway 17-35 with Taxiway D. Taxiway D varies in width fro 75 feet to 130 feet. Taxiways D1, D2 and D3 vary in width from 75 feet to 100 feet. Taxiway D (north of Taxiway B), Taxiways D1, D2, and D3 were closed in April 2000 due to the deteriorated condition of the pavement.

Taxiway E is the second full-length parallel taxiway for Runway 8-26. The Runway 8-26/Taxiway E separation distance varies the full-length of the taxiway. The western portion of Taxiway E (from Taxiway H to the Runway 8 threshold) is located 675 feet south of Runway 8-26 to provide sufficient clearance for the Runway 8 glideslope antenna. The portion of Taxiway E from Taxiway E5 to Taxiway E9 is located 600 feet from Runway 8-

26. The eastern portion of Taxiway E (from Taxiway H to the Runway 26 threshold) is located 550 feet from Runway 8-26. Taxiway E varies in width from 75 feet to 100 feet.

Taxiways E1 through E12 connect Runway 8-26 to Taxiway E. Taxiways E5, E6, E7 and E8 are high speed exit taxiways. Taxiway E11 also serves as a by-pass taxiway at the Runway 26 end. Taxiway E1 extends to Taxiway K, providing access to the general aviation area. These taxiways vary in width from 100 feet to 130 feet.

Taxiway F lies parallel to Runway 3-21, approximately 450 feet west of the runway centerline. Taxiway F does not run the entire length of Runway 3-21, extending only from the Runway 3 end to Taxiway G. Taxiways F1, F3 and C connect Taxiway F with Runway 3-21. Taxiways F2, F3, F4 and F5 connect Taxiway F with the air cargo apron. Taxiway F is 75 feet wide. Taxiways F1 through F5 vary in width from 100 feet to 130 feet.

Taxiway G is the parallel taxiway serving Runway 12-30. Extending from the Runway 30 end to Taxiway E, Taxiway E1 is used to access the Runway 12 end. Taxiway G varies in width from75 feet to 130 feet. The Runway 12-30/Taxiway G separation distance varies from 340 feet northwest of Runway 3-21 to 320 feet southwest of Runway 3-21.

Taxiways G1, G2 and G3 connect Taxiway G to Runway 12-30 and are 75 feet wide.

Taxiway H extends between Taxiway E and Runway 12-30. Taxiway H is located on Kirtland Air Force Base and primarily provides access to military Hot Pads. Taxiway H is 175 feet wide and is maintained by Kirtland Air Force Base.

Taxiway J extends between Taxiway E3 and Taxiway C. Taxiway J is located 340 feet from Runway 12-30.

Taxiways M1 through M8 are military taxiways, providing access to apron facilities on Kirtland Air Force Base. These taxiways vary in width from 75 feet to 130 feet.

AIRFIELD PAVEMENT STRENGTH

Since aircraft landing gear type and configuration dictate how an aircraft's weight is distributed on the pavement, airfield pavement strengths are expressed in terms of the configuration of the main landing gear design on aircraft. Aircraft are typically designed with a tricycle landing gear configuration that consists of a single nose wheel strut and two main landing gear struts located under the wing. Some larger aircraft have a center landing gear strut to distribute weight more evenly.

Single wheel loading (SWL) refers to the design of certain aircraft landing gear which have a single wheel on each main landing gear strut. Dual wheel loading (DWL) refers to certain aircraft landing gear which have two wheels on each main landing gear strut. Dual tandem wheel (DTW) loading refers to certain aircraft landing gear which have four wheels on each main landing gear strut. Double dual tandem wheel loading (DDTWL) refers to certain aircraft landing gear which have twin sets of dual tandem wheel assemblies on each main landing gear strut, or eight wheel on each main landing gear strut. **Table V-1-B** summarizes pavement strength ratings for the runways, taxiways, and apron areas at Albuquerque International Sunport.

AIRFIELD LIGHTING

Airfield lighting systems extend an airport's usefulness into periods of darkness and/or poor visibility. A variety of lighting systems are installed at the airport for this purpose. These lighting systems, categorized by function, are summarized below. **Exhibit V-1-B** identifies the location of these lighting aids on the airport.

IDENTIFICATION LIGHTING

The location of an airport at night is universally indicated by a rotating beacon. A rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The rotating beacon at the airport is located on top of a 55-foot steel tower in the center of the general aviation complex parking area.

RUNWAY AND TAXIWAY LIGHTING

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

Runway 8-26 and Runway 3-21 are equipped with high intensity runway lights (HIRL). Runways 12-30 and 17-35 are equipped with medium intensity runway lights (MIRL). Each taxiway is equipped with medium intensity taxiway lighting (MITL).

Additional lighting aids are available for aircraft landing Runway 8 and 3, particularly during inclement weather conditions when visibility might be reduced. For both Runway 8 and Runway 3, the designed touchdown zone and runway centerline are lighted.

AIRFIELD SIGNS

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

98MP19-V1B-6/2/00

Exhibit V-1-B
AIRFIELD FACILITIES AND
NAVIGATIONAL AIDS

TABLE V-1-B
Airfield Pavement Characteristics Data

	Surface Material	Strength Rating (000's lbs.)	Condition	Year Constructed
RUNWAYS				
8-26	Concrete	100(S),210(D),360(DT),720(DDT)	Fair	1995
3-21	Concrete	100(S),210(D),360(DT),720(DDT)	Good	1995
12-30	Concrete	65(S),120(D),155(ST)	Excellent	1999
17-35	Asphalt/Concrete	100(S),210(D),360(DT),700(DDT)	Poor[1]/Fair[2]	1986
TAXIWAYS				
A	Asphalt Portions[3] Concrete Portion[4]	100(S),210(D),360(DT),720(DDT) 100(S),210(D),360(DT),720(DDT)	Good Good	1993 1996
A1-A3	Concrete	100(S),210(D),360(DT),720(DDT)	Good	1996
A5-A9, A11-A12	Asphalt Portions Concrete Portions	100(S),210(D),360(DT),720(DDT) 100(S),210(D),360(DT),720(DDT)	Good Good	1993 1996
A10	Asphalt/Concrete	100(S),210(D),360(DT),720(DDT)	Good	1996
B, B5	Asphalt	100(S),210(D),360(DT),720(DDT)	Good	1993
C	Asphalt Portions Concrete Portions	100(S),210(D),360(DT),720(DDT) 100(S),210(D),360(DT),720(DDT)	Poor/Fair Good	1985 1994
C1, C2, C3	Asphalt	100(S),210(D),360(DT),720(DDT)	Poor	1985
C4, C5	Asphalt	100(S),210(D),360(DT),720(DDT)	Fair	1985
D (closed north of Taxiway B)	Asphalt Portions Concrete Portions	100(S),210(D),360(DT),720(DDT) 100(S),210(D),360(DT),720(DDT)	Poor Good	Prior to 1960 1994/1996
D1, D2, D3 (closed)	Asphalt	100(S),210(D),360(DT),720(DDT)	Poor	1985[5]
E, E1	Asphalt Portions Concrete Portions	100(S),210(D),360(DT),720(DDT) 100(S),210(D),360(DT),720(DDT)	Good Excellent	1991 1999
E3	Concrete	100(S),210(D),360(DT),720(DDT)	Good	1996
E5-E12	Asphalt Portions Concrete Portions	100(S),210(D),360(DT),720(DDT) 100(S),210(D),360(DT),720(DDT)	Good Good	1993 1996
F, F1-F4, F6	Concrete	100(S),210(D),360(DT),720(DDT)	Good	1994
F5	Concrete	100(S),210(D),360(DT),720(DDT)	Good	1996
G	Concrete	65(S),120(D),155(ST) 100(S),210(D),360(DT),720(DDT)	Good Excellent	1994[6] 1999[7]
G1	Concrete	100(S),210(D),360(DT),720(DDT)	Excellent	1999
G2, G3	Concrete	65(S),120(D),155(ST)	Excellent	1999

TABLE V-1-B (Continued) Airfield Pavement Characteristics Data	Surface Material	Strength Rating (000's lbs.)	Condition	Year Constructed
TAXIWAYS (Continued)				
J	Concrete	100(S),210(D),360(DT),720(DDT)	Good	1996
K	Concrete	100(S),210(D),360(DT),720(DDT)	Good	1995
M1	Asphalt	N/A	Fair	1993[8]
M2-M7	Asphalt	100(S),210(D),360(DT),720(DDT)	Good	1993
M8	Asphalt	100(S),210(D),360(DT),720(DDT)	Good	1991
APRON AREAS				
Terminal	Asphalt Portions Concrete Portions	100(S),210(D),360(DT),720(DDT) 100(S),210(D),360(DT),720(DDT)	Fair Fair	1986 1996
Air Cargo	Original Concrete Extended Portions	100(S),210(D),360(DT),720(DDT) 100(S),210(D),360(DT),720(DDT)	Good Fair	1989 1996
General Aviation[9]	Asphalt	N/A	Poor	1979
Century Aerospace	Original Asphalt Extended Asphalt	N/A	Poor Fair	1985 1992
NDI Validation Hangar	Asphalt	N/A	Fair	1971
T-Hangars	Asphalt	N/A	Poor	1984

1 North of Runway 8-26
2 South of Runway 8-26
3 East of Runway 17-35
4 West of Runway 17-35
5 Portions reconstructed in 1985, remainder of pavement was constructed prior to 1960
6 Portions Northwest of Runway 3-21
7 Portions Southeast of Runway 3-21
8 Portions reconstructed in1993, remainder of pavement was constructed prior to 1960
9 Includes apron at Western Air and Four Seasons

Runway 8-26, Runway 3-21 and Runway 17-35 are equipped with lighted runway distance remaining signs. Placed in 1,000 intervals along the runway edge, runway distance remaining signs notify the pilot of the amount of usable runway length left in feet.

VISUAL APPROACH LIGHTING

Two types of visual approach slope guidance aids are utilized at the Albuquerque International Sunport: visual approach slope indicator (VASI) and precision approach path indicator

(PAPI). While configured differently, the VASI and PAPI have a similar purpose of providing visual approach slope guidance to pilots, but vary in their configuration. In general, each lighting aid consists of a system of lights, located at various distances from the runway threshold, which when interpreted by the pilot give him or her an indication of being above, below, or on the designed descent path to the runway.

The VASI-6 installed at the Runway 8 and 26 ends consist of three individual light units placed in a row near the designed touchdown point along the runway, each containing two lights. The VASI-6 is specifically designed to provide two approach paths to the runway end. The first two light units provide an approach path for use by pilots of smaller aircraft. Combined, the three light units provide a second approach path for use by pilots operating larger aircraft with higher cockpits.

The VASI-4 installed at the Runway 17 and 35 ends consists of two individual light units placed in a row near the designed touchdown point along the runway, each containing two lights. In contrast to the VASI-6, the VASI-4 only provides a single approach path.

In contrast to the VASI system, the PAPI consists of a single row of lights equipped with either two or four lights. Runway 3, 21 and 30 are equipped with PAPI-4s.

RUNWAY END IDENTIFICATION LIGHTING

Runway end identifier lights (REILs) provide rapid and positive identification of the approach end of a runway. REILs are typically used on runways with no other approach lighting systems. The REIL system consists of two synchronized flashing lights, located laterally on each side of the runway threshold facing the approaching aircraft. REILs are installed at the Runway 17, 35, 30 and 26 ends.

APPROACH LIGHTING

Approach lighting systems consists of a configuration of signal lights extending into the approach area from the runway threshold to aid pilots transitioning from instrument flight to visual flight and landing. A medium intensity approach lighting system with runway alignment indicator lights (MALSR) is installed at the Runway 3 and 8 ends to assist pilots in landing to these runway ends during inclement weather conditions. The MALSR extends 1,400 feet from the runway threshold.

POWER DISTRIBUTION

All airfield lighting systems are powered through two interconnected power vaults. The "north vault" generally controls lighting the north side of the airfield (Runway 8-26 and its parallel taxiways, while the "south vault" southern portions of the airfield (Runway 3-21 and related taxiways). Emergency generators at each vault can power airfield lighting systems should commercial electrical service fail.

PAVEMENT MARKINGS

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. Precision runway markings identify the runway centerline, designation, touchdown point, threshold and pavement edge. Non precision runway markings identify the runway centerline, threshold and designation. Runway 8-26 and Runway 3-21 are equipped with precision runway markings. Runway 17-35 and Runway 12-30 are equipped with non precision runway markings.

Taxiway and apron taxilane centerline markings are provided to assist aircraft using these airport surfaces. Aircraft hold positions are also marked on all taxiway surfaces. Pavement markings also identify aircraft parking positions.

LANDING ARRESTORS

Regular use of the airport by military aircraft at Kirtland Air Force Base has necessitated the need for the installation of landing arrestor systems at Albuquerque International Sunport. A barrier arresting cable (BAK) 9 is located inside the Runway 26 overrun. A BAK 12/14 is located 1,000 feet from the Runway 3 and 8 landing thresholds.

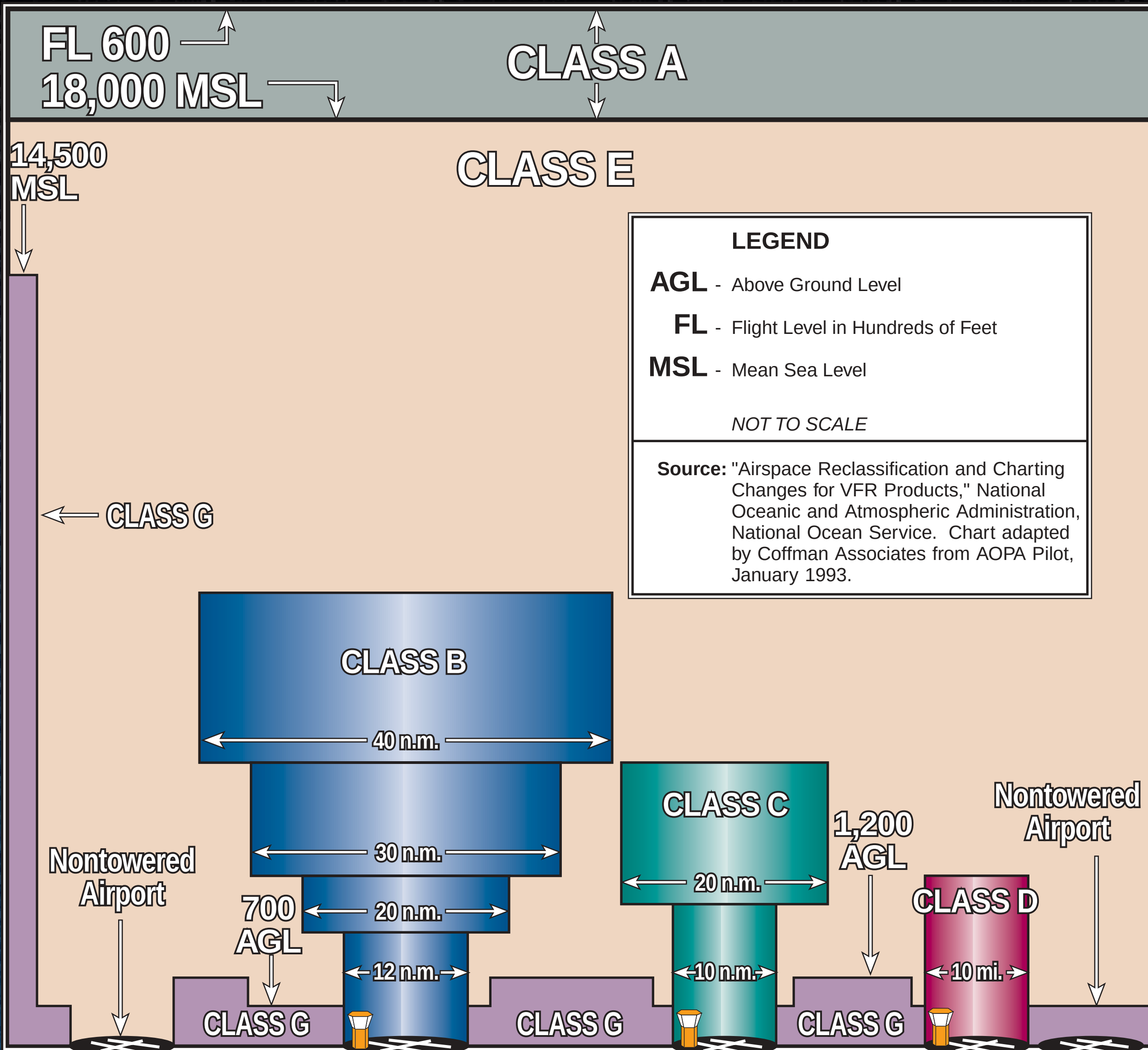
The landing arrestor equipment consists of a taut steel cable stretched across the runway between two controlled cable feed-out systems located on each side of the runway. A landing aircraft "snags" the cable with a "tail hook" and is decelerated to a stop by the controlled cable feed-out system. On the BAK 12/14, the cable remains flush with the runway pavement until activated by personnel in the air traffic control tower. On the BAK 9, the cable remains above the runway pavement supported by "doughnut style" rings.

VICINITY AIRSPACE

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

Class A airspace is controlled airspace and includes all airspace from 18,000 feet mean sea level (MSL) to Flight Level 600 (approximately 60,000 feet MSL). Class B airspace is controlled airspace surrounding high capacity commercial service airports (i.e.

98MP19-V1C-6/6/00



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

Exhibit V-1-C
AIRSPACE CLASSIFICATION

Phoenix Sky Harbor International Airport, Los Angeles International Airport). Class C airspace is controlled airspace surrounding lower activity commercial service (i.e. Albuquerque International Sunport) and some military airports. Class D airspace is controlled airspace surrounding airports with an airport traffic control tower (Santa Fe Municipal Airport). All aircraft operating within Class A, B, C, and D airspace must be in contact with the air traffic control facility responsible for that particular airspace. Class E is controlled airspace that encompasses all instrument approach procedures and low altitude federal airways. Only aircraft conducting instrument flights are required to be in contact with air traffic control when operating within Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio communications with air traffic control facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist. Class G airspace is uncontrolled airspace that does not require contact with an air traffic control facility.

The airspace in the vicinity of Albuquerque International Sunport is depicted on **Exhibit V-1-D**. Albuquerque International Sunport is located within Class C airspace. Class C airspace is a two-tier airspace structure designed to manage aircraft arrivals and departures at an airport with an airport traffic control tower, which is served by radar approach control and meets certain passenger enplanement and instrument departure requirements. The inner Class C surface for Albuquerque International Sunport extends for a five-mile radius from the surface to 9,400 feet mean sea level (MSL). The outer surface generally extends for at a 10-nautical mile radius from 6,900 feet MSL to 9,400 feet MSL. A portion of the Class C airspace to the southeast (over the Sandia Mountain Range) has a floor 7,800 MSL.

The airspace outside Class C airspace is Class E airspace that extends from 700 feet above ground level (AGL) to 18,000 feet MSL. Outside this level of Class E airspace, is Class E airspace which primarily encompasses the low altitude Federal (Victor) airways. Victor airways are corridors of airspace eight miles wide that extend upward from 1,200 feet AGL to 18,000 feet MSL, and extend between VOR navigational facilities. The Victor airways in the vicinity of Albuquerque International Sunport emanate from the Albuquerque VORTAC.

A number of military training routes are located within the vicinity of Albuquerque International Sunport. Military jets travel on these routes above 10,000 feet MSL at speeds in excess of 250 knots.

While not considered part of the U.S. Airspace Structure, the boundaries of National Park Service Areas, and U.S. and Wildlife Service areas, and U.S. Forest Wilderness and Primitive areas are noted on aeronautical charts. While aircraft operations are not specifically restricted over these areas, aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface.

REGIONAL AIRPORTS

A review of the airports near Albuquerque International Sunport has been made to identify and distinguish the type of air service provided in the area surrounding the airport. The location of these airports from Albuquerque International Sunport are depicted on **Exhibit V-1-D**. Information on each airport was derived from the *FAA 5010-1 Airport Master Record Form*.

Double Eagle II Airport is located approximately 11 nautical miles northwest of Albuquerque International Sunport. As the designated general aviation reliever airport for Albuquerque International Sunport, Double Eagle II Airport is expected to relieve congestion and provide for greater capacity at Albuquerque International Sunport by providing an alternate facility for general aviation aircraft.

Double Eagle II Airport is owned by the City of Albuquerque and operated by the Aviation Department. Santa Fe Municipal Airport is the only other regional airport providing commercial air service. However, this is currently limited to regional aircraft connecting through Albuquerque International Sunport. Specific features of the regional airports are summarized in **Table V-1-C**.

NAVIGATIONAL AIDS

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

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

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

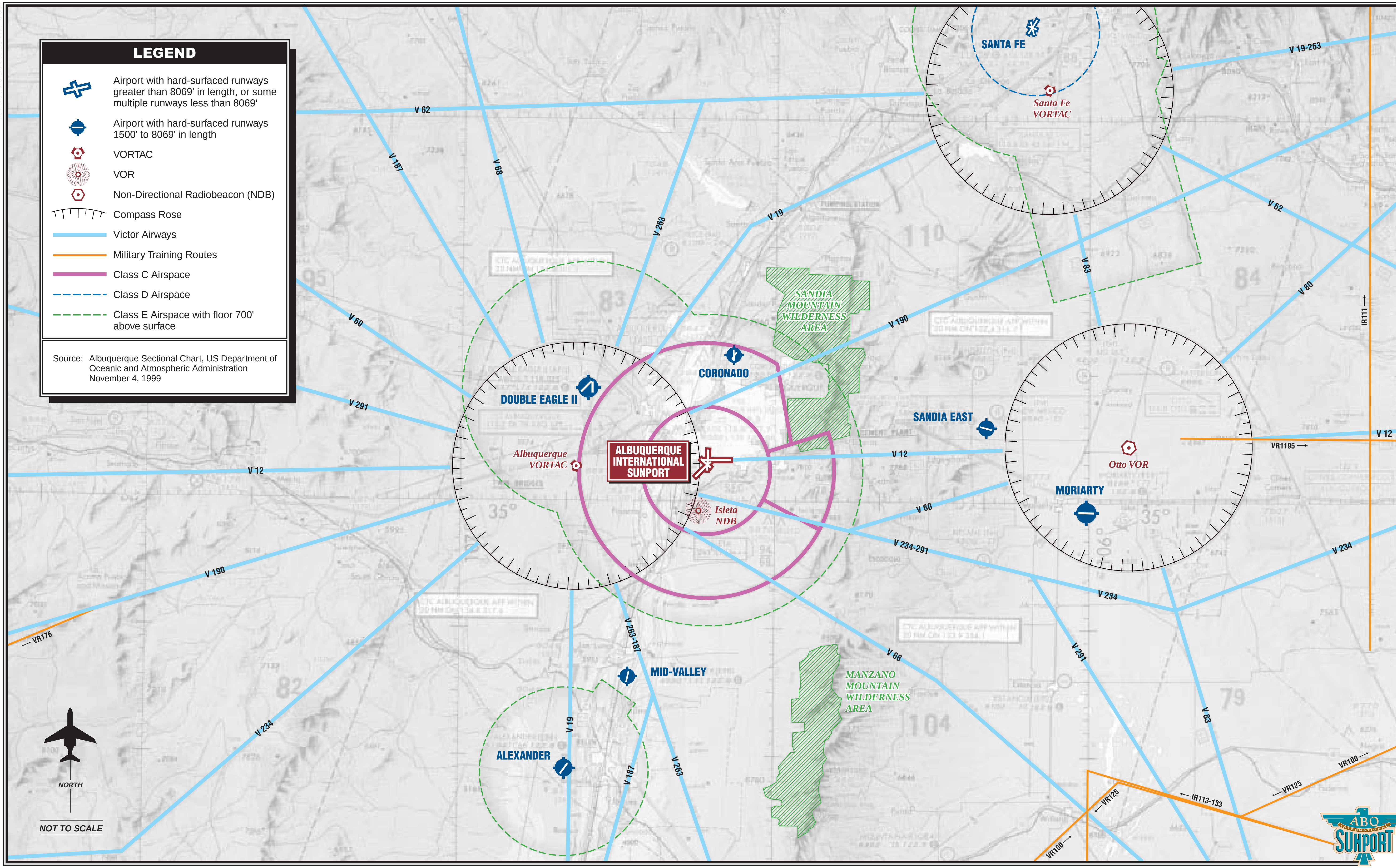


Exhibit V-1-D
AREA AIRSPACE

TABLE V-1-C **Regional Airport Data**							
Airport Name (ownership)	**Airport Type**	**Location From ABQ**	**Longest Runway (Surface)**	**Based Aircraft Total**	**Annual Operations**	**IAP**	**Services [1]**
Double Eagle II (public)	General Aviation	11 NM Northwest	7,400 (asphalt)	261	51,100	Y	F,M,H,T, C,I,R,S
Coronado (private)	General Aviation	9 NM North	4,010 (asphalt)	131	86,510	N	F,H,T
Santa Fe (public)	Comm. Service	42 NM Northeast	8,342 (asphalt)	179	93,000	Y	F,M,H,T, C,I,R,S
Moriarty (public)	General Aviation	29 NM East	7,700 (asphalt)	32	6,000	N	F,H,T,G
Mid-Valley (private)	General Aviation	18 NM Southwest	4,340 (asphalt)	107	2,300	N	F,M,H,T, C,I,R,S
Alexander (public)	General Aviation	26 NM Southwest	6,601 (asphalt)	28	13,273	N	F,M,H,T, I,R

ABQ - Albuquerque International Sunport
NM - Nautical Mile
IAP - Instrument Approach Procedure

[1] F- Fuel, M - Airframe, Avionics, and/or Powerplant Maintenance and Repair, H - Hangar Storage, T- Tiedowns, C - Charter, I - Instruction, R - Aircraft Rental, S - Aircraft Sales, G - Gliders and Towing, A - Agricultural Application, AM - Air Ambulance

Source: FAA *Form 5010-1, Airport Master Record*

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

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

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

GPS was developed and deployed by the United States Department of Defense as a dual-use (civil and military) radionavigation system. GPS provides two levels of service: the GPS standard positioning system (SPS), which supports civil GPS uses; and the GPS precise positioning system (PPS), which is restricted to U.S. Armed Forces, U.S. Federal Agencies and selected allied armed forces and governments use.

Presently, the GPS SPS, reserved for civil aviation users, does not meet all requirements for civil aviation. Additional frequencies are needed to meet system requirements. As part of the GPS Modernization effort, a second civil aviation signal is planned to be available with new satellite launches beginning in 2005. A third signal will become available in 2007 with the further launch of new satellites.

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

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

Once augmented, GPS will become the primary Federally provided radio-navigation system. During the transition, the FAA plans to phase-out existing navigational aids as dependence on these systems is reduced by the capabilities of the GPS system. **Exhibit V-1-E** depicts the *1999 Federal Aviation Radionavigation Plan* for the implementation of GPS augmentation and phase-out of traditional navigational aids.

LOCAL OPERATING PROCEDURES

Albuquerque International Sunport is situated at 5,352 feet MSL. The traffic pattern altitude for all aircraft at the airport is 7,000 feet MSL (1,645 feet AGL). Runways 26, 21, 30 and 35 utilize a left traffic pattern. In this manner, most aircraft approach the desired runway end following a series of left-hand turns. Runways 8, 3, 12 and 17 utilize a right traffic pattern.

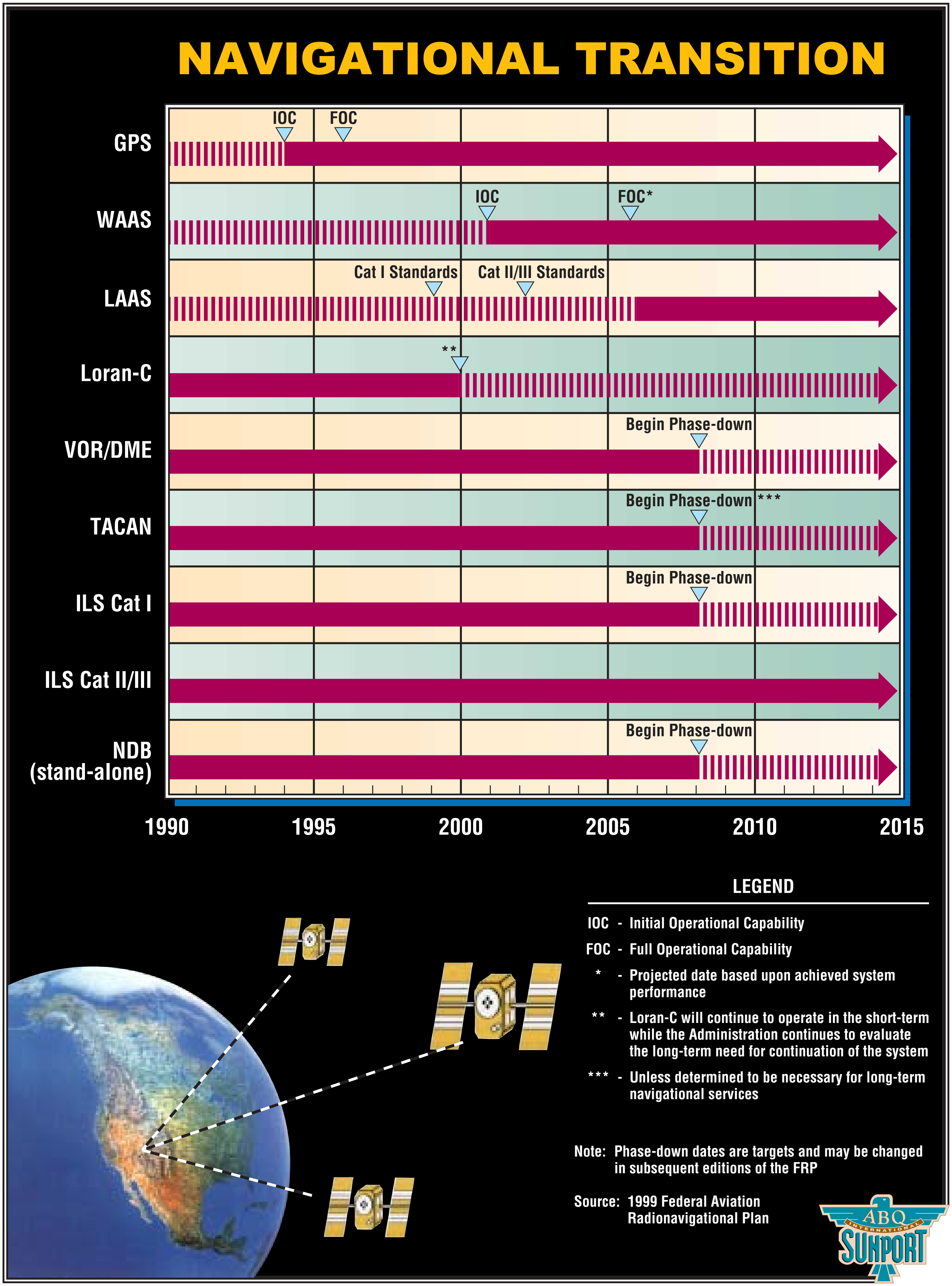


Exhibit V-1-E
RADIONAVIGATIONAL PLAN

NOISE ABATEMENT

In cooperation with the Airport Traffic Control Tower (ATCT) and airport users, an informal noise abatement program has been established for Albuquerque International Sunport by the City of Albuquerque Aviation Department. The following summarizes the program:

- Unless the crosswind (wind flowing perpendicular to the travel of the aircraft) for other runways exceeds 15 knots, exceeds aircraft operating limits, or unsafe conditions preclude the use of other runways, Runway 35 is not used for turbojet or turboprop departures.

- Unless otherwise directed by the ATCT, nonturbo-type aircraft making a left turn from Runway 8 are requested to delay their turn until the east field boundary.

- Between 9 p.m. and 7 a.m., all aircraft departing Runway 8 are issued a right turn, weather permitting.

- From 7 a.m. to 9 p.m. crews of jet aircraft departing Runway 8, turning left, should delay starting the turn until 13.5 DME from the Albuquerque VORTAC. This procedure is only used when the cloud ceiling is 5,000 feet MSL and visibility is greater than seven miles.

INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of predetermined maneuvers established by the FAA using electronic navigational aids that assist pilots in locating and landing at an airport during low visibility and cloud ceiling conditions. There are currently four instrument approach procedures at Albuquerque International Sunport: Instrument Landing System (ILS) approach to Runway 8, ILS Approach to Runway 3, VOR or TACAN or GPS approach to Runway 8 and NDB or GPS approach to Runway 35. Details of the published instrument approaches are provided in **Table V-1-D**.

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

The localizer (LOC) antennas for each approach is located beyond the far end of the runway. The localizer antenna for Runway 8 is situated on the extended Runway 8-26 centerline, approximately 1,500 feet east of the Runway 26 threshold. The localizer antenna for Runway 3 is situated along the extended Runway 3-21 centerline, approximately 675 feet north of the Runway 21 threshold. These antennas emit very high frequency (VHF) signals that provide the pilot with course deviation (left or right of the runway centerline and the degree of deviation) information.

TABLE V-1-D
Instrument Approach Data

	WEATHER MINIMUMS BY AIRCRAFT TYPE					
	Category A/B		Category C		Category D	
	CH	VIS	CH	VIS	CH	VIS
ILS RUNWAY 3 APPROACH						
Straight-In ILS	200	.5	200	.5	200	.5
Localizer Only[1]	300	.5	300	.5	300	.75
Circling	500	1	500	1.5	600	2
ILS RUNWAY 8 APPROACH						
Straight-In ILS	200	.5	200	.5	200	.5
Localizer Only[2]	300	.5	300	.5	300	.75
Circling	500	1	500	1.5	600	2
VOR or TACAN or GPS RUNWAY 8						
Straight-In	900	.75	900	2	900	2.25
Circling[3]	900	1	900	2.5	900	2.75
Distance Measuring Equipment (DME) Minima						
Straight-In	400	.5	400	.5	400	1
Circling	500	1	500	1.5	600	2
NDB or GPS RUNWAY 35						
Straight-In	400	1	400	1	400	1.25
Circling	500	1	500	1.5	600	2

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

Category A/B 0-120 knots (Cessna 172, Beechcraft Kingair)
Category C 121-140 knots (Canadair Challenger, Boeing 737)
Category D 141-165 knots (Gulfstream IV, Boeing 747)
CH -Cloud Height (in feet above ground level)
VIS - Visibility (in statute miles)
[1] For inoperative MALSR, increase Category D visibility .25 miles
[2] For inoperative MALSR, increase Category D RVR to 5,000
[3] For Category B Aircraft, visibility minimums are 1.25 miles
Source: U.S. Terminal Procedures, Southwest Volume 1 of 2

The ultra high frequency (UHF) glide slope (GS) transmitter for Runway 8 is located on the south side of the runway, approximately 1,000 feet east of the Runway 8 landing threshold. The glide slope transmitter for Runway 3 is located on the east side of the runway, approximately 1,000 feet northeast of the Runway 3 landing threshold. The transmitters provide a signal indicating whether the aircraft is above or below the designed glide path.

The Runway 3 ILS approach is equipped with an outer marker beacon to provide pilots with a secondary indication of their distance from the runway end. The outer marker for Runway 3 is located six nautical miles southwest of the Runway 3 end. The Runway 8 ILS approach is equipped with an outer marker and inner marker beacon. The outer marker beacon is located 6.1 nautical miles west of the Runway 8 threshold. The middle marker is located one-half mile from the Runway 8 threshold.

Both the Runway 3 ILS approach and Runway 8 ILS approach provide the airport with the lowest approach visibility minimums. Utilizing either of these approaches, a properly equipped aircraft and pilot can land at the airport with cloud ceilings as low as 200 feet above the ground and visibility reduced to one-half mile. The cloud ceiling and/or visibility minimums increase if only the localizer portion of the approach is used or an aircraft lands at different runway end (defined as a circling approach) after using the Runway 8 or Runway 3 ILS approach.

The VOR or TACAN or GPS approach to Runway 8 provides different capabilities for aircraft not equipped to utilize the Runway 8 ILS approach. For this approach, aircraft can utilize any one of the navigational aids described to complete the approach. Aircraft are not required to have capabilities for all the navigational aids to complete the approach. The Albuquerque VORTAC is used by aircraft equipped with a VOR or TACAN receiver.

The NDB or GPS approach to Runway 35 provides capabilities for landings to the north. The NDB portion of the approach utilizes the Isleta NDB located approximately 2.6 nautical miles southwest of the airport.

ARRIVAL AND DEPARTURE PROCEDURES

To expedite aircraft arrivals and departures to Albuquerque International Sunport, the FAA has established a series of Standard Terminal Arrival (STAR) and Standard Instrument Departure (SID) procedures. The STAR is a preplanned air traffic control procedure designed to provide the transition from the enroute phase of the flight to an outer fix or instrument approach fix/arrival waypoint in the terminal area. The SID is a preplanned air traffic control procedure that provides the transition from the terminal area to the enroute phase of the flight.

The Curly Two Arrival, Friho Three Arrival, Lavan Three Arrival and Miera

Two Arrival are designated STARs for Albuquerque International Sunport. The Albuquerque One Departure and Largo Two Departure are designated SIDs for Albuquerque International Sunport.

AIR TRAFFIC CONTROL

The airport traffic control tower (ATCT) is located north of Runway 8-26 on Kirtland Air Force Base. Owned and operated by the FAA, the ATCT has a staff of 54 personnel. The ATCT operates 24 hours daily. Tower personnel provide an array of control services for aircraft arriving and departing Albuquerque International Sunport.

Tower personnel also provide an airport traffic information service (ATIS) which is a recorded message, updated hourly. ATIS generally provides pilots with the airport's recent weather conditions and any notices to airmen (NOTAM's) filed for the day that are pertinent to Albuquerque International Sunport or its environs.

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

WEATHER REPORTING

Albuquerque International Sunport is equipped with an Automated Surface Observation System (ASOS). The ASOS provides automated aviation weather observations 24 hours a day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. The ASOS reports cloud ceiling, visibility, temperature, dew point, wind direction and speed, altimeter setting (barometric pressure), density altitude (airfield elevation corrected for temperature), precipitation identification, and freezing rain occurrence.

Runway 8 is equipped with runway visual range (RVR) equipment. The RVR consists of a transmissometer located along the runway edge to determine, in feet, the horizontal distance a pilot can see down the runway from the Runway 8 approach threshold.

The FAA Automated Flight Service Station (AFSS) provides weather information to pilots. The National Weather Service conducts weather observations and forecasting from its facility at Albuquerque International Sunport.

Chapter Five

Airfield Facilities

Section Two

DEMAND/CAPACITY

Chapter Five
Airfield Facilities

Section Two
DEMAND/CAPACITY

The capacity of the existing airfield system is analyzed from the perspectives of wind coverage and operational capacity, as they impact the configuration and number of runways in airfield design. To optimize the use of an airport it is important to have adequate wind coverage. The safest operation of aircraft during takeoff or landing is into the wind. When landing and taking off, aircraft are able to maneuver on a runway as long as the wind component perpendicular to the direction of travel (defined as crosswind) is not excessive. Multiple runways can also increase the operational capacity of the airport. The operational capacity is not only affected by the number of runways, but also their configuration. The following subsections examine the capacity of the airfield at Albuquerque International Sunport, first from the standpoint of the wind coverage, then for operational capacity.

RUNWAY SYSTEM

As indicated earlier, the runway system at Albuquerque International Sunport includes four non-parallel runways. Primary Runway 8-26 is oriented east-west. The other three runways are oriented on approximately 45 degree intervals. When the airport was initially developed in 1937, it was not unusual for an airport to have multiple runway orientations. This was common because minimal data regarding wind direction was available. With most runways being dirt or turf, and seldom more than 5,000 feet long, it was relatively economical to provide runways at 45 degree intervals to account for nearly every wind scenario.

This philosophy was carried through World War II when numerous airfields were developed or expanded to meet the war effort's demand for trained pilots. Airfields to serve the war cause were developed across the United States, and especially in the west central and southwestern portions of the country where poor weather conditions were minimized. Most of these airfields were developed with runways oriented to the eight points of the compass. The Albuquerque Airport was used by the Army Air Corps during the war.

After the war, many airports were turned over to local governments to operate as civilian or joint use facilities. Many communities found it difficult to maintain four runways. As a history of local wind data became more readily available, officials were able to determine which runways were most critical to maintaining a reasonable level of wind coverage. This resulted in the abandonment and closing of one or more runways on many airports as the pavement aged and needed to be rebuilt.

The airfield at Albuquerque International Sunport transitioned to military ownership then back to civilian ownership. After the war, the airfield was sold to the Air Force which improved and operated the airfield as Kirtland Air Force Base until turning it back over to the City of Albuquerque in 1962.

ABQ is unique in that it has maintained all four of its runways active for nearly forty years of civilian operation. In fact, there are only a handful of airports around the Untied States that still maintain paved runways in four different orientations. These include the following (longest runway length in parenthesis):

- Fernandina Beach, Florida (5,300 ft.)
- New Smyrna Beach, Florida (5,000 ft.)
- Chicago O'Hare, Illinois (13,000 ft.)
- Hobbs County, New Mexico (7,400 ft.)
- Port Isabel, Texas (8,000 ft.)
- San Marcos, Texas (6,600 ft.)
- Hondo, Texas (6,059)
- Casper, Wyoming (10,600)

In addition to ABQ, only three of these airports currently have air service (Hobbs County, Casper, and O'Hare). ABQ and Chicago O'Hare are the only airports ranked in the nation's top 100 commercial service airports that have runways in four different orientations. O'Hare is one of the busiest airports in the world.

In reviewing the top 100 busiest commercial airports in the United States, it also becomes evident that many have reduced their airfield from four runway orientations to three or even less. Examples include:

- Port Columbus International, Ohio
- Houston Hobby, Texas
- Chicago Midway, Illinois
- Greater Rochester International, New York
- Milwaukee General Mitchell International, Wisconsin

The **1994 Master Plan** recommended that north-south Runway 17-35 be closed at such time that it required major maintenance to be kept operational, or when additional passenger or cargo terminal facilities require additional space.

Several aviation interests have indicated the desire to maintain Runway 17-35 in operation into the future. Because of this interest, the Scope of Services for this Master Plan Update included a re-evaluation of Runway 17-35's future. This will begin in this section with an examination of the airfield's wind and operational capacity both with and without Runway 17-35.

WIND ANALYSIS

FAA Advisory Circular 150/5300-13 recommends that a crosswind runway should be made available when the primary orientation provides less than 95 percent wind coverage for any aircraft forecast to use the airport on a regular basis. The 95 percent wind coverage is computed on the basis of crosswinds not exceeding 10.5 knots for Airport Reference Codes (ARC) A-I and B-I; 13 knots for ARC A-II and B-II; 16 knots for ARC C-III and B-III, plus C-I through D-III; and 20 knots for ARC A-IV through D-VI. Definition of the ARC is provided later in Section V-3-Requirements.

A wind rose analysis is utilized to determine airport wind coverage. For its purposes, the FAA indicates that the most current ten years of data should be utilized in this analysis. **Exhibit V-2-A** presents the all-weather wind rose for ABQ based upon ten years of wind data from 1989 through 1998. The wind rose analysis on the table in the exhibit indicates that primary Runway 8-26 has the best 10.5 knots (12 miles per hour) wind coverage of the four available runways (93.0 percent). Runway 17-35 has the lowest coverage 89.5 percent. Thus, a single runway does not provide the 95 percent standard for single and twin engine propellor general aviation aircraft. The primary runway, however, does meet the 95 percent criteria for the larger ARC.

The additional wind coverage provided by any one of the crosswind runways allows the airport to meet the 95 percent standard for 10.5 knots with just two runways. Runway 17-35 provides the most coverage in combination with the primary Runway 8-26 (98.94 percent).

The combination of all four runway orientations provides 99.96 percent coverage at 10.5 knots. If Runway 17-35 is not included, the three runway combination at 10.5 knots is 98.78 percent. Based upon the current wind rose data, Runway 17-35 adds 1.18 percent coverage at 10.5 knots, 0.42 percent at 13 knots, and 0.13 percent at 16 knots.

Table V-2-A presents a comparison of wind analyses based upon data from earlier time periods dating as far back as 1941. The older wind analyses were derived from wind roses on earlier airport layout plans for the airport. The periods evaluated include 1941-1957, 1951-1960, 1949-1978, and 1981-1990. The best single runway wind coverage has fluctuated between Runway 8-26 and Runway 12-30. Of the three crosswind runways, Runway 17-35 has always provided the most wind coverage in combination with the primary runway. In fact, Runways 17-35 and 8-26 have historically provided as much or more coverage than the three-runway combination of Runways 8-26, 3-21, and 12-30.

TABLE V-2-A
Historic Wind Coverage
Albuquerque International Sunport

Crosswind Component	**10.5 KTS/12 MPH**				
Time Period	**1941-1957 Pct.**	**1951-1960 Pct.**	**1949-1978 Pct.**	**1981-1990 Pct.**	**1989-1998 Pct.**
RUNWAYS					
Single					
8-26	89.9	89.4	85.1	90.8	93.0
17-35	87.8	88.0	84.5	87.1	89.5
3-21	86.8	86.0	83.6	87.1	90.1
12-30	89.1	90.4	87.3	89.2	91.2
Dual					
8-26/17-35	97.3	97.4	98.0	98.5	98.9
8-26/3-21	94.3	93.6	94.3	95.1	96.4
8-26/12-30	93.7	94.1	91.5	95.5	96.2
Three					
8-26/3-21/12-30	97.2	97.3	98.2	98.5	98.8
Four					
All	99.93	99.84	99.85	99.97	99.96
Crosswind Component	**13 KTS/15 MPH**				
Time Period	**1941-1957 Pct.**	**1951-1960 Pct.**	**1949-1978 Pct.**	**1981-1990 Pct.**	**1989-1998 Pct.**
RUNWAYS					
Single					
8-26	91.6	92.5	94.6	94.47	95.78
17-35	90.3	91.7	91.3	90.67	92.51
3-21	89.3	90.6	92.4	92.19	94.09
12-30	92.6	94.1	96.3	93.97	94.96
Dual					
8-26/17-35	98.9	98.6	99.4	99.49	99.66
8-26/3-21	95.5	96.3	97.8	97.87	98.43
8-26/12-30	94.8	96.4	98.3	97.95	98.24
Three					
8-26/3-21/12-30	98.2	98.9	99.6	99.50	99.58
Four					
All	99.98	99.94	99.99	99.97	99.99
Percent < 10.5 kts/12 mph	74.4	77.7	80.6	77.2	81.7

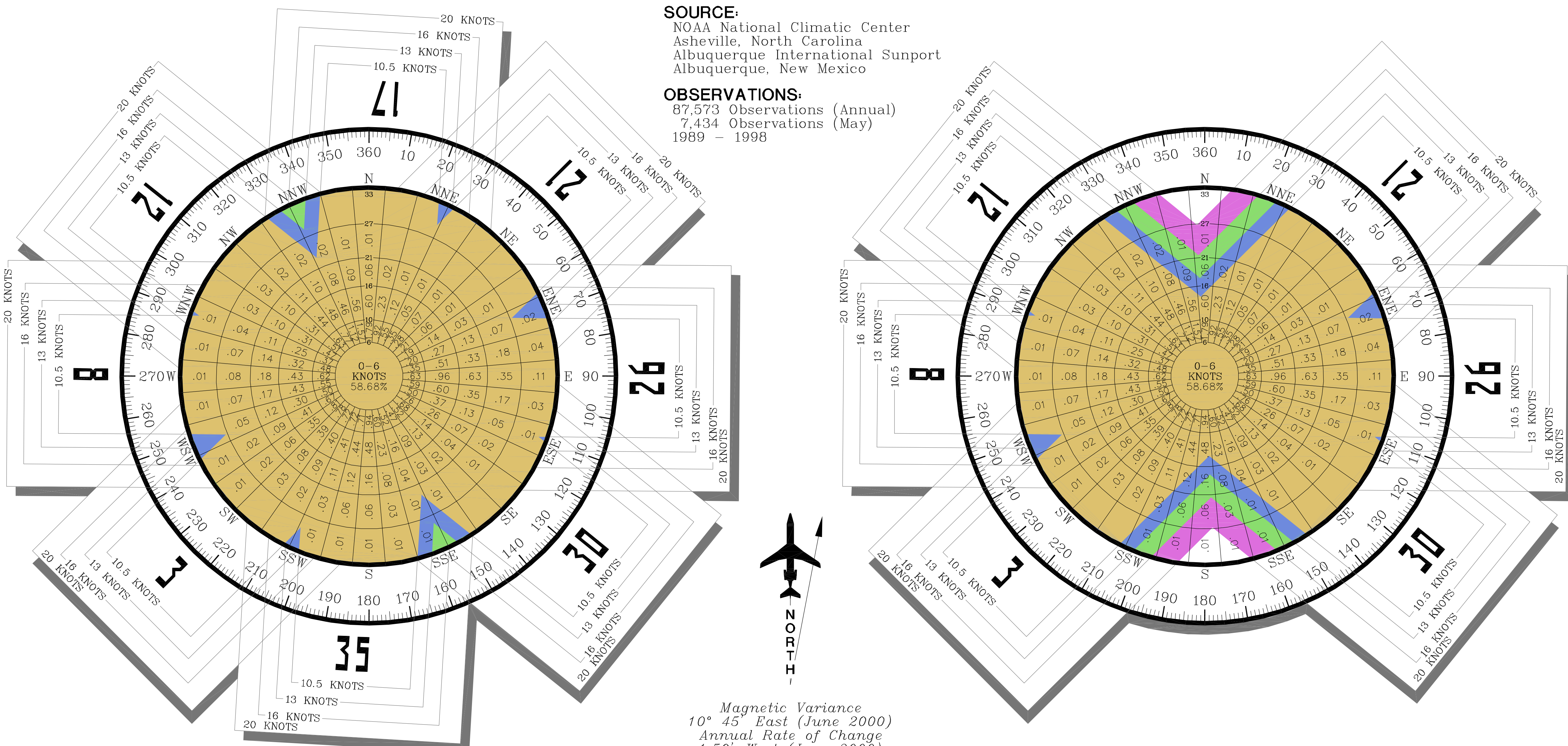
Wind Rose Sources: All data from NOAA National Climatic Center, Asheville, North Carolina
1941-1957 - Master Plan of Development, Albuquerque Metropolitan Airport; Aug. 1962
1951-1960 - Airport Layout Plan, Albuquerque Sunport; April 1970
1949-1978 - Master Plan Report, Albuquerque International Airport, February 1985
1981-1990 - Airport Master Plan, Albuquerque International Airport, December 1993
1989-1998 - Most current available 10 years data for ABQ; November 2000

ALL WEATHER WIND COVERAGE (Annual)

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 3-21	90.12%	94.07%	97.43%	99.17%
Runway 8-26	92.98%	95.78%	98.44%	99.46%
Runway 12-30	91.20%	94.97%	97.95%	99.34%
Runway 17-35	89.47%	92.51%	95.67%	97.92%
Runways 8-26/3-21	96.44%	98.44%	99.48%	99.87%
Runways 8-26/12-30	96.23%	98.23%	99.35%	99.81%
Runways 8-26/17-35	98.94%	99.66%	99.92%	99.99%
Runways 8-26/3-21/12-30	98.79%	99.58%	99.87%	99.98%
Runways 8-26/3-21/12-30/17-35	99.96%	99.99%	100.00%	100.00%

SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Albuquerque International Sunport
Albuquerque, New Mexico

OBSERVATIONS:
87,573 Observations (Annual)
7,434 Observations (May)
1989 – 1998



Magnetic Variance
10° 45' East (June 2000)
Annual Rate of Change
1.50' West (June 2000)

Exhibit V-2-A
ALL WEATHER (ANNUAL) WIND ROSES

It is apparent from the wind analyses that the most efficient wind coverage at ABQ would be the combination of the north-south runway with the primary east-west runway. It should be noted, this is strictly based upon wind coverage, and does not take into consideration the operational capacity of the airfield which will be analyzed in a later subsection.

Several pilots have indicated that Runway 17-35 is particularly important in the spring, when the area experiences strong winds from the south. This was examined in detail by breaking down the wind coverage by month. **Table V-2-B** presents an all-weather wind analysis for each month of the year. The 10.5 knot wind coverage for the four runway system remains at 99.93 percent or above each month. The combined all-weather wind coverage without Runway 17-35 is lowest in May (97.03 percent). Thus, Runway 17-35 provides an additional 2.9 percent coverage at 10.5 knots in May. The next lowest coverage without Runway 17-35 98.58 percent in April. During this month Runway 17-35 provides and additional 1.46 percent. **Exhibit V-2-B** presents the wind rose for the month of May.

TABLE V-2-B
Monthly Wind Coverage
Albuquerque International Sunport

Runway System	Winds (knots)	JAN. %	FEB. %	MAR. %	APR. %	MAY %	JUN %
w/o Runway 17-35	10.5	98.84	98.82	98.71	98.58	**97.03**	98.77
	13	99.97	99.64	99.58	99.51	**98.48**	99.52
	16	100.00	99.85	99.86	99.85	**99.44**	99.85
	20	100.00	99.95	99.95	99.99	**99.92**	99.98
Four Runways	10.5	99.99	99.95	99.96	99.94	**99.93**	99.98
	13	100.00	99.98	100.00	99.94	**99.99**	100.00
	16	100.00	99.99	100.00	100.00	**100.00**	100.00
	20	100.00	100.00	100.00	100.00	**100.00**	100.00
Runway System	**Winds (knots)**	**JUL. %**	**AUG. %**	**SEP. %**	**OCT. %**	**NOV. %**	**DEC. %**
w/o Runway 17-35	10.5	99.24	99.54	99.56	98.81	98.68	98.85
	13	99.75	99.83	99.88	99.63	99.64	99.67
	16	99.95	99.94	99.99	99.90	99.94	99.91
	20	99.99	99.99	100.00	99.98	100.00	100.00
Four Runways	10.5	99.94	99.98	99.89	99.94	99.98	99.89
	13	99.99	100.00	100.00	99.99	100.00	99.97
	16	100.00	100.00	100.00	100.00	100.00	100.00
	20	100.00	100.00	100.00	100.00	100.00	100.00

Source: 1989-1998 wind data for Albuquerque International Sunport; NOAA National Climatic Center, Asheville, NC.

The wind analysis does indicate that Runway 17-35 adds more coverage in the spring. The coverage provided by the three other runways, however, is still well over the 95 percent standard established by the FAA. Since the 95 percent standard is met with three runways, any additional runways must be justified for operational capacity. If the additional runways cannot be justified in relation to benefits outweighing costs, the FAA may not participate in their rehabilitation and/or improvement.

OPERATIONAL CAPACITY

An airfield operational capacity analysis was conducted to determine the existing capacity of the airfield and to identify any present or potential deficiencies in the airfield system. Airfield capacity and delay were examined utilizing FAA Advisory Circular (AC) 150/5060-5, **Airport Capacity and Delay.** Calculations derived from using this AC produces the following output:

- **Hourly Capacity of Runways**: The maximum number of aircraft operations that can take place in one hour.
- **Weighted Hourly Capacity**: Average of hourly capacities for various runway use scenarios weighted according to percentage of use.
- **Annual Service Volume**: The annual capacity or a maximum level of aircraft operations that may be used as a reference in planning the runway system.
- **Annual Aircraft Delay**: Total delay incurred by all aircraft on the airfield in one year.

As indicated in **Exhibit V-2-C**, the capacity of the airfield is affected by several factors including airfield layout, meteorological conditions, aircraft mix, runway use, percent arrivals, percent touch-and-go's, and exit taxiway locations. These items are described below.

AIRFIELD LAYOUT

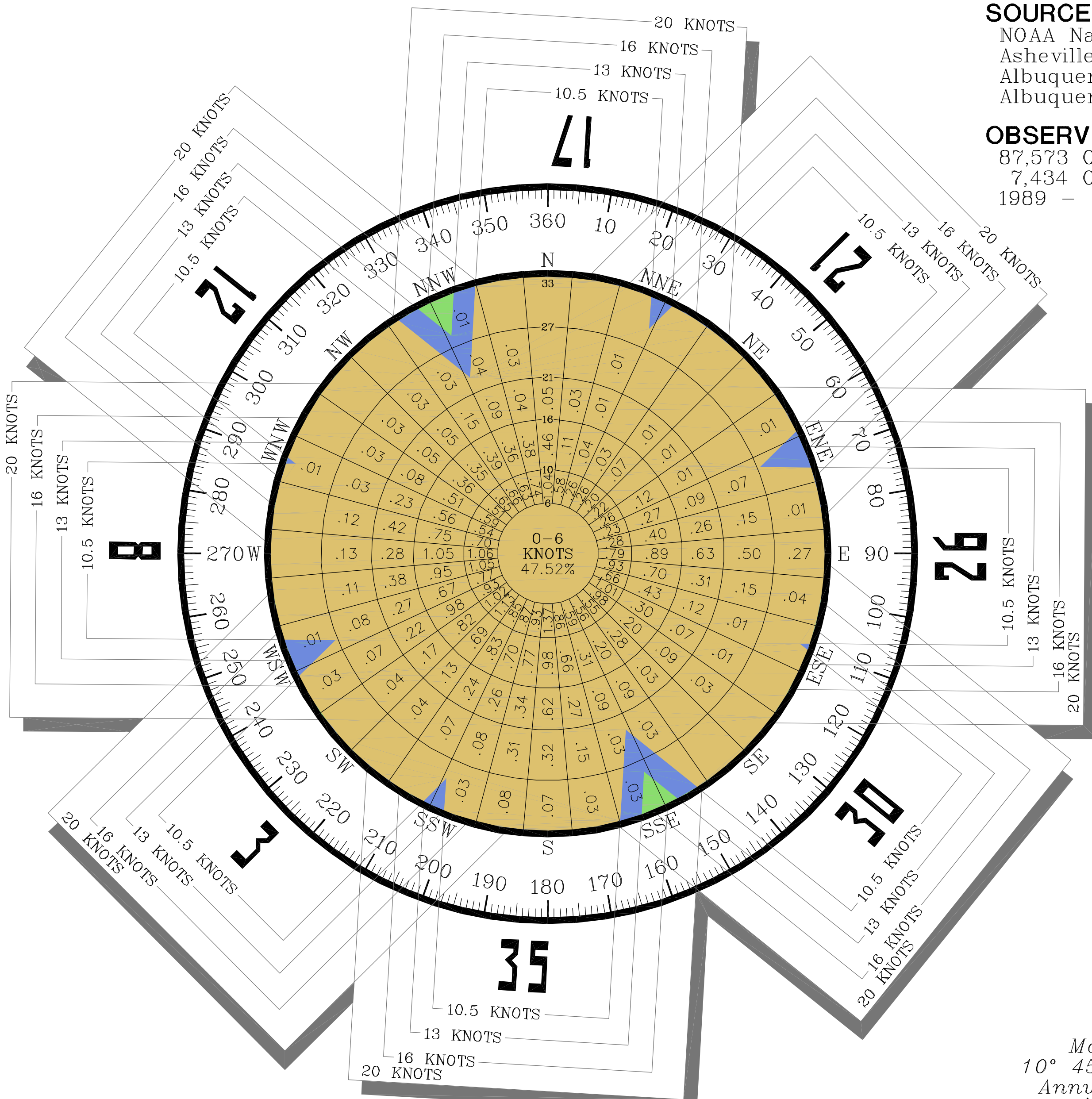
The airfield layout refers to the location and orientation of the runways, taxiways, and terminal area. The layout of the airfield can significantly affect its ability to accommodate aircraft movements. The existing airfield layout is depicted on **Exhibit V-1-A**. The existing airfield, includes primary east-west Runway 8-26, and three crosswind runways. Two of the crosswind runways (north-south Runway 17-35 and northeast-southwest Runway 3-21) are 10,000 feet long and capable of accommodating all types of aircraft that use the airport. Northwest-southeast crosswind Runway 12-30 is 6,000 feet long and can accommodate most of the general aviation aircraft as well as the air taxi and commuter aircraft.

Runways 12-30 and 3-21 are located entirely south of Runway 8-26. Runway 17-35 intersects the Runway 8-26 approximately 4,900 feet from the north end of Runway 17-35 and approximately 2,900 feet east of the west end of Runway 8-26. The three crosswind runways all intersect at virtually the same point south of the primary runway. This is approximately 7,200 feet south of the north end of Runway 17-35, 3,300 feet southeast of the northwest end of Runway 12-30, and 8,200 feet northeast of the southwest end of Runway 3-21.

98MP19-V-2-B-12/01/02

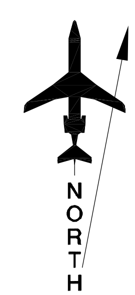
ALL WEATHER WIND COVERAGE (May)

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 3-21	85.90%	91.43%	96.19%	98.79%
Runway 8-26	88.89%	92.65%	96.22%	98.27%
Runway 12-30	85.31%	90.83%	95.84%	98.59%
Runway 17-35	85.04%	89.73%	94.42%	97.37%
Runways 8-26/3-21	94.30%	97.00%	98.74%	99.66%
Runways 8-26/12-30	92.81%	95.88%	98.02%	99.31%
Runways 8-26/17-35	98.54%	99.57%	99.92%	100.00%
Runways 8-26/3-21/12-30	97.04%	98.49%	99.45%	99.92%
Runways 8-26/3-21/12-30/17-35	99.93%	99.99%	100.00%	100.00%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Albuquerque International Sunport
Albuquerque, New Mexico

OBSERVATIONS:
87,573 Observations (Annual)
7,434 Observations (May)
1989 – 1998



Magnetic Variance
10° 45' East (June 2000)
Annual Rate of Change
1.50' West (June 2000)

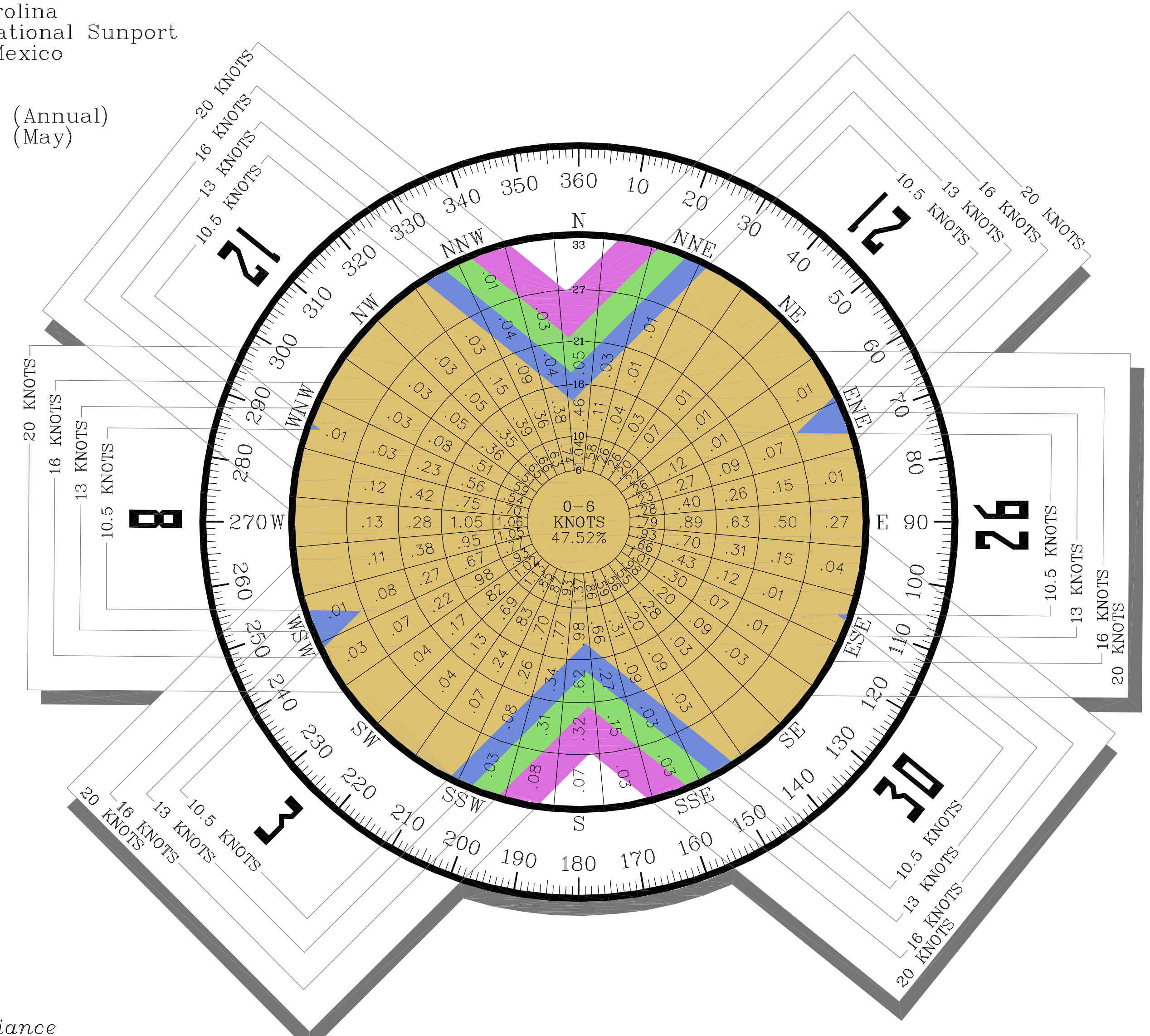


Exhibit V-2-B
ALL WEATHER (MAY) WIND ROSES

DRAFT FINAL-98MP19-V2C-11/29/00

Exhibit V-2-C
AIRFIELD CAPACITY
FACTORS

Airfield capacity is also affected by the type, size, and number of available taxiways. The purpose of the taxiway system is to reduce the amount of time that aircraft spend on the runway and to facilitate aircraft movements between the runways and terminal areas. Each of the four runways at ABQ is served by parallel and/or exit taxiways.

The location of the landside terminal facilities can indirectly affect airfield capacity. Terminal areas which are remotely located reduce overall airfield capacity by making it more difficult for aircraft to expedite their movement off of the airfield system. At ABQ, the airline passenger terminal is located in the northwest quadrant as formed by the intersection of the Runways 8-26 and 17-35.

The general aviation facilities are located south of the primary runway and immediately west of the intersection of the three crosswind runways. The air cargo facilities are located southwest of the general aviation area along the west side of Runway 3-21. Kirtland AFB is located on the north and south sides of the primary runway east of the crosswind runways.

METEOROLOGY

Weather conditions at ABQ can significantly affect the capacity of airside facilities. Runway utilization is normally dictated by wind conditions, cloud ceilings and visibility. The direction of take-offs and landings is generally determined by the speed of the prevailing winds. As indicated earlier, it is generally safest for aircraft to takeoff and land into the wind, avoiding crosswind or tailwind components during these operations. The type of instrumentation and the adequacy of the associated instrument approaches for each runway will also dictate runway use during inclement weather conditions.

Besides the wind coverage discussed earlier, wind conditions are also important in determining runway use percentages in a capacity analysis. To maximize capacity, the runway use scenario providing the highest hourly capacity should be used unless winds dictate another use scenario.

The primary effect of cloud ceiling and flight visibility conditions on airport capacity is the required spacing between aircraft in a controlled environment. As weather conditions deteriorate, the spacing of aircraft must increase to provide allowable margins of safety. The increased distance between aircraft reduces the number of aircraft which can operate at the airport during any given period. This consequently reduces overall airfield capacity.

FAA **Airfield Capacity and Delay** Advisory Circular (AC 150/5060-5), recognizes three categories of ceiling and visibility minimums. **Visual Flight Rule (VFR)** conditions occur whenever the reported ceiling is greater than 1,000 feet above ground level, and visibility is greater than three statute miles. **Instrument Flight Rules (IFR)** conditions occur when the reported ceiling is less than 1,000 feet above ground level and/or visibility is less than three statute miles. **Poor Visibility Conditions (PVC)** conditions occur when the ceiling is less than 500 feet and/or visibility is less than one statute mile.

According to data obtained from the National Climatic Data Center for the period 1989-1998, ABQ operates under VFR conditions over 99 percent of the time, whereas IFR conditions occur approximately 0.7 percent of the time. Poor visibility and low ceiling conditions (less than 500 feet and/or one mile) occur less than 0.3 percent of the time. The percentage of time that the airport is under instrument conditions coincides with the actual instrument approaches at the airport which average less than 0.8 percent of the total itinerant operations.

AIRCRAFT MIX

Aircraft mix for the capacity analysis is defined in terms of four aircraft classes. Classes A and B consist of small and medium-sized propellor and some jet aircraft, all weighing 12,500 pounds or less. These aircraft are associated primarily with general aviation activity, but do include some air taxi, air cargo and commuter aircraft. Class C consists of large multi-engine aircraft weighing between 12,500 pounds and 300,000 pounds. These aircraft are associated primarily with airline and cargo activity, but do include most business jets and larger general aviation and commuter propeller aircraft. Class D aircraft consists of large aircraft weighing more than 300,000 pounds. These aircraft are associated with airline and air cargo activities, and include the DC-10, Boeing 767, and Boeing 747. Boeing 757 aircraft is considered a Class D aircraft in the capacity analysis, even though it falls within the Class C weight category. The Boeing 757 generates a large wake turbulence typical of Class D aircraft, so controllers must increase aircraft separations in order to provide an adequate safety buffer for smaller aircraft. Greater aircraft separation lowers airfield capacity.

The current operational and projected fleet mix at the airport is summarized in **Table V-2-C**. The current aircraft mix during both VFR and IFR conditions includes all aircraft classes. Based on air traffic forecasts presented in the previous chapter the percentage of Class C and D aircraft operating at the airport is projected to increase throughout the planning period.

At present, Class C aircraft comprise 65 percent of annual VFR operations, and 69 percent of annual IFR/PVC operations. Class D aircraft currently represent three percent of the aircraft mix during VFR conditions and three percent under IFR/PVC weather.

The percentage of Class C and D aircraft is higher when weather conditions deteriorate because some general aviation aircraft users are not subject to the scheduling factors of commercial air carriers; therefore they choose to cancel or delay their flight until favorable weather conditions exist. In addition, not all general aviation aircraft are equipped for instrument flight, nor are all general aviation pilots qualified for IFR flight.

TABLE V-2-C
Aircraft Operational Mix
Albuquerque International Sunport

Weather	Year	Total Operations	A & B	C	D
VFR	1999	148,499	32%	65%	3%
	Short Term	177,670	32%	64%	4%
	Intermediate	193,744	31%	63%	6%
	Long Range	220,320	29%	59%	12%
IFR/PVC	1999	10,676	28%	69%	3%
	Short Term	12,774	25%	70%	5%
	Intermediate	13,929	23%	70%	7%
	Long Range	15,840	19%	66%	15%

Typical Aircraft By Classification

Class A: small single-engine, gross weight 12,500 pounds or less
Examples: Cessna 172/182; Mooney 201; Beech Bonanza; Piper Cherokee/Warrior

Class B: small twin-engine, gross weight 12,500 pounds or less
Examples: Beech Barron; Mitsubishi MU-2; Cessna 402; Piper Navajo; Cessna Citation I; Rockwell Shrike; Beechcraft 99; Lear 25

Class C: large aircraft, gross weight 12,500 pounds to 300,000 pounds
Examples: Beech King Air 200; Douglas DC-9; Boeing 727; MD 80; Boeing 737; Cessna Citation II, III, X; DeHavilland DH-7; Gulfstream III, IV, V; Beech 1900; Lear 35/55; Regional Jets; Saab Fairchild 340; Global Express

Class D: large aircraft, gross weight more than 300,000 pounds
Examples: Airbus A-300/A-310; Douglas DC-8-60/70; Boeing 747; Douglas DC-10; Boeing 757*; Boeing 767

* The Boeing 757 has a gross weight less than 300,000 pounds but is considered a Class D aircraft for capacity analysis because the wake vortex created by the aircraft requires greater separation requirements.

PERCENT ARRIVALS

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

TOUCH-AND-GO OPERATIONS

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

Touch-and-go activity is counted as two operations since there is an arrival and a departure involved. A high percentage of touch-and-go traffic normally results in a higher operational capacity because one landing and one takeoff occurs within a shorter time than individual operations. At ABQ, touch-and-go operations are mostly associated with training operations conducted by flight schools and the military. Touch-and-go operations are recorded by the ABQ air traffic control tower and currently account for approximately eight percent of all airport operations. For capacity calculation purposes, this percentage is expected to decrease slightly throughout the planning period because general aviation and military local operations are increasing at a slower rates than itinerant operations by all types of aircraft.

EXIT TAXIWAYS

Exit taxiways have a significant impact on airfield capacity since their locations directly determine the occupancy time of an aircraft on the runway. The airfield capacity analysis gives credit to exits located within a prescribed range from the runway's threshold. This range is based upon the mix index of the aircraft that use the runway. Exit rating credit is only given to those taxiways separated by at least 750 feet.

Analysis of the runway configurations and fleet mixes utilizing the runways indicates that for all weather conditions credit is given to taxiways lying between 3,500 and 6,500 feet from the runway thresholds. For the purposes of this analysis, it is assumed that additional exit taxiways can be provided to ensure that each runway has an exit rating of at least two.

RUNWAY USE

Runway use is expressed in terms of number, location, and orientation of active runways. It involves directions and kinds of operations using each runway. When runways are not dimensioned equally, their use by aircraft operating at the facility may vary. Some runways may be able to accommodate virtually the entire fleet mix of aircraft operating at the facility, whereas other runways may only be of sufficient design to handle only a portion of the fleet mix. Such is the case at ABQ, where Runway 12-30 is limited to 6,000 feet in length. This limits the use of this runway, in most conditions, to general aviation, air taxi, and commuter aircraft.

The capacity of the runway system varies depending upon the combination of runways in use. **Exhibit V-2-D** depicts the hourly capacities of the different runway combinations at ABQ. In order to maximize capacity especially during peak operational conditions, east flow is used during VFR weather and acceptable wind conditions. Under high winds during VFR conditions, operations are conducted along the runway alignment providing the best wind coverage.

Instrument approach capabilities of a runway will also play a key role in determining airfield capacity. Obviously, it would be ideal for all runways to be served by an instrument landing system with approach minimums capable of allowing the runway system to remain operational during all weather conditions. As was illustrated previously in Table V-1-D, two runway ends at Albuquerque International Sunport are served by Instrument Landing System (ILS) approaches. The Runway 8 and Runway 3 precision approaches allow the runways to remain operational during conditions of at least 200 foot cloud ceilings and half-mile visibility. Runway 35 is equipped with a non-precision approach with minimums of 400 foot ceilings and one mile visibility. These are the only runways with straight-in instrument approaches.

HOURLY RUNWAY CAPACITY

The first step in determining overall airfield capacity involves the computation of the hourly capacity of each runway use configuration. Wind direction, the percentage use of each runway configuration in VFR, IFR, and PVC weather conditions, the amount of touch-and-go training activity, and the number and locations of runway exits become important factors in determining the hourly capacity of each runway configuration.

Considering the existing airfield configuration, an aircraft mix of 65 percent Class C and three percent Class D operations during VFR weather and 69 percent Class C and three percent Class D during IFR weather conditions, eight percent touch-and-go operations, and exit taxiway ratings of each existing runway, the existing hourly capacity of each potential runway use configuration was computed.

The three-runway system of Runways 8, 3, and 12 operated under VFR conditions results in the highest hourly capacity of the airfield (106 operations in 1999). The maximum IFR hourly capacity available is 57 operations per hour using Runways 3 and 8. Current and future hourly capacities are depicted on **Exhibit V-2-D**.

This indicates that the maximum operational capacity is available in east flow. In west flow, the combination of Runways 26, 21, and 30 provides the highest capacity (95 operations per hour in 1999). Other runway combinations provide less capacity.

While Runways 3-21 and 12-30 intersect, they do not intersect with primary Runway 8-26. This provides a higher capacity, similar to that of a parallel runway. The two runway combination of Runway 8-26 and Runway 3-21 provides higher capacity than the combination of intersecting Runways 8-26 and 17-35. The intersecting runway combination does have a higher hourly capacity than Runway 8 and 12, because use of Runway 12 is limited to aircraft that can operate on 6,000 feet of runway length.

As indicated on **Table V-2-C**, the percentages of Class C and D aircraft can be expected to increase through the long range planning horizon. Also, the percentage of touch-and-go operations is forecast to decrease slightly. These factors contribute to an overall decline in the hourly capacity over the planning horizons.

The future hourly VFR and IFR/PVC capacities of the runway configuration providing the highest capacity and the weighted hourly capacity of all runway configurations are compared to forecast hourly demand in **Table V-2-D**.

TABLE V-2-D
Hourly Demand vs. Capacity
Albuquerque International Sunport

	VFR		IFR	
Planning Horizon	**Design Hour Demand**	**Hourly Capacity**	**Design Hour Demand**	**Hourly Capacity**
1999	53	106	39	57
Short Term	59	105	44	57
Intermediate	63	106	48	58
Long Range	75	103	59	58

The design hour demand will reach nearly 70 percent of the maximum VFR hourly capacity of the existing airfield by the end of the planning horizon. Under IFR conditions, however, the design hour demand level will reach 100 percent of the maximum IFR hourly capacity in the long range.

Weighted Hourly Capacity - Existing Airfield

The weighted hourly capacity reflects the average capacity of the airfield considering VFR and IFR/PVC conditions. This takes into account the various runway use scenarios and the percentage of time each is utilized. **Exhibit V-2-E** presents the runway use scenarios that affect the weighted hourly capacity of the existing airfield. The percentage of use for each airfield scenario attempts to maximize the use of those scenarios with the highest operational capacity as long as wind and weather permits.

Based upon winds, Runways 3,8, and 12 could be utilized in combination to maximize capacity 68 percent of the time. In west flow, runways 26, 21, and

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RUNWAY USE SCENARIO (East Flow) — HOURLY CAPACITY

1999: 106
SHORT: 105
INTER: 106
LONG: 103

1999: 102
SHORT: 100
INTER: 101
LONG: 98

1999: 72
SHORT: 72
INTER: 71
LONG: 70

1999: 66
SHORT: 65
INTER: 66
LONG: 65

1999: 61
SHORT: 60
INTER: 61
LONG: 60

RUNWAY USE SCENARIO (West Flow) — HOURLY CAPACITY

1999: 95
SHORT: 95
INTER: 89
LONG: 86

1999: 79
SHORT: 78
INTER: 79
LONG: 76

1999: 75
SHORT: 75
INTER: 76
LONG: 75

1999: 55
SHORT: 55
INTER: 54
LONG: 53

1999: 55
SHORT: 55
INTER: 54
LONG: 53

RUNWAY USE SCENARIO (South Flow) — HOURLY CAPACITY

1999: 72
SHORT: 72
INTER: 71
LONG: 70

1999: 66
SHORT: 66
INTER: 65
LONG: 64

1999: 66
SHORT: 66
INTER: 65
LONG: 64

1999: 56
SHORT: 55
INTER: 57
LONG: 55

1999: 50
SHORT: 50
INTER: 50
LONG: 49

RUNWAY USE SCENARIO (North Flow) — HOURLY CAPACITY

1999: 72
SHORT: 72
INTER: 71
LONG: 70

1999: 64
SHORT: 63
INTER: 64
LONG: 62

1999: 64
SHORT: 63
INTER: 64
LONG: 62

1999: 57
SHORT: 57
INTER: 58
LONG: 58

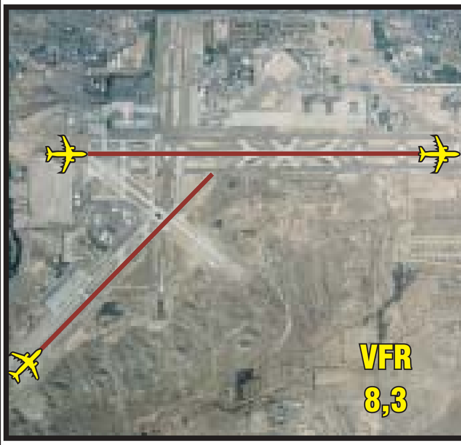
1999: 51
SHORT: 51
INTER: 50
LONG: 50

Exhibit V-2-D
HOURLY CAPACITY SCENARIOS

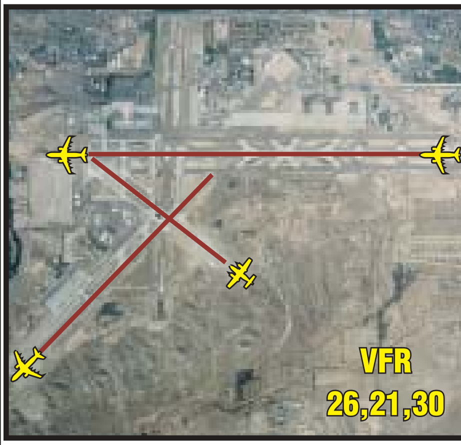
DRAFT FINAL-98MP19-V2D-11/27/00

RUNWAY USE SCENARIO	HOURLY CAPACITY

1999:	106
SHORT:	105
INTER:	106
LONG:	103
% of Year:	68



1999:	102
SHORT:	100
INTER:	101
LONG:	98
% of Year:	4

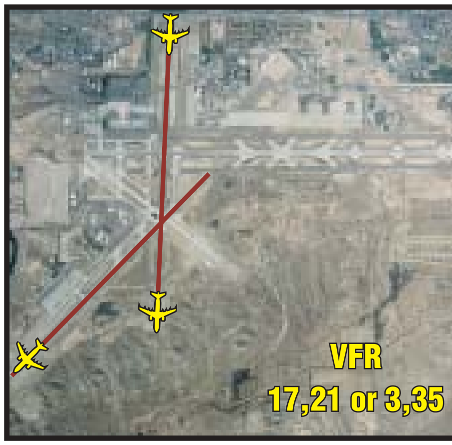


1999:	95
SHORT:	95
INTER:	89
LONG:	86
% of Year:	11

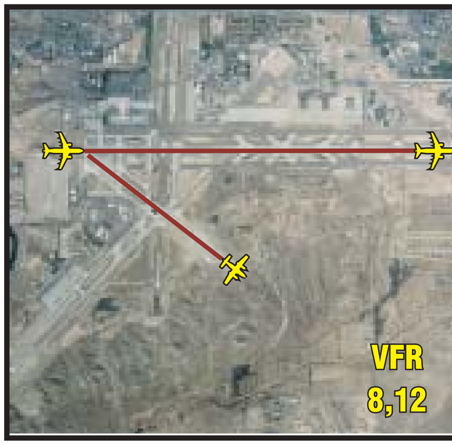
1999:	79
SHORT:	78
INTER:	79
LONG:	76
% of Year:	6

RUNWAY USE SCENARIO	HOURLY CAPACITY

1999:	75
SHORT:	75
INTER:	76
LONG:	75
% of Year:	4



1999:	72
SHORT:	72
INTER:	71
LONG:	70
% of Year:	2



1999:	66
SHORT:	65
INTER:	66
LONG:	65
% of Year:	3

1999:	57
SHORT:	57
INTER:	58
LONG:	58
% of Year:	2

Exhibit V-2-E
RUNWAY USE SCENARIOS
EXISTING AIRFIELD

30 could be used 11 percent of the time. The winds would require that two-runway combinations be used the remaining 21 percent of the time. The methodology calls for any scenario used less than two percent of the time to be discounted or combined with similar scenarios. The combinations that would be used for a discernable amount of time in order of highest hourly capacity include Runways 8 and 3, Runways 26 and 30, Runways 26 and 21, Runways 3 and 35, Runways 17 and 21, Runways 8 and 12, and Runways 8 and 17. Although actual IFR/PVC minimums occur less than one percent of the time, the IFR scenario of Runways 8 and 3 was assigned the remaining two percent of the time.

The weighted hourly capacity of the existing airfield was determined to be 80.7 operations in 1999. The capacity declines slightly over time to 78.1 operations. This is due primarily to the increasing mix of Class C and D aircraft. The weighted hourly capacity for each of the planning horizons is included in **Table V-2-D**. When considering the weighted hourly capacity, the current VFR design hour demand equals 65 percent of the weighted hourly capacity. The short term VFR design hour demand will equal 73 percent of the weighted hourly capacity, an the intermediate term demand will be 79 percent of the capacity. The long range planning horizon will be at 96 percent of the long range weighted hourly capacity.

Weighted Hourly Capacity - Runway 17-35 Closed

Exhibit V-2-F presents the runway use scenarios used to determine the airfield's weighted hourly capacity with Runway 17-35 closed. As with the existing airfield, the three-runway operational scenarios in east and west flow provide the best hourly capacities. These can be used up to 79 percent of the time, and do not involve Runway 17-35. Similarly the best IFR capacity is obtained utilizing Runway 3 and 8, and does not involve Runway 17-35. The highest capacity for the two-runway use scenarios also do not utilize Runway 17-35. As a result, for maximization of airfield capacity, Runway 17-35 is advantageous less than three percent of the time. If Runway 17-35 were not available, the scenarios utilizing it would be replaced by Runways 12 and 21. This would be at the expense of six operations per hour three percent of the time.

As a result, the weighted hourly capacities for the airfield without Runway 17-35 does not change significantly. In fact the change is less than 0.8 operations per hour, suggesting that Runway 17-35 does not significantly contribute to the hourly capacity of the airfield.

ANNUAL SERVICE VOLUME

Once the weighted hourly capacity is known, the annual service volume

(ASV) can be determined. ASV is calculated by the following equation:

$$ASV = C \times D \times H$$

C = weighted hourly capacity

D = ratio of annual demand to average daily demand during the peak month

H = ratio of average daily demand to average peak hour demand during the peak month

The ratio of annual demand to average daily demand at ABQ in 1999 was calculated at 348. This is projected to remain relatively constant through the planning period, declining to just 344 over the long range. The ratio of average daily demand to peak hour demand in 1999 was computed at 12.4. This ratio is expected to increase to 13.4 over the long range because operations can be expected to be less concentrated within the peak hour This is due to the increase in air carrier operations which tend to spread departure and arrival times.

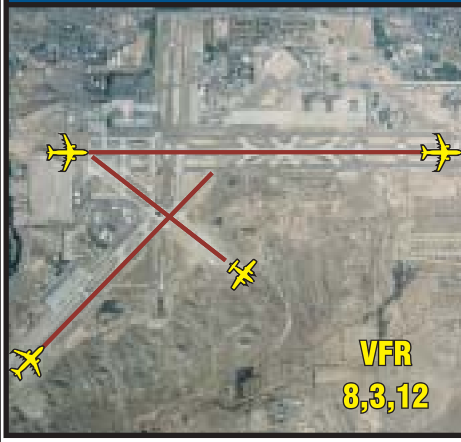
The current ASV is calculated at a level of 348,000 operations. With operations in 1999 totaling 228,933, ABQ was operating at 64 percent of its annual service volume. The ASV for the long range horizon was calculated to be 360,000 annual operations. The long range activity level of 345,400 operations would be 96 percent of the ASV. The ASV for each planning horizon for the existing airfield is presented in **Table V-2-E**, and is compared against the planning horizon activity milestones on **Exhibit V-2-G.**

TABLE V-2-E
Demand-Capacity Summary
Albuquerque International Sunport

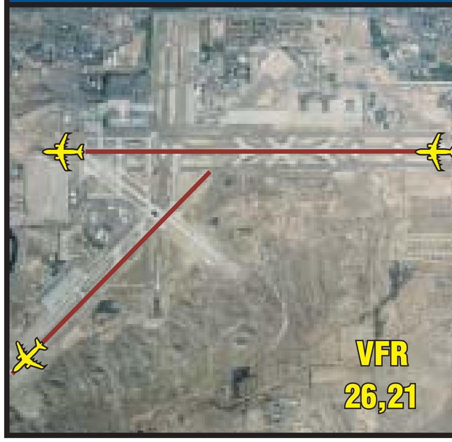
	Planning Horizon Activity Levels		Airfield Capacity			
			Existing		w/o Runway 17-35	
Planning Horizon	Design Hour Operations	Annual Operations	Weighted Hourly Capacity	Annual Service Volume	Weighted Hourly Capacity	Annual Service Volume
1999	53	228,933	80.7	348,000	79.9	345,000
Short Term	59	256,900	80.2	349,000	79.4	345,000
Intermediate	63	280,500	80.1	356,000	79.3	353,000
Long Range	75	345,400	78.1	360,000	77.3	356,000

The annual service volume is not significantly affected if Runway 17-35 were closed. The ASV without Runway 17-35 is presented on **Table-V-2-E** as well. In 1999, the ASV without Runway 17-35 is 345,000. Over the long range, the ASV would increase to 356,000 so the long range activity level of 345,400 would be at 97 percent of capacity. Runway 17-35 makes approximately a one percent difference in the operational capacity of the airport.

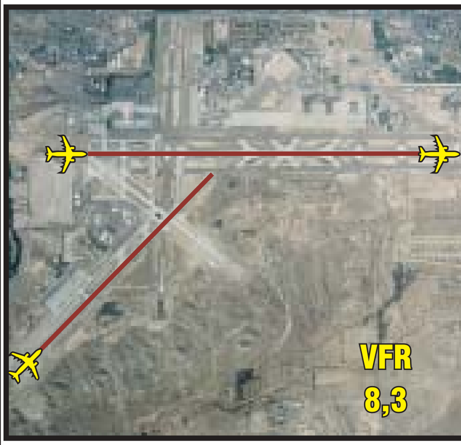
RUNWAY USE SCENARIO	HOURLY CAPACITY	RUNWAY USE SCENARIO	HOURLY CAPACITY



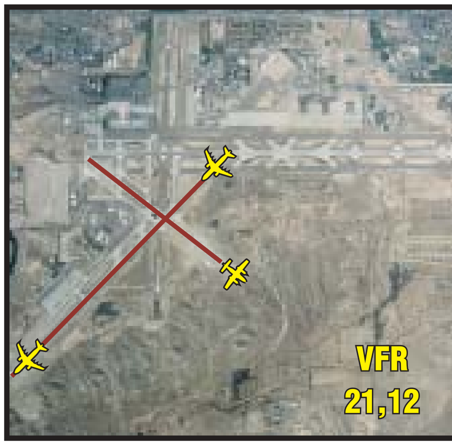
1999:	106
SHORT:	105
INTER:	106
LONG:	103
% of Year:	68



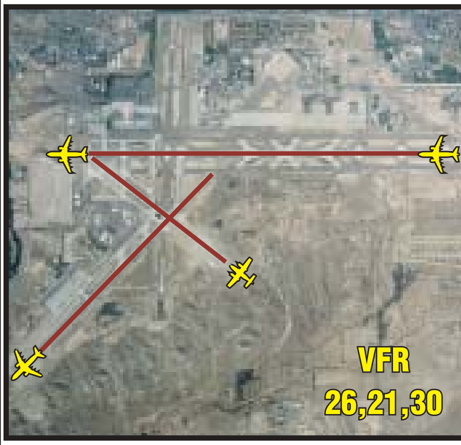
1999:	75
SHORT:	75
INTER:	76
LONG:	75
% of Year:	4



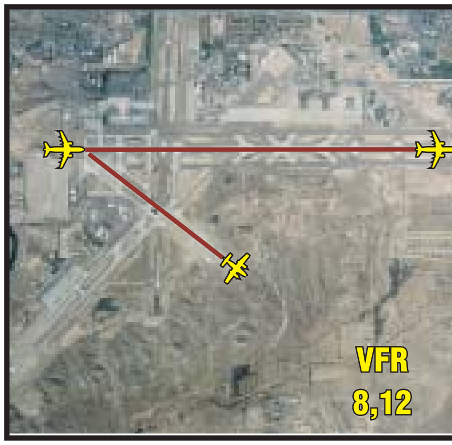
1999:	102
SHORT:	100
INTER:	101
LONG:	98
% of Year:	4



1999:	66
SHORT:	66
INTER:	65
LONG:	64
% of Year:	2



1999:	95
SHORT:	95
INTER:	89
LONG:	86
% of Year:	11



1999:	66
SHORT:	65
INTER:	66
LONG:	65
% of Year:	3

1999:	79
SHORT:	78
INTER:	79
LONG:	76
% of Year:	6

1999:	57
SHORT:	57
INTER:	58
LONG:	58
% of Year:	2

Exhibit V-2-F
RUNWAY USE SCENARIOS
WITHOUT RUNWAY 17-35

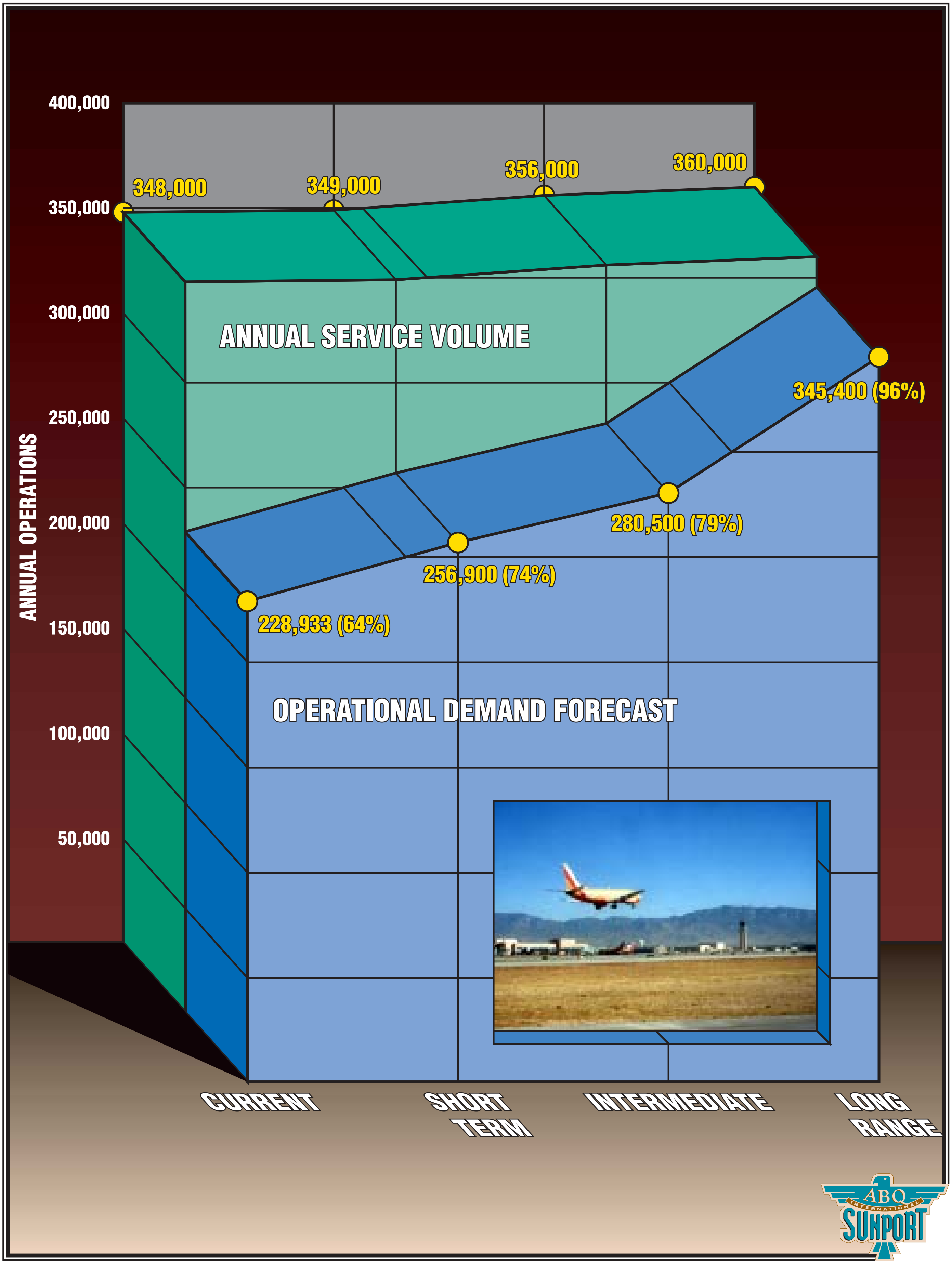


Exhibit V-2-G
DEMAND/CAPACITY

AIRFIELD SIMULATION MODEL

To further examine the effect of Runway 17-35 on airfield capacity, a computer simulation model was run. This was used to determine the contribution that Runway 17-35 provides with regard to reducing or increasing airfield delays. The FAA's Airport and Airspace Simulation Model, SIMMOD, was employed for this purpose. This model uses random linear variables based upon user-defined probability distributions to produce an output that represents the day-to-day variations in the air traffic.

SIMMOD simulates movement of aircraft, step-by-step, while monitoring the time along each segment of a flight or taxi path. The movements of individual departing aircraft are traced as they travel from gate, through the taxiway system, departure queue, takeoff roll, and through the airspace structure. For an arriving aircraft, the movements are reversed. The model produces quantitative measures of aircraft operational delay.

This delay is defined as any adverse deviation from a pre-defined nominal flight path. This deviation is typically caused by conflict with other aircraft. Examples of delay include waiting for departure queues, or waiting to taxi across an active runway. Delay in the air includes holding or speed restrictions while merging aircraft into a common flight path, such as the final approach.

SIMMOD uses random variables in its operation, so output changes with each run, even when the input data is identical. Therefore, statistically significant tendencies require several iterations of the model for each data set. The results discussed here were developed based upon five iterations for each scenario and data set. A more detailed discussion of the SIMMOD analysis for ABQ is included in **Appendix B**. This includes a description of the input data, observations, and assumptions as well at the output in terms of aircraft delay.

The SIMMOD analysis for ABQ concentrated on examining the dominant operational scenarios on the airfield. The hourly capacity and annual service volume evaluations discussed previously, examined operational scenarios based upon maximizing capacity within the constraints of wind weather. The SIMMOD analysis takes into account observed operating procedures and runway utilization. These were determined though observations from the tower, discussion with ATC personnel, and review of previous studies that defined runway utilization at ABQ.

Table V-2-F depicts the runway utilization percentages for the ABQ airfield. As might be expected, Runway 8 is heavily used for departures by the airlines and the military because of its proximity to the airline terminal, longest length, and its favorable wind conditions. Arrivals take advantage of the recent upgrade of Runway 3. General aviation takes advantage of the proximity of Runway 12 for departures and Runway 30 for arrivals. According to this table, the airport tends to operate in east flow over 70 percent of the time.

These percentages are also different from those used to determine the annual service volume (ASV) of the airport in the previous subsection. Therefore, consideration must also be given to the runway use that can maximize the airport's operational capacity.

TABLE V7-2-F
Runway Utilization

	Percentage Utilization for each Runway							
	08	**26**	**03**	**21**	**17**	**35**	**12**	**30**
Departures								
Air Carrier	69%	13%	1%	14%	1%	2%	0%	0%
Military Jet	70%	25%	1%	1%	1%	2%	0%	0%
General Aviation	56%	1%	1%	19%	1%	2%	13%	6%
Arrivals								
Air Carrier	28%	25%	43%	1%	2%	2%	0%	0%
Military Jet	70%	25%	1%	1%	2%	2%	0%	0%
General Aviation	14%	13%	57%	1%	2%	2%	0%	13%

Simulation models representing the current year and three future planning horizon levels of activity were prepared. **Table V-2-G** summarizes the average annual delay for each scenario considered.

The first scenario modeled was the baseline which considered the current airfield and how it is used. The second scenario modeled the affect of increasing operations on Runway 17-35. As shown in **Table V-2-G**, the result is an increase in delays.

The third scenario considers eliminating Runway 17-35. This scenario reduces delays through the intermediate planning horizon, but delays increase above those of the baseline in the long range.

Two final scenarios were modeled to consider runway usage more in line with that used to maximize the ASV. These results are also included in **Table V-2-G**. Again, a more detailed breakdown of the results is included in **Appendix B**.

These scenarios indicate that closing Runway 17-35 reduces delay, except in the long range, where the baseline scenario still provides a slight improvement.

TABLE V-2-G
Total Annual Delays (Hours)

	Current Operational Conditions			Maximize Capacity	
Year	**#1 Baseline**	**#2 Increase Runway 17-35 Use**	**#3 Close Runway 17-35**	**#4 Increase Runway 17-35 Use**	**#5 Close Runway 17-35**
1999	513	576	490	615	470
2005	665	760	714	881	632
2010	881	926	904	1,086	903
2025	1,638	1,993	2,209	2,141	1,682

It is possible that the select use of a fourth runway slightly improves capacity. If the runway is used only two percent or less of the time, however, there is a question as to whether the costs involved in maintaining the fourth runway in perpetuity can be justified. Increased use of the runway would be needed to justify the tens of millions of dollars in reconstruction costs that will be necessary to keep it operational.

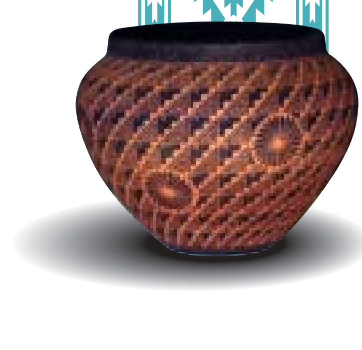
As shown in the table, increasing the use of Runway 17-35 increases the airfield delay. If Runway 17-35 truly improved airfield capacity, the increased use of the runway would reduce delay. Therefore, it can be concluded that if Runway 17-35 is used enough to justify the costs associated with its future preservation, the capacity of the airfield will be negatively affected.

Chapter Five

Airfield Facilities

Section Three

REQUIREMENTS



Chapter Five
Airfield Facilities

Section Three
REQUIREMENTS

The Federal Aviation Administration (FAA) has established criteria for use in the sizing and design of airfield facilities. The selection of appropriate FAA design standards for the development of airfield facilities is based primarily upon the characteristics of the aircraft which are expected to use the airport. Planning for future aircraft use is particularly important because design standards are used to plan separation distances between facilities that could be extremely costly to relocate at a later date.

The most important characteristics in airfield planning are the **approach speed** and the **wingspan** of the **critical design aircraft** anticipated to use the airport now or in the future. An aircraft's approach speed is based upon 1.3 times its stall speed in the landing configuration at the particular aircraft's maximum certified weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.

Category B: Speed 91 knots or more, but less than 121 knots.

Category C: Speed 121 knots or more, but less than 141 knots.

Category D: Speed 141 knots or more, but less than 166 knots.

Category E: Speed 166 knots or more.

The second basic design criteria relates to the size of an airplane. The airplane design group (ADG) is based upon wingspan. The six groups are as follows:

Group I: Up to but not including 49 feet.

Group II: 49 feet up to but not including 79 feet.

Group III: 79 feet up to but not including 118 feet.

Group IV: 118 feet up to but not including 171 feet.

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

Group VI: 214 feet up to but not including 262 feet.

FAA AC 150/5300-13, **Airport Design**, identifies a coding system which is used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport. This code, called the Airport Reference Code, has two components: the first component, depicted by letter, is the aircraft approach category defined above; the second component, depicted by a Roman numeral, is the airplane design group.

Generally, aircraft approach speed applies to runway length, while airplane design group primarily relates to separation criteria involving taxiways and taxilanes. In order to determine facility requirements, the Airport Reference Code (ARC) should first be determined, and then the airport design criteria as contained within AC 150/5300-13, **Airport Design** can be applied. The FAA recommends designing airport functional elements to meet the requirements of the most demanding ARC for that airport. A minimum of 500 annual operations by the aircraft or family of aircraft is required to be eligible for federal funding to a specific ARC. This is equivalent to a daily passenger flight, excluding weekends. **Exhibit V-3-A** summarizes representative aircraft by ARC.

Passenger and cargo jet aircraft currently utilizing ABQ fall into approach categories C and D. Business jet aircraft range in category from the Cessna Citation I (category B) to the Gulfstream V (category D). Propellor-driven commuter and general aviation aircraft fall within categories A and B.

Most general aviation (including business jets) and commuter aircraft operating at ABQ fit into airplane design groups I and II (wingspans less than 79 feet). There are now larger business jets such as the Gulfstream V, the Global Express, and the Boeing Business Jet (BBJ) that have wingspans up to 100 feet or more that are classified as Group III. The majority of passenger and cargo jet aircraft utilizing the airport fall within Group III. The largest aircraft operating with daily passenger flights to ABQ is the B-757 which is in ADG Group IV. There are also numerous daily cargo flights by Group IV aircraft including the DC-8-71 and -73 aircraft as well as the A-310. Therefore, the present airport reference code for civilian aircraft is D-IV.

In order to provide adequate facilities for the planning period and beyond, determination of the ultimate (future) critical aircraft must be made. The forecasts indicate that the size of aircraft will continue to grow as passenger and cargo flights increase. The previous chapter, **Aviation**

98MP19-V3A-2/5/01

A-I

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

C-I, D-I

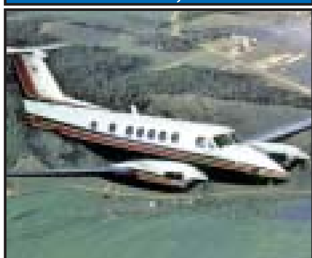
Lear 25, 35, **55**
Israeli Westwind
HS 125

B-I
less than 12,500 lbs.

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

C-II, D-II

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



B-II
less than 12,500 lbs.

Super King Air 200
Cessna 441
DHC Twin Otter

C-III, D-III

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

B-I, II
over 12,500 lbs.

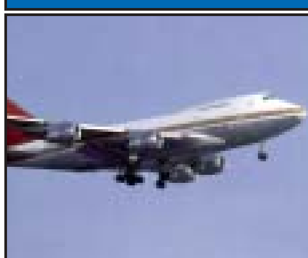
Super King Air 300
Beech 1900
Jetstream 31
Falcon 10, 20, 50
Falcon 200, 900
Citation II, III, IV, V
Saab 340
Embraer 120

C-IV, D-IV

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

A-III, B-III

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



D-V

B-747 Series
B-777

Note: Aircraft pictured is identified in bold type.

Exhibit V-3-A
AIRPORT REFERENCE CODES

Demand Forecasts, indicated that both segments would experience an increase in operations of wide-body aircraft with seating capacities between 220 and 350. Typical aircraft meeting this seating capacity include the B767-300, A-310, and the DC-10. These aircraft are in ADG IV. Some charter operations by B-747 aircraft can be expected as well. Air freight can also expect increasing operations by ADG IV aircraft. There is also a potential for B-747 all-freight operations in the long range. In addition, Kirtland Air Force Base attracts operations by the military version of the B-747.

To ensure that the airport will continue to support the needs of passenger, cargo, and military activity, it is recommended that the airport continue to be planned to accommodate aircraft up to ARC D-V. Such design standards will provide separation distances between airfield elements which accommodate ADG V aircraft.

The following airfield facility requirements are outlined to describe the scope of facilities that would be necessary to accommodate the airport's role throughout the planning horizons.

RUNWAYS

The adequacy of the existing runway system was analyzed from a number of perspectives including runway orientation, runway length, runway width and pavement strength. From this information, requirements for runway improvements were determined for the airport.

RUNWAY ORIENTATION

One of the primary considerations in runway orientation is wind coverage. The previous section provided an extensive wind analysis extensively discussing the wind coverage with and without the north -south Runway 17-35. In review, FAA Advisory Circular 150/5300-13, **Airport Design**, recommends that a crosswind runway should be made available when the primary orientation provides less than 95 percent wind coverage for any aircraft forecast to use the airport on a regular basis. The 95 percent wind coverage is computed on the basis of crosswinds not exceeding 10.5 knots for Airport Reference Codes A-I and B-I; 13 knots for ARC A-II and B-II; 16 knots for ARC C-III and B-III, plus C-I through D-III; and 20 knots for ARC A-IV through D-VI.

The wind rose analysis in Section V-2 indicated that no single runway orientation at ABQ can provide sufficient wind coverage at 13 knots or below. The combination of the east-west primary Runway 8-26 with any one of the other three runways can provide adequate coverage for any aircraft. Since only two runway orientations are necessary for wind coverage, any additional orientations must be justified for other purposes to continue to be eligible for future federal funding.

While north-south Runway 17-35 provides the best additional coverage of the three crosswinds, it enhances capacity the least. It is the only runway that physically intersects with the primary runway. Both Runway 3-21 and Runway 12-30 offer capacity enhancements to justify maintaining them. In contrast, the capacity analysis in **Section V-2** indicated that the more the north-south runway is used, the more it reduces airfield capacity. The alternatives analysis will further consider the airfield layout in relation with other airport needs, but strictly from a facility requirements standpoint, no more than three runway orientations should be required.

RUNWAY LENGTH

Runway length requirements are based upon five primary elements:

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

Aircraft performance declines as elevation, temperature, and runway gradient factors increase. For calculating runway length requirements at ABQ, the airport elevation is **5,352 feet above mean sea level (MSL)** and the mean maximum daily temperature of the hottest month (July) is **92.5 degrees Fahrenheit**. For runways accommodating Approach Category C and D aircraft, a maximum of 1.5 percent runway gradient is allowed. The runway gradient on each runway varies with the primary Runway 8-26 having a gradient of 0.3 percent.

Another factor in determining the length of runway required for aircraft takeoffs and landings is the distance of non-stop flights. Currently, the longest non-stop daily passenger airline service from ABQ is to Baltimore at 1,665 miles. There is also a non-stop flight to New York City once a week that is 1,820 miles. The longest non-stop cargo flight is to Wilmington, Ohio at 1,290 miles.

To ensure that ABQ is able to capitalize on its ultimate airline service potential, runway lengths should be planned that would accommodate non-stop airline service to top twenty destination cities, as well as potential international locations in Canada and Mexico. **Table V-3-A** summarizes some of the key existing and potential haul lengths from ABQ.

Hub and spoke service by the airlines has tended to inhibit non-stop service to some of the top twenty markets. Some airlines, however, are gearing towards individual route profitability, low cost/high frequency service, and the downsizing of their major hubs. This trend could result in a re-examination of the potential for point-to-point airline service in the future.

Several destinations within the top twenty markets could be served by daily non-stop service from ABQ in the future. With service to New York City already available on a weekly basis, increased service is a possibility in the future. New York and Boston are the most distant potential domestic routes at 1,814 and 1,968 respectively. Internationally, potential flights to Montreal would be 1,872 miles.

TABLE V-3-A Non-Stop Haul Lengths Cover 1,000 miles Albuquerque International Sunport			
Existing Daily Non-stops	Air Miles	Potential Non-stops	Air Miles
Baltimore	1,665	***DOMESTIC***	
Orlando	1,545	Boston	1,968
Tampa	1,495	New York	1,820
Atlanta	1,265	Washington, D.C.	1,650
Cincinnati	1,237	***INTERNATIONAL***	
Seattle	1,178	Montreal	1,872
Chicago	1,118	Toronto	1,565
		Mexico City	1,169

PRIMARY RUNWAY

The primary runway at a commercial service airport should be designed to accommodate the runway length needs of the most demanding (critical) aircraft. At ABQ, critical aircraft providing commercial passenger service include older aircraft such as the B727-200, B737-200, and DC-9 series aircraft that have been modified to meet noise requirements. Newer aircraft such as the B737-300, MD-80, and B757 are used extensively and can expect increased use. In addition, all-cargo airlines currently use of the B727-200, DC-8-70 series, and A-310. The potential for future use of the B-747, must also be considered in runway length analyses.

As discussed in **Chapter Two - Forecasts**, ABQ can expect to see an increase in the average seats available for departure. This means a greater percentage of larger aircraft are expected to operate at the airport. Aircraft within the 220 to 350 seating capacity range are projected to comprise five percent of the long range fleet mix. Aircraft within the 165 to 219 seating range are projected to reach 16 percent over the long range. Representative aircraft include the B757, B767, and the DC-10. The B737-800 (184 passenger capacity) is a newer aircraft that also falls within this range.

Even though an increase in operations by larger aircraft is expected, the majority of air carrier operations will still be conducted by aircraft with up to 164 seats. Aircraft such as the Airbus 320, Boeing 727-200, 737 (-200 to -700), DC-9, and the MD-82/88 and -87 are examples of aircraft which fall within this seating capacity range.

An important factor to consider when conducting runway length analysis is that Stage 2 aircraft types are no longer being manufactured. The **Airport**

Noise and Capacity Act of 1990 essentially mandated the complete transition to a Stage 3 fleet (for aircraft weighing more than 75,000 pounds) by December 31, 1999. Thus, the airline's use of aircraft with Stage 2 engines in the United States has virtually been eliminated. The only exceptions are those that have been retro-fitted with hush kits or re-engined to meet Stage 3 requirements.

In general, Stage 2 aircraft require more length for takeoff than Stage 3 aircraft for common trip lengths. In most cases, however, the airlines are calculating runway requirements based on no change in performance. **Table V-3-B** presents runway length requirements for takeoffs by commercial aircraft currently operating and anticipated to operate at Albuquerque International Sunport. Runway takeoff length requirements for commercial jets were determined for 1,000, 1,500 and 2,000 mile haul lengths from ABQ with typical payloads.

TABLE V-3-B
Runway Length Requirements
Typical Commercial Aircraft
Albuquerque International Sunport

	Takeoff Length (Feet) For Haul Length (Miles)		
	1,000	**1,500**	**2,000**
Stage 2 Aircraft			
B737-200	9,900	12,200	x
B727-200	10,300	12,300	x
Stage 3 Aircraft			
A320	7,100	8,000	8,700
B717-200	9,500	12,100	x
B737-300	7,500	9,000	11,000
B737-400	8,500	10,200	12,600
B737-500	8,100	9,300	x
B737-700	8,000	8,700	10,700
B737-800	7,900	8,300	9,500
B757-200	5,800	6,800	7,100
MD82/88	8,700	10,000	x
MD83	8,700	9,500	x
MD87	6,700	7,400	9,200+
Widebodies			
A300	6,800	7,500	8,500
A310	5,800	6,300	7,000
B747-400	6,700	7,200	7,700
B767-200	6,300	6,500	6,800
B767-300	7,400	8,000	8,900
B767-400	8,300	9,000	9,600
B777-200	7,000	7,700	8,100
B777-300	10,400	11,600	13,300
DC-8-71	9,400	10,400	11,200
DC-8-73	10,600	11,700	12,900
DC-10-30	8,300	9,000	9,800

The most critical takeoff runway length for passenger aircraft currently serving ABQ is the B727-200. This aircraft requires up to 12,300 feet for a 1,500 mile flight. The Boeing 737-300 is the most frequently used aircraft. It would require a length of 11,000 feet for the 2,000 mile flight. The DC-8-73 is used by one of the all-cargo airlines and would require 12,900 feet of runway for a 2,000 mile flight. The Boeing 777-200 does not currently serve the airport, but would require 13,300 feet for the 2,000 mile flight.

Currently, ABQ is served by a variety of Stage 3 aircraft. The largest percentage of Stage 3 aircraft is represented by the B737 family. The B737-300 is the current workhorse, but the B737-700 and -500 are also used extensively. Other versions that could be expected in the future include the B737-800.

At its existing length of 13,793 feet, Runway 8-26 will be sufficient for the takeoff requirements of existing and future passenger aircraft providing non-stop service to current and potential destinations. It will also allow for occasional longer haul flights by widebody aircraft. In addition, the length allows the runway to serve virtually any type of U.S. military aircraft that could be associated with Kirtland Air Force Base in the future.

Table V-3-C presents the runway length requirements for various groups of general aviation aircraft at Albuquerque International Sunport. A runway length of 6,800 feet will sufficiently accommodate airplanes weighing less than 12,500 pounds. This includes most aircraft in ARC B-I and some in ARC B-II. Business jet aircraft are primarily included in the category of large airplanes up to 60,000 pounds. ABQ experiences activity from the full range of business jet aircraft. These aircraft can be fully accommodated on a runway length of 11,400 feet.

Secondary Runways

FAA recommendations call for the construction of a crosswind runway if the primary configuration does not provide at least 95 percent wind coverage. Wind data specific to ABQ indicated that the primary runway configuration does not provide 95 percent wind coverage for small aircraft. **Table V-3-C** indicates that these aircraft require a runway length of 6,800 feet.

While it is desirable to have a crosswind runway meet the full length requirement, a length of 80 percent of the full length is acceptable. This would suggest that a crosswind runway specifically serving small aircraft should be at least 5,500 feet long. By comparison, Runway 12-30, which primarily serves small general aviation aircraft, is 6,000 feet long.

Providing a safe alternative for air carrier and business aircraft operations during times when the primary runway is not operational is also essential. The runway allows the airport to remain open when normal maintenance operations, runway rehabilitation, snow removal activities, and extreme crosswinds require that the primary runway configuration be closed. Again, it would be ideal to maintain the secondary runway at the same length as the primary runway. At a minimum, the runway should be capable of accommodating the vast majority of operations, a length that would accommodate at least 90 percent of the commercial jet operations should be planned.

TABLE V-3-C
General Aviation Runway Length Requirements
Albuquerque International Sunport

Runway Lengths Recommended For Airport Design	
Small airplanes with less than 10 passenger seats	
75 Percent of these small airplanes	4,900 Feet
95 percent of these small airplanes	6,800 Feet
100 percent of these small airplanes	6,800 Feet
Small airplanes with 10 or more passenger seats	4,400 Feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	7,400 Feet
75 percent of these large airplanes at 90 percent useful load	9,100 Feet
100 percent of these large airplanes at 60 percent useful load	11,500 Feet
100 percent of these large airplanes at 90 percent useful load	11,500 Feet

Reference: FAA Airport Design Software, Version 4.2a

Runways 3-21 and 17-35 are presently 10,000 feet long. A review of **Table V-3-B** would suggest that the current length is adequate for most aircraft up to the 1,500 mile trip length. This coincides with the current longest nonstop flight. In the future, the longest daily nonstop can be expected to extend to 2,000 miles.

The B737-300 aircraft is the busiest commercial jet aircraft at ABQ. It has high potential for use on flights in the 1,500 to 2,000 mile range, and requires 11,000 feet for the 2,000 mile trip length. The B737-700 is expected to used on routes similar to the B737-300 and requires a length of 10,700 feet.

Thus, it would appear that the 10,000 foot length of the secondary runways is presently adequate. Over the long range, a length of 11,000 feet should be planned to better serve the longer hauls anticipated in the future.

PAVEMENT STRENGTH

The most important feature of airfield pavement is its ability to withstand repeated use by aircraft of significant weight. At Albuquerque International Sunport, pavement must be able to support multiple operations of large commercial and military jet aircraft on a daily basis.

The current strength rating on Runway 8-26 is 100,000 pounds single wheel loading (SWL), 210,000 dual wheel loading (DWL), 360,000 pounds dual tandem wheel loading (DTL), and 850,000 pounds double dual tandem (DDT). The single wheel strength rating is sufficient for all aircraft with single wheel landing gear. The critical aircraft for dual wheel gear is the B727-200 with a maximum takeoff weight of 190,000 pounds. For the critical aircraft for dual-tandem wheel gear the B767-300, takeoff weights can reach 360,000 pounds DTL for long stage lengths. The existing pavement strength of the runway will be adequate to accommodate these aircraft. The pavement is also capable of accommodating DDT aircraft, such as the B747 jumbo jet, weighing up to 850,000 pounds. The current strength of the primary runway should be adequate for the long range planning horizon.

Runways 17-35 and 3-21 have strength-ratings identical to the primary runway, except the crosswind runways are not rated for DDT. This will still accommodate 99 percent of the future traffic, so the pavement strength on these two runways is adequate.

Runway 12-30 has a pavement strength rating of 45,000 pounds SWL and 65,000 pounds DWL. This is adequate to accommodate all but the largest general aviation aircraft, as well as commuter turboprops and regional jets.

DIMENSIONAL DESIGN STANDARDS

Runway dimensional design standards define the widths, and clearances required to optimize safe operations in the landing and takeoff area. Theses dimensional standards vary depending upon the ARC for each runway. **Table V-3-D** outlines key dimensional standards for the airport reference codes most applicable to Albuquerque International Sunport now and in the future.

The primary runway at ABQ should currently be designed to at least D-IV standards, the airports current critical ARC. Planning and development considerations should take into account the potential for D-V aircraft in the future. Runway 8-26 is presently designed to D-V standards.

As secondary runways, Runway 3-21 and Runway 17-35 should also be designed to D-IV standards. Runway 3-21 was upgraded in the mid-1990's and meets the D-IV standards. Runway 17-35 does not have adequate safety area beyond the north end of the Runway pavement. As a result, the Runway 17 threshold has been displaced 890 feet to allow for the required 1,000 foot of extended runway safety area. This limits the runway to 9,110 feet for landing from the north and 9,110 feet for takeoffs to the north.

TABLE V-3-D Airfield Design Standards Albuquerque International Sunport				
Airport Reference Code	**B-III (ft.)**	**C-II (ft.)**	**D-IV (ft.)**	**D-V (ft.)**
Runway Width	100	100	150	150
Runway Safety Area				
Width	300	500	500	500
Length Beyond End	600	1,000	1,000	1,000
Runway Object Free Area				
Width	600	800	800	800
Length Beyond End	800	1,000	1,000	1,000
Runway Blast Pad				
Width	140	120	200	220
Length	200	150	200	400
Runway Centerline to:				
Holding Position	250	250	250	250
Parallel Taxiway	300	300	400	400
Parallel Runway	700	700	700	700
Taxiway Width	50	35	75	75
Taxiway Centerline to:				
Fixed or Movable Object	93	65.5	129.5	160
Parallel Taxilane	152	105	215	267
Taxilane Centerline to:				
Fixed or Movable Object	81	57.5	112.5	138
Parallel Taxilane	140	97	198	245
Runway Protection Zones -				
One mile or greater visibility				
Inner width	500	500	500	500
Length	1,000	1,700	1,700	1,700
Outer width	700	1,010	1,010	1,010
Category I				
Inner Width	1,000	1,000	1,000	1,000
Length	2,500	2,500	2,500	2,500
Outer Width	1,750	1,750	1,750	1,750

Crosswind Runway 12-30 has adequate clearances to accommodate B-III aircraft. It is lacking only in safety area off the southeast end to meet C-II standards. The extended southeast safety area is 400 feet wide and 800 feet long, compared to the C-II standard of 500 feet wide and 1,000 feet long.

TAXIWAYS

Taxiways are primarily constructed to facilitate aircraft movements to and from the runway system. Parallel taxiways greatly enhance airfield capacity and are essential to aircraft movement about an airfield. Some taxiways are necessary simply to provide access to apron and terminal areas, while others are designed to facilitate the movement of aircraft to and from the runway configuration. As activity increases, additional taxiways become necessary to provide for safe and efficient use of the airfield. The taxiway system at ABQ consists of parallel taxiways serving each runway, exit taxiways, and access taxiways serving the airline terminal, cargo area, general aviation area, and the military facilities.

Primary Runway 8-26 is served by three parallel taxiways. There are a full length and a partial parallel on the north side of the runway, as well as another full length taxiway on the south side. Taxiways A and B serve as dual parallel taxiways providing two-way traffic flow in front of the military apron continuing to the passenger terminal apron. Taxiway E is located on the south side and provides access to the primary runway from facilities on the south side of the airport. The runway has 13 exits on the north side and 12 on the south side. This includes a series of high speed exits in the mid-runway area.

The type and frequency of runway entrance/exit taxiways can affect the efficiency and capacity of a runway system. Right-angled exits require an aircraft to be nearly stopped before it can safely exit the runway. High speed exits allow aircraft to slow to safe exit speed (rather than stopping) before exiting the runway. Runway 17-35 has 13 exits on the north side and 12 on the south side. This includes a series of high speed exits in the mid-runway area. All exit taxiways recommended by the previous master plan have been constructed. The high speed exits are between 6,000 and 7,600 feet from the landing thresholds. Observations have indicated that the high speeds are the exits used most often by arriving jet aircraft.

Secondary Runway 3-21 is served by a partial parallel Taxiway F located on its west side. The parallel extends from Taxiway C southwest to the end of Runway 3. Access to the north end of the runway is gained by utilizing Taxiways C and E. Seven taxiways provide exits along the length of the runway, including three high speed exits. The high speed exits are located between 5,400 and 8,000 feet from the Runway 3 threshold.

There are no high speed exits for landings on Runway 21 because of the minimum number of landings from the northeast. All but two of the exit taxiways recommended by the previous master plan for Runway 3-21 have been constructed. Those two were planned for the southwest third of the runway. They have not been constructed due to the minimal number of landings on Runway 21. If future landside development is planned for the east side of Runway 3-21, an east parallel taxiway may need to be considered.

Crosswind Runway 17-35 had a full length parallel taxiway on its west side and a partial parallel on the east side. Taxiway C serves the west side. It has nine taxiway exits. Taxiway D is on the east side and extends from the north end of the runway to Runway 3-21. There are no high speed exits on this runway and no additional taxiways were planned.

Runway 12-30 is served by a full length parallel Taxiway G on its south side and a partial parallel Taxiway J on the north side. Taxiway G is placed to serve the general aviation facilities in the east quadrant of the airport. Taxiway J, while parallel to Runway 12-30, serves more as a connecting taxiway to the passenger terminal area. There are six taxiway exits between Runway 12-30 and Taxiway G. The exit taxiways are well placed for a general aviation runway.

Holding aprons and bypass taxiways can also improve the efficiency of the taxiway system. Currently, all runway ends except for Runway 21 have either holding aprons or bypass taxiways. Since Runway 21 is used primarily for takeoffs, a bypass taxiway should be considered in the future.

Other taxiway improvements will be as appropriate with future development alternatives.

AIRFIELD INSTRUMENTATION

Previously, instrument approaches were categorized as either precision or nonprecision. Precision instrument approach aids provide an exact alignment and descent path for an aircraft on final approach to a runway while non-precision instrument approach aids provide only runway alignment information. Most existing precision instrument approaches in the United States are instrument landing systems (ILS).

Currently, Runway 8 and Runway 3 have instrument landing systems at Albuquerque International Sunport. These provide minimums down to 0.5 miles visibility and 200 foot cloud ceilings (200-1/2), and are considered Category I (CAT I) minimums. With the minimal IFR weather in the area, lower minimums to CAT II or CAT III are difficult to justify at ABQ.

Airfield weather information is provided by a runway visual range (RVR) and airport surface observation system (ASOS) affiliated with the Runway 8 ILS. These two instruments provide information regarding temperature, pressure, cloud ceiling and visibility.

Runway 17 and 21 are not recommended for instrument approaches as noise abatement procedures minimize landings on these two approaches. Rising terrain east of the airport prohibits an instrument approach to Runway 26. An instrument approach with one-mile minimums could be planned to Runway 30 for use by general aviation and commuter aircraft.

The planned transition to the global positioning system (GPS) for instrument approaches to airport in the United States was discussed earlier in Section One of this chapter. It is anticipated that GPS will eventually be able to provide accurate enough position information to allow for even Category II and III precision instrument approaches, independent of any existing ground-based navigational facilities. In addition, GPS equipment will be much less costly than existing precision instrument landing systems. GPS technology will provide airports with the means of gaining additional instrument approach capability at a moderate cost.

The FAA is also developing CAT I precision instrument capability from the GPS. This is anticipated to involve a differential GPS system identified as the wide area augmentation system (WAAS). It is anticipated that the existing ILS systems at ABQ will ultimately be replaced with WAAS or similar capability.

VISUAL APPROACH AIDS

Electronic and visual guidance to arriving aircraft enhance safety and capacity of the airfield. Such facilities are vital to the success of the airport, and provide additional safety to passengers using the air transportation system. While instrument approach aids are especially helpful during poor weather, they are often used by commercial pilots when visibility is good.

Visual glide slope indicator (VGSI) lights are a system of lights located at the side of the runway which provide visual descent guidance information during an approach to the runway. Currently, each runway end (except for Runway 12) is served by a VGSI. Six-box visual approach slope indicators (VASI-6) are available on Runway 8-26. VASI-4 are available on Runways 17-35. Runway 3-21 and Runway 30 are equipped with four-box precision approach path indicators (PAPI-4). These systems are designed for use by both jet and piston aircraft. Runway 12 should be planned for a VGSI system.

Runway end identifier lights (REIL) are installed to provide rapid and positive identification of the approach end of the runway especially at night or in low visibility conditions. REIL's consist of high intensity flashing strobe lights on each side of the runway threshold and should be considered for all runways not served by an approach lighting system. Runways 26, 30, 17 and 35 have REIL's. Installation of REIL's on Runways 12 and 21 would get minimal use and could be confusing because of the proximity of the thresholds to other runways.

AIRFIELD LIGHTING

To complement the existing ILS instrument approaches, Runways 8-26 and 3-21 are equipped with high intensity runway edge lighting (HIRL). HIRL provides a pilot with identification of the runway edge limits at night or in periods of low visibility, and is therefore typically used for commercial service runways. Runways 8 and 3 are also served by touchdown zone (TDZ) and centerline lighting (CL). This is adequate for the planning period.

Both ILS approaches are equipped with a medium approach light system and runway alignment indicator lights (MALSR). These are adequate for the CAT I approaches both now and in the future.

An approach with higher minimums is available to Runway 35. The 400-1 minimums are available from an NDB approach and a GPS overlay approach. It is recommended this approach be maintained as long as the runway is maintained.

An approach light system is not needed for an approach of this type, although a lead-in system such a omni-directional approach lights (ODALS) could assist in the final approach to Runway 30.

Runways 17-35 and 12-30 are equipped with medium intensity runway lighting (MIRL). This level of lighting is suitable for runways with minimums above ½ mile. Medium intensity taxiway lights (MITL) are in place on all airfield taxiways and should also be planned for any new taxiways.

The airport beacon located in the general aviation area, is also adequate for the planning period.

AIRFIELD MARKING

Airfield marking includes visual information for pilots such as signage, pavement markings, and wind indicators. Airfield signage provides location information by identifying runway and taxiway intersections. ABQ utilizes current FAA signage standards.

Runway pavement markings vary depending upon the instrument classification of the runway. Runways 8-26 and 3-21 have precision instrument markings because of their CAT I approaches. Runway 17-35 has nonprecision markings to coincide with its NDB/GPS approach. Runway 12-30 currently has basic markings because it has no instrument approach. If a GPS approach is added in the future, the markings will need to be upgraded to nonprecision. Taxiway are marked with basic taxiway markings. Holdline markings are set on each exit taxiway, at least 250 feet from the runway centerline.

AIR TRAFFIC CONTROL

Albuquerque International Sunport is also served by a 24-hour airport traffic control tower (ATCT). Local radar approach control is also provided for the area from the base of the tower.

An airport surveillance radar (ASR) is available on the airport as well. The ASR-9 is utilized by air traffic control. As radar tracking system technology continues to improve, equipment upgrades can be expected at ABQ.

SUMMARY

The findings and recommendations presented in the previous sections can be summarized as follows:

- The airport has adequate airfield capacity for the planning period. No additional runways need to be planned at this time. In fact, the three runway system of Runways 8-26, 3-21, and 12-30 would be adequate.

- A three runway system provides more than adequate wind coverage.

- Analysis of runway length requirements indicated that the length of primary Runway 8-26 was adequate to accommodate all commercial jet aircraft currently operating and forecast to utilize the airport in the future.

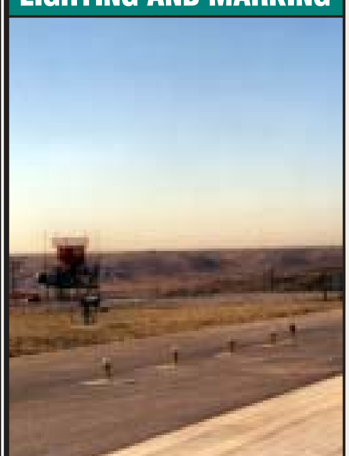
- The secondary runway length of 10,000 feet is currently adequate, but should be planned to be extended to 11,000 feet in the long range to meet the requirements of longer hauls.

- The taxiway system is in relatively good shape. Future taxiway needs will depend upon other airport development that may require additional taxiways. Construction of additional exit taxiways, including high speed exits, will further enhance airfield capacity. Also, full length parallel taxiways should be provided to each runway to further enhance and improve aircraft movements and operational safety.

- Improving the instrument approach capabilities will depend upon the transition to GPS. The CAT I approaches to Runways 8 and 3 are adequate, but an approach with one mile visibility should be considered for Runway 30.

As indicated in this section, existing airfield facilities at Albuquerque International Sunport will not need major improvements to meet the forecast demand through the planning period. Requirements determined in this section are summarized on **Exhibit V-3-B**. The next step in the master planning process is to put forth and analyze alternatives that can accommodate these requirements. The next section will provide this analysis and recommend the best alternative for the future development of the airfield.

98MP19-V3B-8/19/02

CATEGORY	EXISTING	SHORT TERM	LONG RANGE
RUNWAYS 	**Runway 8-26** 13,793' x 150' • 210,000# DWL **Runway 3-21** 10,000' x 150' • 210,000# DWL **Runway 12-30** 6,000' x 150' • 65,000# DWL **Runway 17-35** 10,000' x 150' • 210,000# DWL	**Primary Runway** 13,793' x 150' • 210,000# DWL **Secondary Runway** 10,000' x 150' • 210,000# DWL **General Aviation Runway** 6,000' x 100' • 65,000# DWL	**Primary Runway** Same **Secondary Runway** 11,000' x 150' • 210,000# DWL **General Aviation Runway** Same
TAXIWAYS 	**Runway 8-26** Full Parallel (both sides) Partial Dual Parallel High Speed Exits/Bypasses **Runway 3-21** Parallel, High Speed Exits Holding Apron - South **Runway 12-30** Full Parallel, Partial Parallel Right Angle Exits Holding Apron/Bypasses **Runway 17-35** Full Parallel, Partial Parallel Right Angle Exits/Bypasses	**Primary Runway** Full Parallel (both sides) Parial Dual Parallel High Speed Exits/Bypasses **Secondary Runway** Parallel, High Speed Exits Holding Apron/Bypass **General Aviation Runway** Full Parallel, Partial Parallel Right Angle Exits Holding Apron/Bypass	**Primary Runway** Same **Secondary Runway** Add Parallel **General Aviation Runway** Same
NAVIGATIONAL AIDS 	ASOS, RVR, ASR-9, ATCT **Runway 8-26** ILS (8) VORTAC/GPS (8) VASI-6 **Runway 3-21** ILS-3 PAPI-4 **Runway 12-30** PAPI-4 **Runway 17-35** NDB/GPS (35) VASI-4	ASOS, RVR, ASR-9, ATCT **Primary Runway** ILS GPS VASI-6 **Secondary Runway** ILS PAPI-4 **General Aviation Runway** GPS PAPI-4	ASOS, RVR, ASR-9, ATCT **Primary Runway** CAT I GPS VASI-6 **Secondary Runway** CAT I GPS PAPI-4 **General Aviation Runway** GPS PAPI-4
LIGHTING AND MARKING 	Rotating Beacon, MITL **Runway 8-26** HIRL, CL, TDZ MALSR (8)/REIL (26) Precision Marking **Runway 3-21** HIRL, CL, TDZ, MALSR Precision Marking **Runway 12-30** MIRL Basic Marking **Runway 17-35** MIRL Nonprecision Marking	Rotating Beacon, MITL **Primary Runway** HIRL, CL, TDZ MALSR/REIL Precision Marking **Secondary Runway** HIRL, CL, TDZ, MALSR Precision Marking **General Aviation Runway** MIRL Nonprecision Marking	Rotating Beacon, MITL **Primary Runway** Same **Secondary Runway** Same **General Aviation Runway** Same

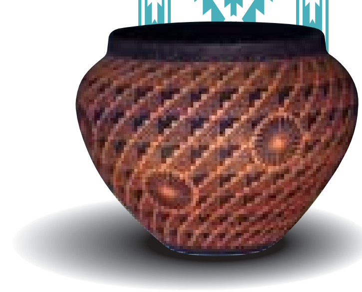
ABQ INTERNATIONAL SUNPORT

Exhibit V-3-B
AIRFIELD FACILITY REQUIREMENTS

Chapter Five

Airfield Facilities

Section Four
ALTERNATIVES



Chapter Five
Airfield Facilities

Section Four
ALTERNATIVES

The previous sections of this chapter identified present and future needs for the components of the airfield. One of the first issues typically considered is the airfield's operational capacity. As determined earlier, the airfield has adequate operational capacity to carry the facility through the long range planning horizon activity milestone.

Another issue to consider is the fact that three of the four existing runways have been reconstructed. At some point in the near term, the pavement of the fourth runway will need to be rebuilt if it is to be maintained into the future. There is a significant expense to this reconstruction that will need to be justified. As indicated in the previous sections, the other three runways can be and have been previously justified for capacity purposes. The costs associated with maintaining a fourth, non-parallel runway must be justified by the benefits it provides to the airport operation.

The following subsections will discuss rational airfield alternatives from the standpoint of their ability to meet the planning horizon activity milestones in a functional, efficient, economic, and environmentally acceptable manner. The alternatives are not limited to those that would develop the existing airfield. The alternatives of no action or "doing nothing" as well as relocating services to another airport or a new site must also be addressed. Through this process, a basic airfield concept can be transformed into a realistic development plan.

REVIEW OF 1993 MASTER PLAN

The **1993 Airport Master Plan** examined the alternatives for future expansion of the airfield. At that time, a major concern was the rehabilitation of the airfield's pavement without significant disruption or even interruption of air service. The only runways designed for use by commercial service jets were Runways 8-26 and 17-35. If Runway 8-26 were shutdown for any reason, the commercial jets were limited to Runway 17-35. The displaced threshold on the north end of Runway 17-35 limits its effective length to 9,110 feet for takeoffs to the north, further restricting the airport's capability. To work on the intersection of the two runways, the commercial jets would be limited to approximately 9,000 feet of Runway 8-26 located east of the intersection. Because of the extensive reconstruction that was necessary at the intersection, an independent secondary runway became a priority.

Another factor was the capacity of the airfield. Airfield operations totaled 210,000 in 1991, or 88 percent of the airport's annual service volume (ASV). The airport needed to plan for additional capacity in the near term before delays became significant.

A major recommendation of the 1993 plan included upgrading Runway 3-21 to 10,000 feet long and 150 feet wide and installing a Category (CAT) I instrument approach on Runway 3 from the southwest. The entire runway is located south of Runway 8-26. It provided the independent secondary runway as well as increased the airfield's annual service volume by nearly 47 percent. With 233,500 operations in 2000, the airfield is operating at 67 percent of its ASV and will remain below full ASV through the long range planning horizon.

Runway 12-30 was also improved to 6,000 feet by 150 feet primarily to enhance its use by general aviation aircraft. As shown in the earlier sections, it enhances capacity as well as enhances wind coverage for general aviation aircraft.

Besides the runway improvements discussed above, other airfield improvements recommended by the Master Plan and completed include the reconstruction of Runways 8-26 and 12-30 and associated taxiways. Also included was the construction of Taxiways G and D as well as other parallel and exit taxiways associated with the runways that were upgraded.

Another recommendation of the plan was to close Runway 17-35. The reasons cited by the previous master plan included:

- Limited need as a crosswind runway.
- Minimal impact on capacity.
- Runway closest to residential areas.
- Opens up two additional areas for landside aviation development.

To date, this recommendation has not been implemented.

AIRFIELD ISSUES CONSIDERATIONS

The development undertaken since the last Master Plan has put the airfield in good shape. In fact, there are only a few improvements that would be necessary to carry the airfield through the long range planning horizon milestone. These include planning for an 11,000-foot length capability for the secondary commercial service runway and evaluating the taxiway system for possible efficiency improvements and to serve future landside development.

Two of the biggest public issues related to Albuquerque International Sunport are the future justification of Runway 17-35 and the relocation of the airport to another site. The evaluation of Runway 17-35 must consider the capacity and wind coverage analysis of the previous chapter. It must also consider other factors such as the cost of continuing to maintain the runway, compatible land use factors, and the effect on providing future landside needs at the airport.

It is not uncommon for those living closest to an airport to support relocating the facility elsewhere. This has been an issue in the past. It will likely be an issue in the future. This chapter will consider the relocation alternative. To do this, the footprint that will be required will be defined. A preliminary site search will also be conducted that considers generalized potential locations for a new facility.

The alternatives evaluation will begin by addressing the "No Action", or "Do-Nothing", alternative. Next will be the discussion of relocating the airport. Finally, alternatives that shape the long range future at the existing facility will be examined.

NO ACTION ALTERNATIVE

The "No Action" alternative essentially considers keeping the airfield and/or the entire airport in its existing condition with no additional improvements. As the community continues to develop and grow, the transportation system must also adjust to meet the changing needs.

Air transportation is a part of this system, and in many ways, the most dynamic element of the system. Travel by air is the fastest means to cover long distances in the shortest time possible. It provides businesses the capability to expand their markets nationally and globally. It provides tourists the means to maximize their vacation experience within the time frame available. The airlines arguably provide the most successful form of mass transportation in the United States today.

Today's technology advancements have made the Internet the most dynamic form of communication. While the capabilities of the Internet may have reduced the need for some transportation for communications (i.e. certain meetings and letter deliveries), it has also increased the demand for short turnarounds both in business and household purchases. Air transportation is critical to providing the "just-in-time deliveries" for industry that has dramatically reduced overhead related to inventory storage. Even individual households can have any consumer product delivered to the doorstep within 24 hours because of the capabilities of the Internet and air transportation.

The Albuquerque International Sunport is the most important interface to the air transportation system, not only for the city and the metropolitan area, but also for the entire state of New Mexico. Approximately 95 percent of all airline travelers boarding aircraft in New Mexico enplane at ABQ.

The airport's forecasts and facility requirements analyses indicate future needs for facility improvements primarily in the landside components of the airport. The passenger terminal building, which is often the first and last memory of Albuquerque for visitors, will need to be able to grow to accommodate future needs. This is evidenced by simply reviewing history. Today's airport must handle 10 times more passengers than it did in 1965, and nearly three times more than it did 20 years ago. Growth in air cargo has been even more dramatic. General aviation needs continue to change as use of business and corporate aircraft become more commonplace.

If Albuquerque International Sunport had not been capable of responding to this need, the community's and state's ability to participate and compete in the national and global economy would have been compromised. If facilities are not maintained and improved so the airport remains a pleasant experience to the visitor or business traveler, or if delays and queues become unacceptable, then these individuals may consider doing their business elsewhere or choose another location to spend their vacation dollars.

Thus, the No Action Alternative remains inconsistent with the goals of the City, the State of New Mexico, as well as those of the Federal Aviation Administration which include enhancing local and interstate commerce. A policy of no action would be considered as an irresponsible approach affecting the long term economic growth of the region.

RELOCATION OF SERVICES

The relocation of an airport's operations either to another existing airport or to a new airport is an alternative that will typically be favored by many residing close to the existing airport. The relocation of an airport, however, is a very complex and expensive development, particularly when it involves a major commercial service airport such as Albuquerque International Sunport.

That is why in the past quarter century, there have been only two completely new, "green field ", airports constructed in the United States to replace existing airports that were serving over one million annual passengers. Those airports were in Ft. Myers, Florida and Denver, Colorado. The Southwest Florida International Airport was constructed because the existing airport was limited in runway length and in room for terminal development. Additional airfield capacity was considered a long range need at that time, and the airport still operates with just one runway. The new Denver International Airport was constructed primarily to provide adequate airfield capacity, as aircraft using the former Stapleton International Airport were subject to some of the highest operational delays in the nation, and there was not room to feasibly increase that capacity.

It must be noted that Albuquerque International Sunport does not experience any of these constraints at the present time. The airfield has adequate runway length for all types of civilian aircraft. The airfield capacity should be adequate for at least the next quarter of a century as well. The Master Plan is examining alternatives for ensuring that landside facility needs can also be accommodated over the long range. A new commercial service airport site would only be feasible in the next quarter century if landside facilities at ABQ cannot be improved in a cost-effective manner without significant, unmitigable environmental impacts.

Another important factor in considering the transfer of aviation services to another airport site is the proximity to the Albuquerque metropolitan area which generated two-thirds of the airport's passengers. **Exhibit V-4-A** depicts the area surrounding Albuquerque. Concentric 10-mile rings are displayed centered at the intersection of the two interstate highways. A 30-mile radius is considered essential to maintaining an airport within an hour of the majority of the metropolitan area.

With this preface, the following discussion considers what would be involved to relocate operations at ABQ to either an existing airport or a green field site.

TRANSFER SERVICES TO AN EXISTING AIRPORT

A Master Plan for an existing airport typically looks at the needs over a 20 to 25-year period. In this manner, any short term investment in improvements at the airport will be ensured of being amortized over a useful period of time. The same would be true of transferring services to another existing airport, provided that the transfer airport could absorb much of the current and 20-year demand without major investment beyond what would be required at the present airport.

Examples of how this could occur are if services could be effectively consolidated at another nearby commercial service airport, a large general aviation airport, or at a nearby military air base. In most cases, an existing general aviation airport will require such an extensive upgrade that it would essentially be the same as starting over with a new airport on the same site.

The military air base is viable only if there is one available that is either planned to be or recently was decommissioned, or a base that is willing to operate as a joint-use facility. This most recently occurred in Austin, Texas where Bergstrom AFB was converted to

Austin-Bergstrom International Airport. Of course, Albuquerque International Sunport is currently a joint-use facility with Kirtland Air Force Base. There are no other air bases within a proximity to Albuquerque to be reasonably considered.

The next closest commercial service airport to Albuquerque is Santa Fe Municipal Airport (SAF). This airport is owned and operated by the City of Santa Fe and has three intersecting runways. The primary runway is 8,392 feet long and is designed to just 100,000 pounds dual wheel loading. Since 1997, annual enplanements have doubled from 20,000 to over 41,000. This level of traffic is already taxing the capabilities of the small terminal. Up to 220,000 passengers are forecast for the long range by the draft master plan for the airport. This will be equivalent to approximately three percent of the long range passenger traffic projected for ABQ.

The level of facilities available at SAF would need to upgraded significantly to accommodate the traffic at ABQ. For instance, the primary runway is not even as long as the secondary runway at ABQ and would likely need to be rebuilt to provide adequate pavement strength. Additional non-intersecting runways would be necessary to provide adequate capacity as well. A new passenger facility would be required along with all-new cargo facilities. Access roads would also require upgrading. Essentially a new airport would have to be developed on the site, but Santa Fe Municipal Airport simply does not have the room to accommodate a major commercial service airport the size of ABQ.

In addition, the travel distance from Albuquerque would be a significant cost to the large majority of ABQ passengers. As depicted on **Exhibit V-4-A**, Santa Fe Municipal Airport is well outside the 30-mile radius. The present travel distance between Santa Fe and ABQ is what has made the existing commuter air service in Santa Fe attractive for some Santa Fe travelers. Therefore, while SAF may continue to recapture a percentage of its local traffic that has been using ABQ, full relocation of aviation services from ABQ to the Santa Fe Municipal Airport is not considered prudent or feasible.

No other existing commercial service airports are close enough to Albuquerque to be even remotely considered for transfer of services.

Double Eagle II Airport is the largest general aviation airport in the region, but its longest runway is still only 7,400 feet and is designed for 30,000 pound aircraft. While Double Eagle II may have some expansion capability, it would basically need to be redeveloped like a new site if it were to serve as the commercial service airport for Albuquerque. The same would hold true for all the other general aviation airports in the area. Each of these general aviation airports, however, can be maintained and improved to serve general aviation in a manner that could extend the capacity of Albuquerque International Sunport well beyond the 25-year planning period.

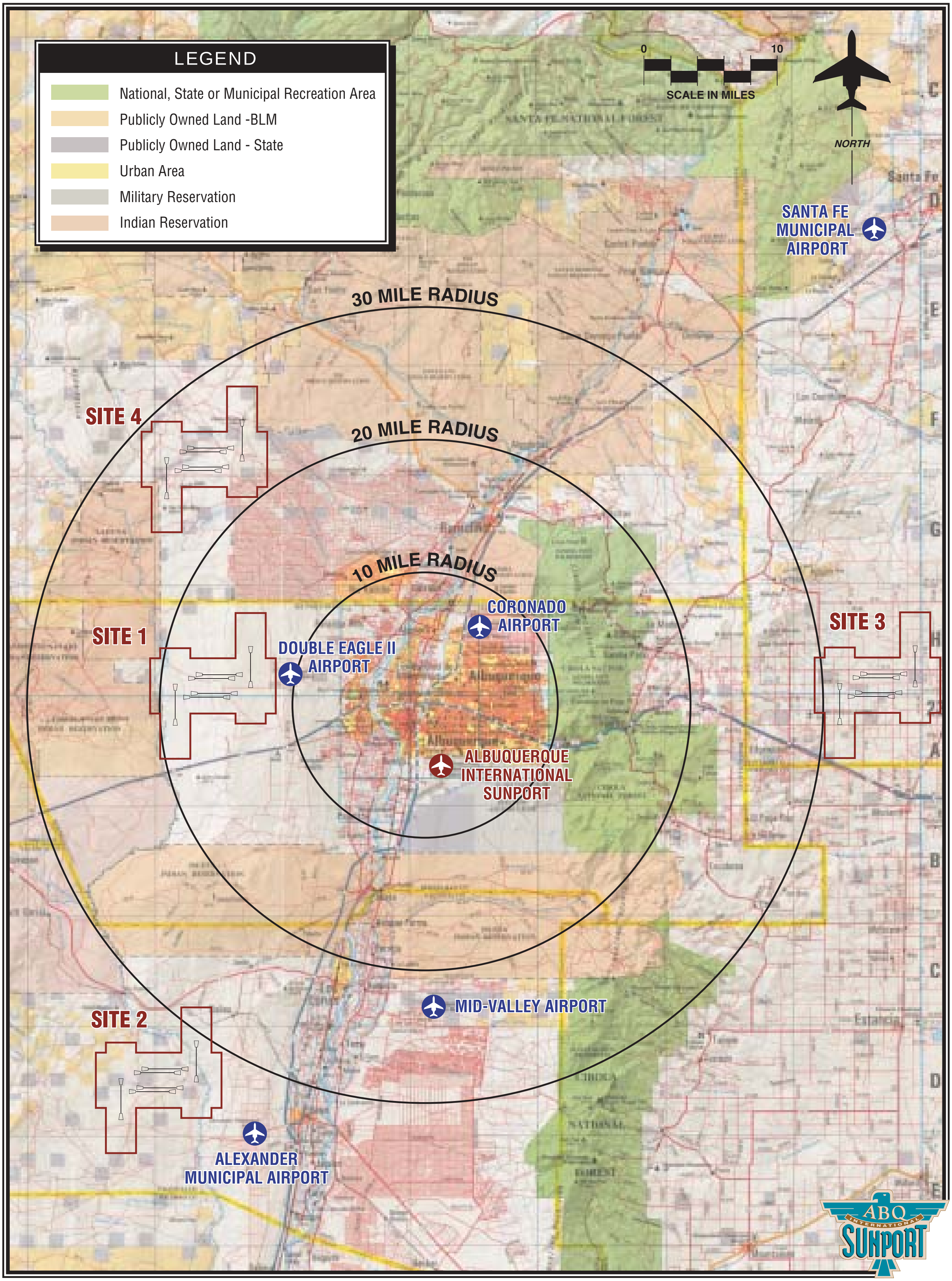


Exhibit V-4-A
AIRPORT SITING AREA

DEVELOP NEW AIRPORT

If a new airport site were to be developed, consideration must be given to providing adequate capability well beyond the 25-year planning envelope. This is prudent to ensure long term viability for the significant commitment of property and funds, and also because it would likely take 10 or more years to gain approvals, secure funding, acquire property, then construct the airport.

The existing airport has a runway nearly 14,000 feet long; this capability should be maintained. Widely-spaced parallel runways provide the best capacity, so any new site should have that capability with adequate space between the runways for terminal development. For a new airport, a spacing of 5,000 to 6,000 feet would be preferred. Third and fourth parallel runways (1,200 feet minimum separation) should also be reserved for ultimate development. The area winds indicate that at least one crosswind runway orientation will be necessary. Ultimately, a widely-spaced parallel should be included. Room will also be necessary for air cargo and general aviation unless the existing airport remains open for their use. It is assumed that the military operations would not relocate. If so, even more space would be necessary.

Exhibit V-4-B depicts a prototype layout for a new airport site based upon the above. A key to the long range viability of the new airport site will be to invest in enough property acquisition to ensure compatible land use. History has shown that, over time, the presence of a commercial service airport attracts urban development. While the surrounding property may be undeveloped when the new airport is constructed, it will not stay that way. The prototype airport assumes that an area three miles (16,000 feet) and over two miles wide (12,000 feet) off the end of each runway would be acquired. As a result, the airport defined in the exhibit could require as much as 56 square miles of property acquisition. As detailed, site-specific refinements are made, it may be possible to reduce this envelope, but it can still be anticipated that at least 40 square miles should be reserved.

Exhibit V-4-A relates the size of this airport envelope to the areas surrounding Albuquerque. Space for major airport development is limited first by the mountainous terrain throughout the area. Indian reservations are present on three sides and comprise a large portion of the area. Areas that might be considered are located to the immediate west of the Albuquerque, southwest near Belen, east of the mountains near Moriarity, and to the northwest.

The next major consideration is transportation and utility access. This level of facility will require freeway access similar to that provided by I-25 adjacent to the Sunport. The further a new airport is from existing freeways, the more expensive that access will become. Similarly, the further the airport is from the city, the further any future mass transportation, such as light rail would need to be extended. In addition, utilities such as water and sewer, power, and gas would have to either be extended to the site or developed on-site.

With a site as large as this airport would command, the chances for environmental impacts are increased. To minimize property acquisition costs as well as relocation costs, sites with minimal existing development would be preferred. Since the site would be primarily undeveloped, the potential for impacts to wildlife and its habitat, wetlands, farmland, and previously undisturbed cultural resources will generally be greater than an existing site which still has development capability.

The cost for development of a new site to meet the long range planning horizon milestone is estimated in the range of $2.0 billion. This includes acquisition of 50 square miles of property, two parallel and one crosswind runway, a 900,000 square-foot terminal, access, parking and support facilities, as well as long range facility needs for general aviation and air cargo.

Also to be considered is the joint-use association of Albuquerque International Sunport with Kirtland Air Force Base (AFB). If the relocation were to include the Air Force Base, the resultant airport relocation could quickly become the most expensive ever undertaken in the United States. This does not even consider the potential ramifications relating to the Sandia National Laboratories.

If Kirtland AFB were to remain at the existing airport, the net result would not be a replacement, rather the addition of another major airport facility in the Albuquerque area. Resources and costs saved by the joint-use operation would be lost, and operating costs would be increased for all parties involved. In addition, the potential for airspace complications in the metropolitan area would be increased. The further away the new airport is the less likely the airspace complications. The trade off, however, is in higher ground transportation times and costs, as well as higher potential impacts on the natural New Mexican environment.

At some point in the next century, Albuquerque International Sunport may reach its practical capacity. As that time approaches, it may be necessary to begin to consider a large, new airport site or at least, relocating some commercial service activities elsewhere. That time, however, is well beyond the next quarter of a century, leaving Albuquerque International Sunport a serviceable airport with a significant useful life.

AIRFIELD IMPROVEMENT ALTERNATIVES

With minimum improvements the existing airfield will be adequate for the long range planning horizon of 345,000 annual operations. This level is not anticipated to be reached for at least a quarter of a century. This airfield capacity was attained with the upgrade of Runway 3-21 to 10,000 feet in length and the addition of a Category I instrument approach to Runway 3. To provide any significant capacity improvement beyond the present level through infrastructure development

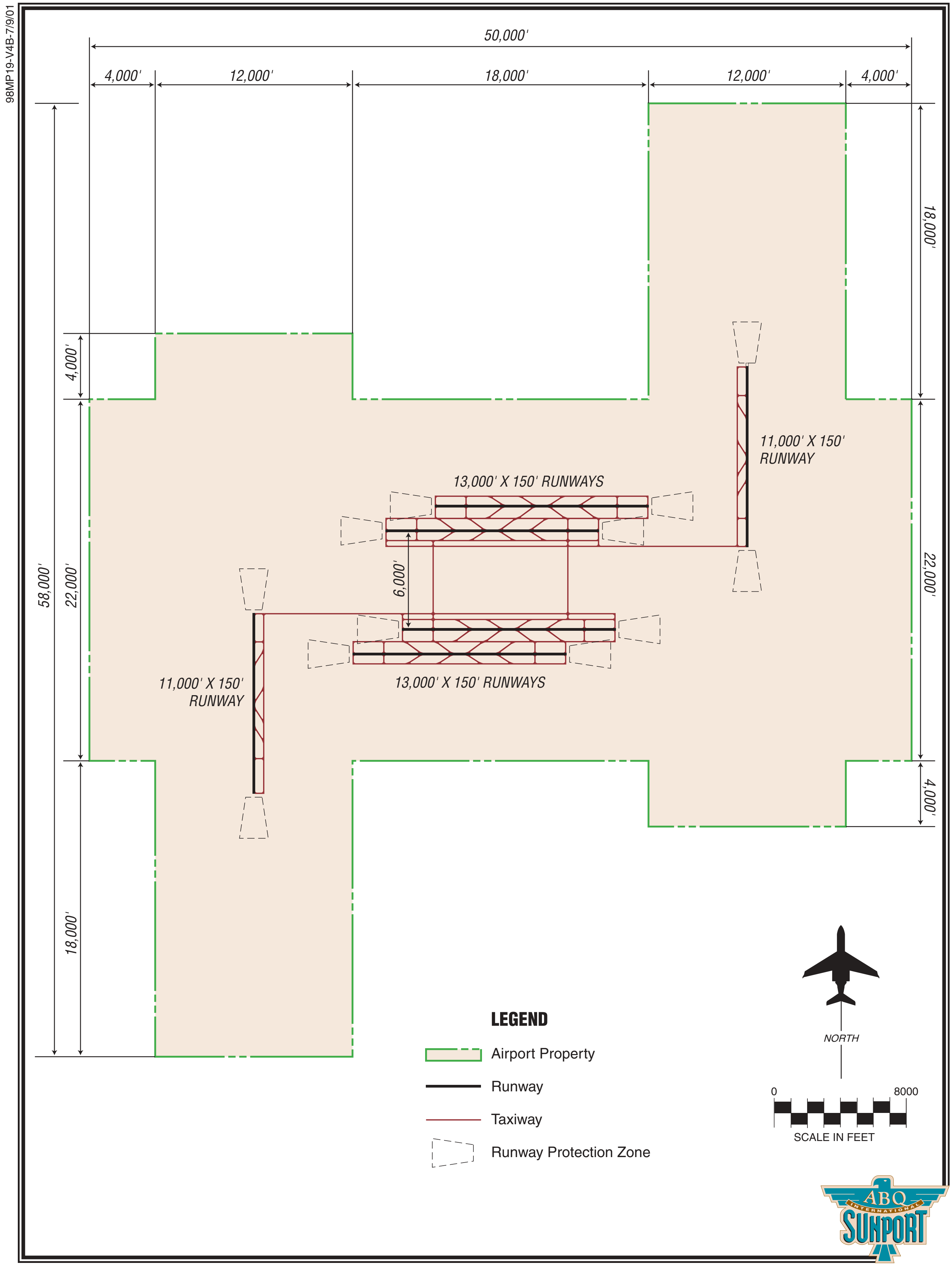


Exhibit V-4-B
GREEN FIELD
AIRPORT PROTOTYPE

would require a parallel runway system. This alternative was first addressed in the last 1993 Master Plan.

The ideal separation for maximizing capacity with a parallel runway system is to provide a runway separation of at least 4,300 feet. This minimum separation permits simultaneous approaches during instrument weather.

The FAA has approved simultaneous approaches down to a 3,400-foot separation, but the wider separation is still preferred.

Providing for a widely-spaced parallel runway would be costly. The airport's location on the edge of a mesa results in rapidly falling terrain on the three sides.

Exhibit V-4-C depicts an alternative with a parallel east-west runway at a separation of 4,300 feet. Unless the current air freight area and portions of the general aviation area were to be removed, this runway would have to be constructed primarily on property controlled by Kirtland Air Force Base.

The topography in this area recedes from the airport into an arroyo 150 feet below. As much as 80 percent of the runway and parallel taxiway system would have to be placed on as much as 150 feet of fill material.

The property is currently used by Kirtland Air Force Base and the Sandia National Laboratory. There are several uses located throughout the area, both above and below ground, some of which could involve national security. In addition, it is unknown if there would be any hazardous waste sites in the area.

Besides the property that would be reclaimed for physical construction, new areas of the Sandia Labs would be overflown. The effect on national security is not known, but there would be a high probability that some uses in the flight path may also have to be relocated.

Exhibit V-4-D depicts a closer separation of the parallel runway. The 1,200-foot separation would permit simultaneous visual (VFR) approaches for all aircraft. A minimum separation for other aircraft, excluding Design Group V and VI, is 700 feet. The 1,200-foot separation would permit the existing parallel Taxiway E to serve both runways.

As indicated on the exhibit, the parallel runway must still be shifted to the east to keep existing landside airport uses out of the RPZ. These include portions of the general aviation area as well as the new rental car facility.

While the closely-spaced runway would not require as much earthwork as the widely-spaced parallel, there are more existing Kirtland facilities that would be affected. These include a weapons laboratory, a water well, and several other facilities.

In summary, the parallel runway would be an expensive proposition, no matter what the spacing. The existing airfield has been shown to have adequate operational capacity for the planning period. Until the existing capacity is reached, there is little need for additional capacity. As the available capacity is reached, these alternatives may be addressed again, but to carry forward these alternatives given the current growth levels and anticipated growth rates would require extensive speculation beyond the normal planning time frame of 20 to 30 years.

Therefore, the remaining airfield alternatives concentrate on optimizing the existing airfield.

RUNWAY 8-26

Over the past decade, the primary Runway 8-26 has undergone reconstruction of its entire length as well as its parallel taxiway system. This included the reconstruction and extension of parallel Taxiway E on the south side of the runway. The extension of this parallel taxiway improved airfield circulation, safety, and efficiency by permitting aircraft from the air freight and general aviation areas to taxi to and from the primary runway without having to cross it.

All the taxiway exits from the primary runway recommended by the previous Master Plan have been constructed; therefore, the runway's exit capabilities have been optimized. The only taxiway recommendation not completed was the extension of dual parallel Taxiway B west to the easternmost high speed exit.

The plan called for the parallel taxiway to be extended across the north side frontage of Kirtland Air Force Base (KAFB) to Taxiway Exit A9. Taxiway B is in place to Taxiway Exit A6. This section was constructed and required the removal of a portion of KAFB's active apron.

As it exists today, Taxiway B is particularly useful in west flow. Because of the length of the runway and the location of the passenger terminal area at the west end of the runway, aircraft typically exit the runway well before reaching the terminal area. With a single parallel taxiway, this would create taxiway bottlenecks between arriving and departing passenger aircraft on Taxiway A. The present length of Taxiway B eliminates this circulation problem by providing the dual system from the first west-bound high speed exit, all the way to the terminal apron.

Ideally, the dual parallel taxiway would be extended along the entire length of the runway as presented on **Exhibit V-4-E**. A full length parallel taxiway would require extensive relocations of existing base facilities along the eastern half of the runway length. The greatest benefit of the east Taxiway B extension would be for the military aircraft stationed near the east end of the runway during east flow. Because of its effects on military facilities and because the primary beneficiaries of its construction would be the military, further extension of Taxiway B should be included in the plan only at the request of Kirtland Air Force Base.

RUNWAY 3-21

As indicated earlier, one of the primary recommendations from the previous

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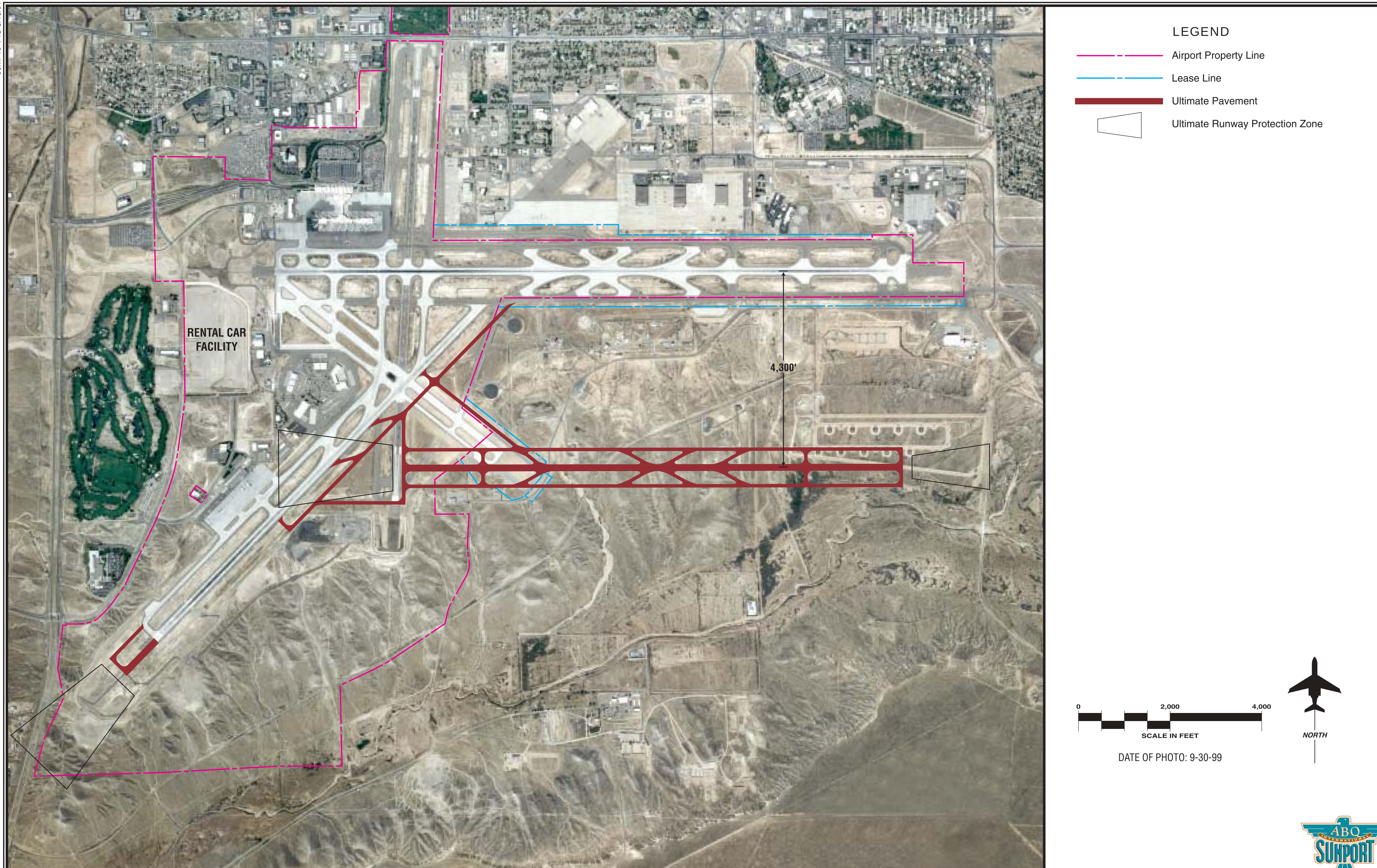

Exhibit V-4-C
PARALLEL RUNWAY
4,300 FOOT SEPARATION

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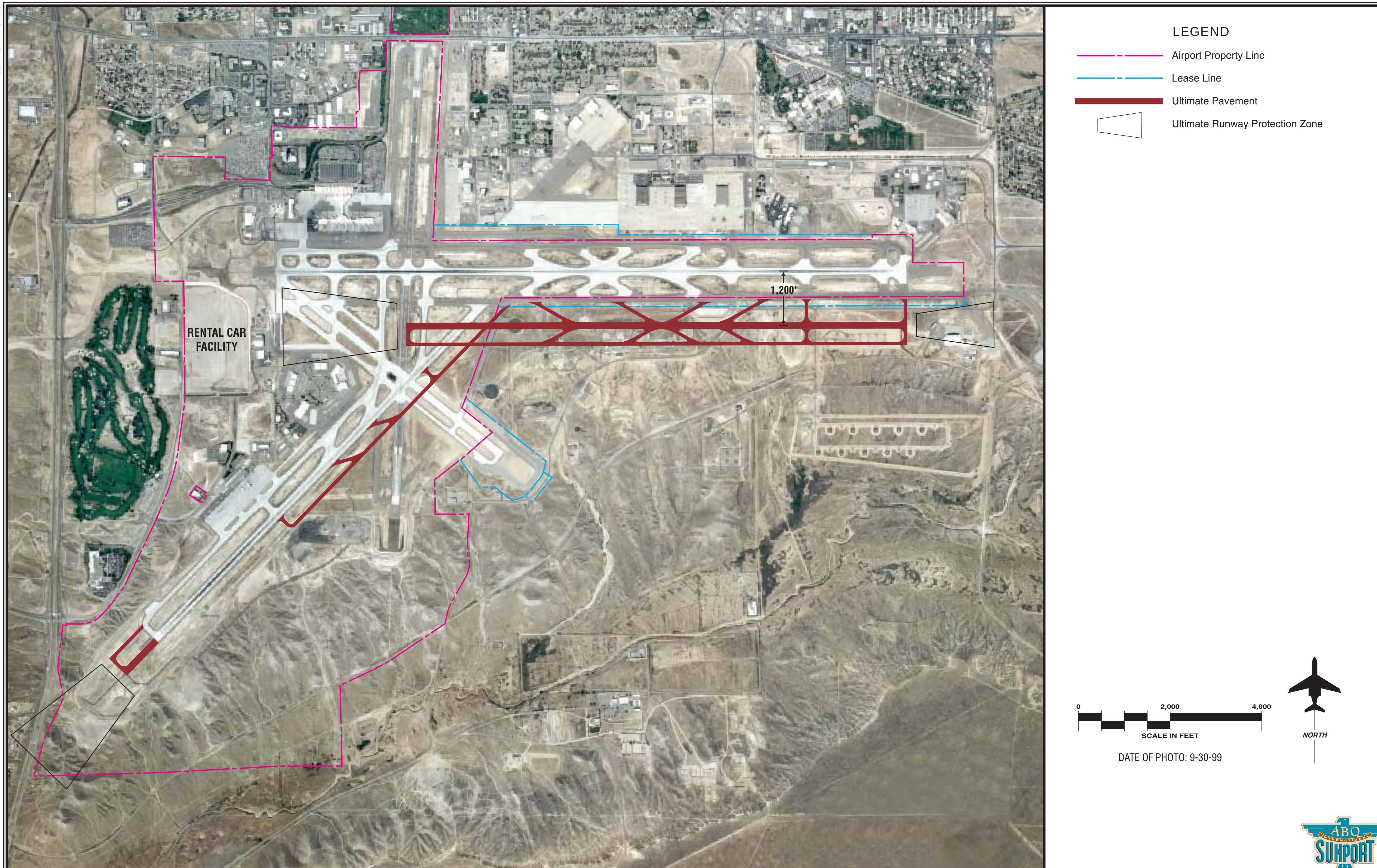

Exhibit V-4-D
PARALLEL RUNWAY
1,200 FOOT SEPARATION

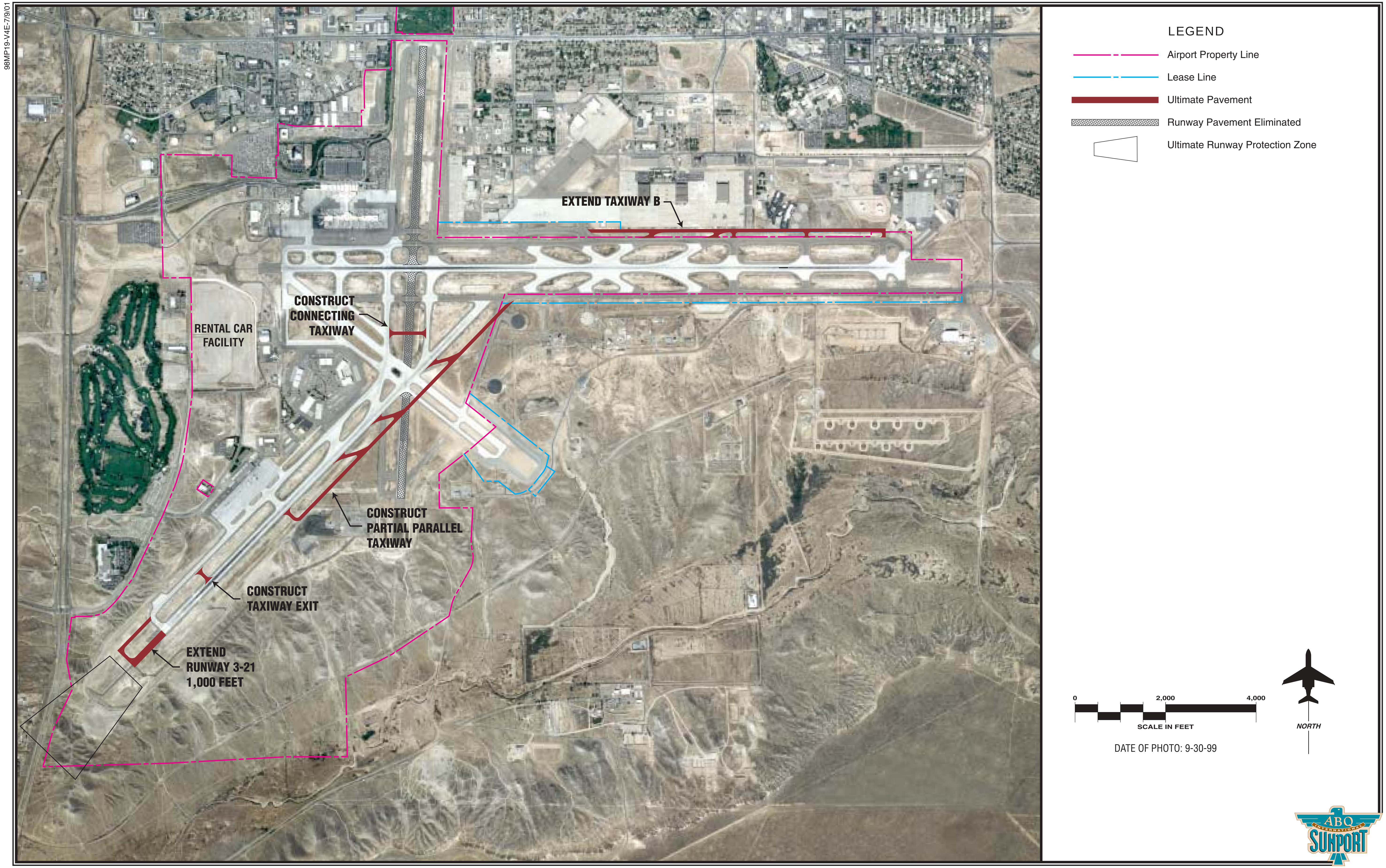

Exhibit V-4-E
AIRFIELD CONSIDERATIONS

master plan was to upgrade Runway 3-21 to accommodate air carrier aircraft. The runway is now 10,000 feet long, 150 feet wide and is equipped with a Category I instrument approach from the southwest.

The facility requirements indicated the airport should plan for a long range need for a secondary runway 11,000 feet in length. This can be added to the southwest end of the runway as depicted on **Exhibit V-4-F**. There is an adequately graded area available for a 1,000-foot extension and the associated extended runway.

An extension to the northeast would intersect with Runway 8-26 and reduce the operational capacity improvements of Runway 3-21. A northeast extension would also extend the runway protection zone off the northeast end of the runway into Kirtland Air Force Base. In addition, aircraft on Taxiways A and B would have to hold for an aircraft operating on Runway 3-21.

Therefore, an extension to the southwest is preferred. The landing threshold could be left in its present location to ensure that aircraft approaches over areas to the southwest are not lowered. At the same time, the limited departures to the northeast would be able to climb out higher with the departure threshold located 1,000 feet further southwest.

Runway 3-21 currently has a parallel taxiway along its west side. Parallel Taxiway F extends from the southwest end of the runway to its intersection with Runway 12-30. From that point, taxiways parallel to Runway 17-35 (Taxiway C) and Runway 8-26 (Taxiway E) are used to access the Runway 21 threshold.

Extending the parallel taxiway the full length of the runway could be considered if Runway 17-35 were to be closed. A concern with this alignment, however, would be two taxiways intersecting at the same intersection with Runway 12-30. This could increase the potential for runway incursions. Therefore, an extension of parallel Taxiway F to the northeast is not recommended, whether or not Runway 17-35 is closed.

A connecting taxiway between Taxiways C and D, however, could be considered if Runway 17-35 were to close. This taxiway would run parallel to Taxiway E and would intersect with Taxiway C at Taxiway J as shown on **Exhibit V-4-E**. This taxiway would provide more flexibility for circulation in the midfield area.

RUNWAY 12-30

The reconstruction and extension of Runway 12-30 to 6,000 feet makes it a better option for general aviation aircraft to avoid the heavier traffic on the other runways. The proximity of the runway to the general aviation area makes Runway 12 convenient for departures in east flow and Runway 30 convenient for arrivals in west flow.

The present taxiway system for Runway 12-30 includes a full length parallel Taxiway G on the south side of the runway. This serves the general aviation users well. A partial parallel

Taxiway J on the north side assists with midfield circulation. Therefore, the taxiway system for Runway 12-30 is sufficient and does not require any other improvements.

RUNWAY 17-35

As indicated earlier, Runway 17-35 is the fourth runway orientation on an airfield where the other three runways provide sufficient wind coverage as well as sufficient airfield capacity. It was determined that Runway 17-35 provides only a minor additional contribution in both instances.

Maintaining Runway 17-35 has the backing of much of the aviation user community. Reasons brought forward by the Runway 17-35 supporters include the following:

- Runway 17-35 provides a third commercial service runway. Removing it takes away one third of the pavement.
- Winds can get so high in the spring at ABQ that Runway 17 must be used.
- It seems that at least one runway is always being worked on.
- The runway enhances capacity.
- Runway 17-35 is the best way to mitigate noise.
- The loss of Runway 17-35 might make Kirtland a stronger candidate for closure.

Each of these points are valid to a degree. If there were not costs involved with maintaining and operating a fourth runway orientation, there would be no reason to consider any change. Unfortunately, there are costs involved in the near term. There are also considerations for space for landside development to balance the airfield's capabilities and the community's needs.

The analysis for maintaining Runway 17-35 begins with a review of the costs that will be involved in maintaining it in its current size and location. A cost estimate for the rehabilitation of the runway and taxiway pavements has been estimated at $27 million. This considers the fact that portions of the runway and its taxiway system have recently been rehabilitated (i.e. the runway intersections with other runways and parallel taxiways C and D at midfield between the runway intersections).

An alternative for keeping a north-south runway orientation and opening up space for landside development would be to shift the runway to the south. Presently, the runway literally abuts Gibson Boulevard on the north end. The north landing threshold of the runway is already displaced 890 feet, and a blast fence is located on the north end of the runway to protect vehicles on Gibson from jet blast. Shifting the runway further south would correct this situation as well as raise the height of overflights of the residential neighborhoods to the north.

To provide room for landside development, and to effectively improve

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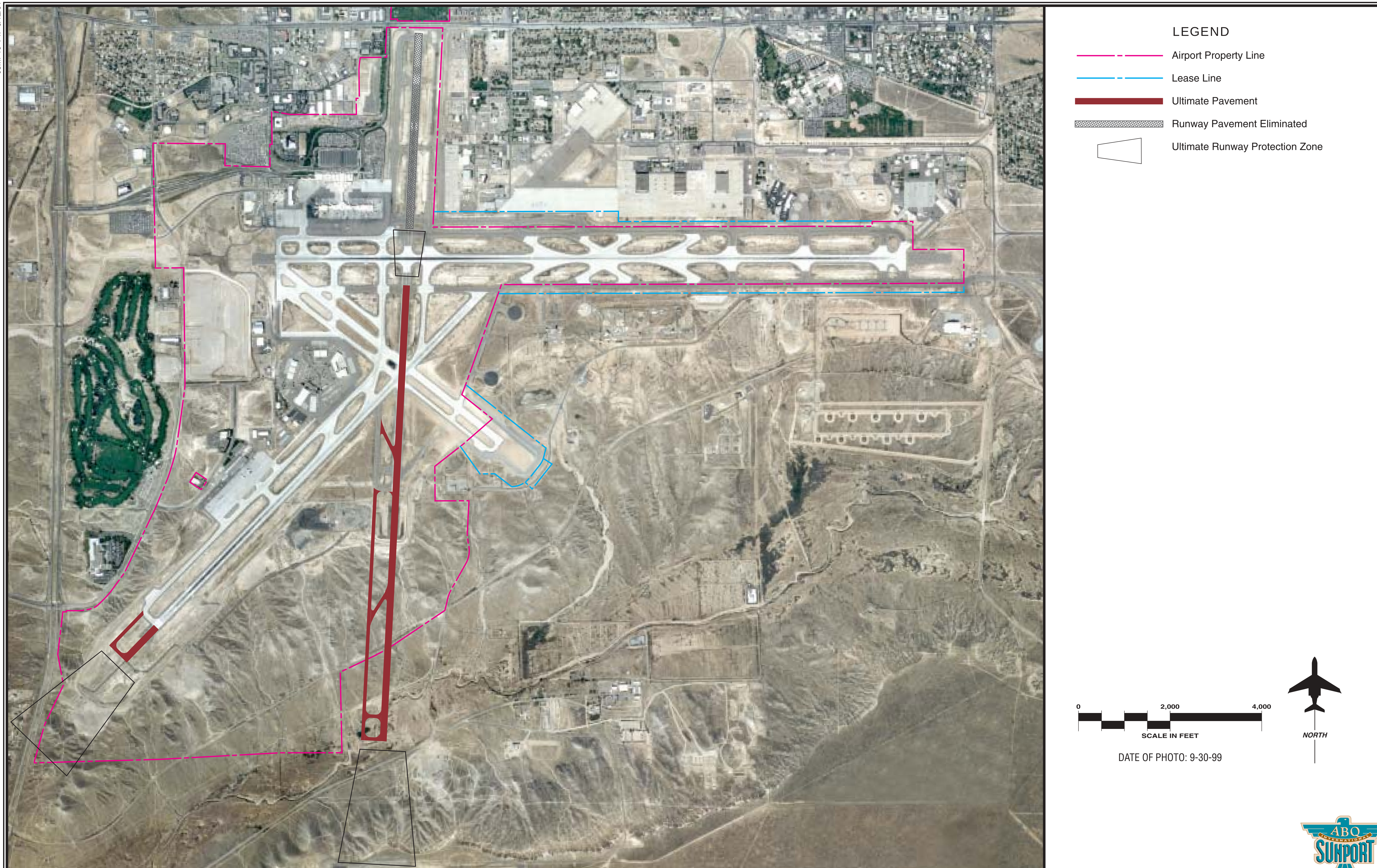

Exhibit V-4-F
RUNWAY 17-35 FULL LENGTH ALTERNATIVE
RELOCATE 10,000' X 150' RUNWAY

safety and enhance capacity, the runway would need to be shifted south of Runway 8-26. This alternative is presented on **Exhibit V-4-F**. The 10,000-foot runway would extend beyond the mesa into the arroyo, requiring up to 200 feet of fill. Additional property would need to be acquired and a wash would need to be relocated for the extension. In addition, the runway would be moved closer to Montessa Park, located in the arroyo, and the Mesa del Sol planned community on the other side of the arroyo. Approved in 1993, Mesa del Sol involves 12,400 acres including over 2,500 acres of residential development. Total costs for the relocated Runway 17-35 commercial service runway are estimated at $496 million. The costs and potential impacts make this runway development infeasible.

Another alternative would also involve relocating the runway, but with a reduced length of 6,000 feet. This runway would still be able to serve general aviation and commuter aircraft, and could be reduced in pavement strength. **Exhibit V-4-G** depicts a 6,000-foot runway located south of the current intersection with Runways 12-30 and 3-21. This alternative runway would extend nearly as far south as the previous alternative, but it would be less demanding with regards to safety areas, so earthwork would be reduced. The overflights of the area to the south would be limited to general aviation and commuter aircraft. Total cost for this shorter runway would still be approximately $436 million due to the extensive amount of fill involved.

Yet a third option would be to maintain a 6,000-foot runway immediately south of Taxiway E. This alternative maintains the major three-runway intersection, but reduces the earthwork because the runway does not extend as far into the arroyo. Costs for this runway are estimated at approximately $19 million. This alternative is also presented on **Exhibit V-4-G.**

It is evident that each alternative for maintaining a north-south runway will be expensive. These costs must be compared to the benefits of maintaining the runway. These are considered below:

Runway 17-35 provides a third commercial runway - A third commercial runway can be nice to have available, but at a minimum short term cost of $27 million, a runway for occasional use is very hard to justify. For noise abatement purposes, the use of the runway is currently minimized at three percent of departures and four percent of arrivals. This equates to approximately 8,000 annual operations (based upon 233,000 total airport operations). In the long range, the operations on Runway 17-35 could increase to 12,000 annually (based upon 345,000 total airport operations).

Most of these operations could still occur on the other runways. It is only when both of the other commercial service runways are down at the same time that the third runway would be needed. Since Runways 8-26 and 3-21 do not intersect, the chances of both runways being inoperable at the same time are significantly reduced. Runway 17-35, however, intersects with both runways, and subsequently can have a greater effect on the uninterrupted use of the other two.

Winds can get so high in the spring, that Runway 17-35 must be used - The wind rose analysis in Sections Three and Four indicated that the runway can add 1.18 percent to the wind coverage for small general aviation aircraft over the course of the year. Strong winds are more concentrated in the spring when the runway could add 2.9 percent coverage in May. Larger general aviation (GA) and commuter planes can take a higher crosswind and would be affected only 0.42 percent of the year and 1.46 percent in May. Over the course of a year, this would equate to less than 800 annual general aviation operations and less than 200 commuter operations. In some cases, the small aircraft can accept a slightly higher crosswind because of the 150-foot wide runways at ABQ, further reducing the affected operations. In the highest of winds, general aviation aircraft also have the option of diverting to Double Eagle II Airport which has a north-south runway.

Larger commercial service planes would be affected less than 0.44 percent of the year by having two runway orientations instead of three and 1.18 percent of the time in May. This currently equates to approximately 380 operations a year. None of these figures are unusual and, in fact, are lower than experienced at most airports across the country.

It seems that at least one runway is always being worked on - As with highways, runways are pavement and eventually must be maintained and rehabilitated. Having a back-up runway is important in these instances. Albuquerque has that capability without Runway 17-35. Runway 17-35 would be some extra insurance, but at a cost. Every piece of active pavement must be maintained, including a third runway such as Runway 17-35. The cost for maintaining Runway 17-35 is at least $27 million in the short term. This will be followed by other recurring operational and maintenance costs on a periodic basis.

The runway enhances capacity - The analysis in the previous sections indicated that Runway 17-35 may provide a slight improvement in capacity if used on a limited basis. If that use is increased, however, the capacity enhancement is lost, and the runway becomes a drag on airfield capacity. So use of Runway 17-35 becomes a problem in itself. If it is not used extensively, it is difficult to justify its maintenance and upkeep. If it is used more, then it will affect airfield capacity and increase delays.

The present location of Runway 17-35 may actually assist one airline in its turnaround times. The airline on the east end of Concourse A at the terminal can arrive from the south on Runway 35 and nearly roll out to its gates. On departure, the airline can conveniently taxi to the north end and takeoff on Runway 17. These takeoffs and landings on Runway 17-35 cross all

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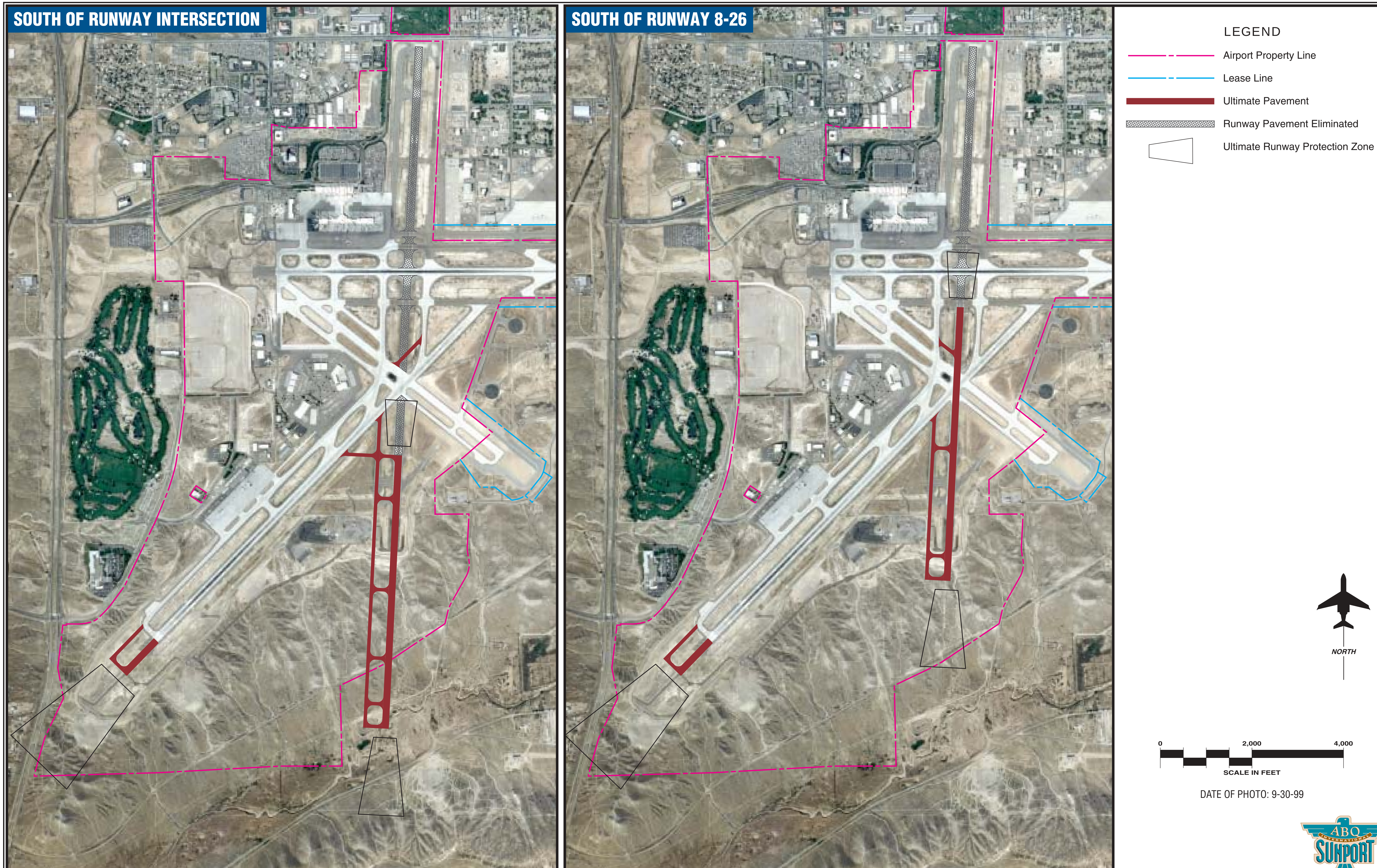


Exhibit V-4-G
GENERAL AVIATION RUNWAY 17-35 ALTERNATIVES
RELOCATE 6,000' X 150' RUNWAY

three of the other runways on the airport. As a result, other aircraft operating from any of the other three runways must hold for the airline landing or departing on Runway 17-35.

The fact that Runway 17-35 intersects with all three runways increases the opportunity for runway incursions. Reducing the potential for runway incursions has been a major emphasis of FAA in improving airfield safety. Not only does Runway 17-35 cross the other three runways, it intersects with two of them – Runways 3-21 and 12-30 – at the same point. A multiple intersection is considered one of the worst conditions for runway incursions.

Runway 17-35 is the best way to mitigate noise - Under the present land uses, landings from the south and takeoffs to the south overfly minimal noise-sensitive land uses. Takeoffs to and landings from the north, however, are closer to noise-sensitive land uses than any other runway approach at the airport. Once more, adding more operations to Runway 17-35 in either direction only serves to reduce the airfield's capacity. Finally, the plans for 12,400 acres south of the airport will affect any noise abatement advantage Runway 17-35 can offer.

Loss of Runway 17-35 might make Kirtland AFB a stronger candidate for closure. The military jet operations from Kirtland AFB use Runway 8-26 almost exclusively. Runway 3-21 and Runway 17-35 are used as back-up runways. Until Runway 3-21 was upgraded in the mid-1990's, the military jets had just one back-up runway. If Runway 17-35 were to close, Runway 3-21 can still provide an adequate back-up.

In summary, Runway 17-35 offers the airport a limited amount of additional capability. It is a second back-up for commercial and military airlines, and a third back-up for general aviation and commuters. It can be a runway of convenience for the airlines on the easternmost terminal concourse. This must be weighed against the following considerations.

- **Safety:** Runway 17-35 intersects all three other runways and increases the opportunity for runway incursions. The existing three-runway intersection is a condition that FAA seeks to avoid or eliminate due to its high potential for runway incursions.

- **Wind Coverage:** Runway 17-35 is needed for less than 1,400 operations per year. In extreme conditions, general aviation aircraft can use the north-south runway at Double Eagle II Airport.

- **Capacity:** The five highest airfield operations capacity scenarios do not include Runway 17-35. Increased use of Runway 17-35 would lower airfield capacity and increase aircraft delays.

- **Costs:** Short term runway rehabilitation costs are estimated at $27.0 million. The minimal benefits of this runway will not survive a benefit-cost analysis.

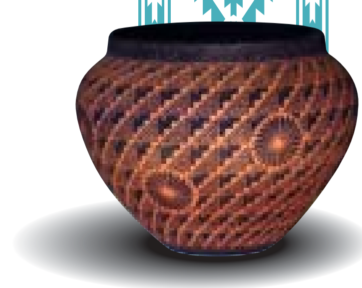
- **Other Considerations:** The north approach directly overflies residential neighborhoods. The physical space and safety clearances required for this runway are in locations that can support future landside development on a land-poor airport.

Chapter Five

Airfield Facilities

Section Five

RECOMMENDED PROGRAM



Chapter Five
Airfield Facilities

Section Five
RECOMMENDED PROGRAM

The airfield alternatives discussed in the previous section were reviewed with the Master Plan advisory committees as well as the public at a public information workshop. In addition, Runway 17-35 was discussed with general aviation pilots and airline representatives at separate informa-tional meetings. The feedback obtained was considered in developing the final recommendations for the airfield.

While the airfield is the key operational component of any airport, it must also be considered in concert with the other airport components in developing the overall Master Plan concept. The airfield recommendations were prepared after examining the functional, environmental, and economic considerations of each viable alternative.

The recommended concept is depicted on **Exhibit V-5-A**. The following paragraphs summarize the airside and landside recommendations. This begins with a review of the airfield design standards for each runway.

DESIGN STANDARDS

Albuquerque International Sunport (ABQ) is identified as a primary commercial service airport in the FAA **National Plan of Integrated Airport Systems** (NPIAS). FAA Advisory Circular 150/5300-13, **Airport Design**, outlines recommended design standards for airports. These design standards are based upon the airplane characteristics that the airport is expected to serve on a regular basis. Most critical to airport design are the weight, wingspan, and approach speed of the design aircraft. An airport's reference code (ARC) is based upon a combination of the aircraft approach category and the airplane design group

(ADG). These were defined earlier in Section Two - Facility Requirements.

The critical ARC for planning at ABQ was determined to be D-V. This would include the civilian and military versions of the B-747 as well as the military C-5A. The primary runway should continue to be designed to accommodate this ARC. Runway 8-26 meets the design criteria for D-V and will remain as the primary runway in the future. Efforts should be focused on preserving and maintaining the safety design standards of the runway.

The secondary runway is needed for capacity and should be maintained in a manner to serve at least 90 percent of aircraft operations at the airport. This will require that the secondary runway be designed to meet at least D-IV standards. Runway 3-21 was upgraded to these standards in the 1990s and is expected to continue in this role in the future.

The general aviation crosswind runway must have the capability to accommodate slower approaching aircraft under crosswind conditions. It also improves capacity if it can accommodate more of the larger, slower aircraft. As a result, the runway is recommended to be maintained at B-III standards. Runway 12-30 is presently designed to these standards. Runway 17-35 is recommended to be closed the end of its useful life. **Table V-5-A** depicts the key design standards for the ultimate three-runway airfield system at ABQ.

AIRFIELD RECOMMENDATIONS

The principal airfield recommendations focus first upon safety and security. Of key importance is to ensure that airport design standards are met, particularly in relation to the runway safety area (RSA). Other recommendations are provided to improve the efficiency and circulation on the airfield. The following subsections discuss the recommendations as they pertain to each runway as well as the taxiway system.

RUNWAY 8-26

Runway 8-26 will remain the primary commercial service runway for the future. At 13,793 feet, it is one of the longest commercial service runways in the country. The runway was rebuilt in the 1990s and is now supported with full length parallel taxiways on both sides as well as an excellent system of exit taxiways. The west approach (Runway 8) is equipped with CAT I approach minimums. While normal traffic flow is west to east, an instrument approach on Runway 26 would be desirable. As the newer technology in navigational systems continues to improve, there may be opportunities to establish an approach to Runway 26.

The only other major capital improvement to consider along Runway 8-26 is the extension of dual parallel Taxiway B to the west end of the

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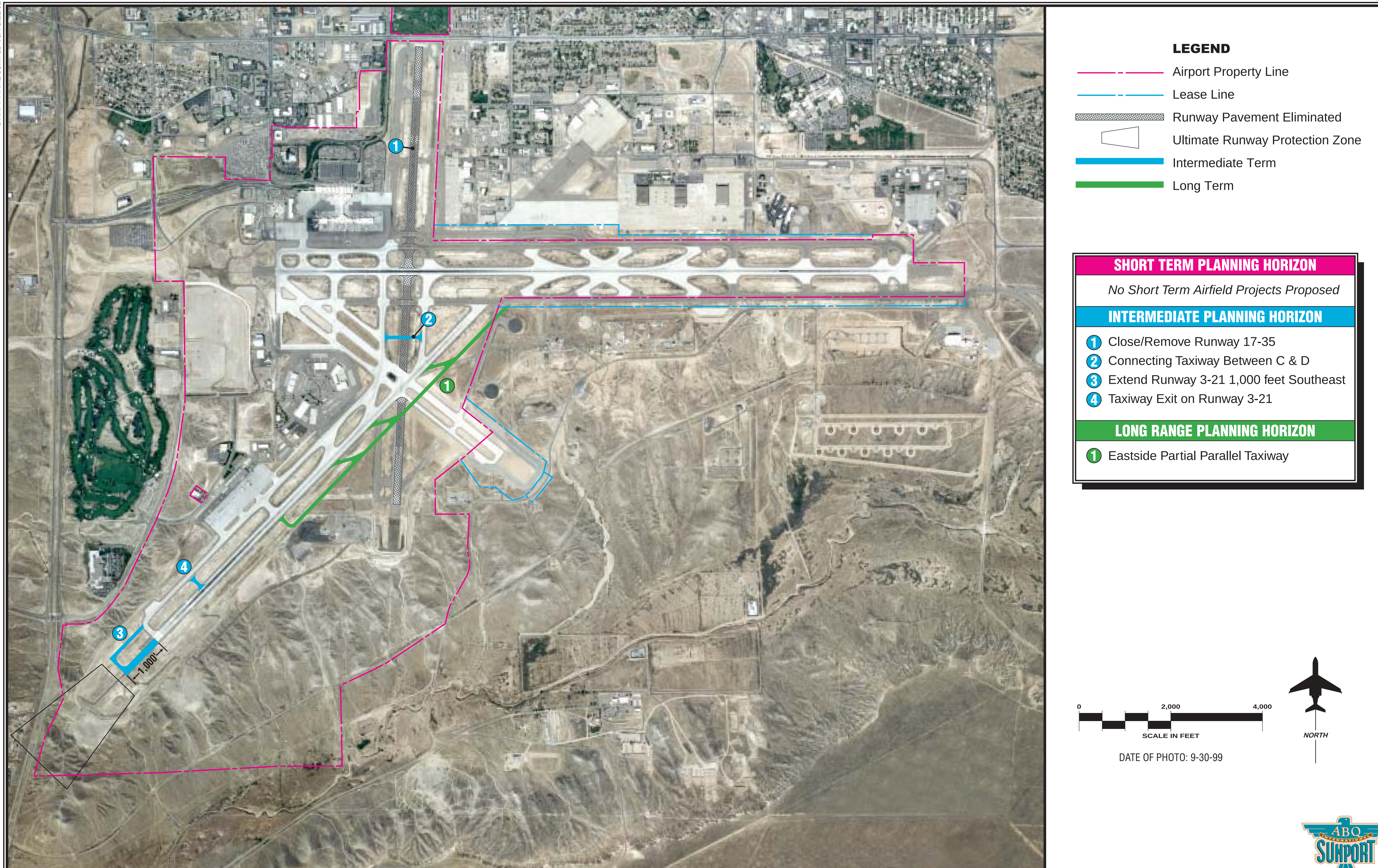

Exhibit V-5-A
RECOMMENDED AIRFIELD PLAN
AND DEVELOPMENT STAGING

runway. As was discussed in the previous section, this taxiway could have an effect on the Kirtland Air Force Base flight line, and is not needed for civilian aircraft circulation. Its benefits would be realized by military traffic. While the taxiway may be shown on the plans, it would only be constructed if desired by the military, and most likely, at the expense of the Department of Defense.

TABLE V-5-A
Airfield Planning Design Standards
Albuquerque International Sunport

	Primary Runway 8-26		Secondary Runway 3-21		Crosswind Runway 12-30	
Ultimate Airport Reference Code	D-V		D-IV		B-III	
Runways						
Length (ft.)	13,793		11,000		6,000	
Width (ft.)	150		150		150	
Strength (1,000 lbs.)						
Double Dual Tandem (DDTL)	790,000		N/A		N/A	
Dual Tandem (DTL)	360,000		360,000		360,000	
Dual Wheel (DWL)	210,000		210,000		210,000	
Shoulder Width (ft.)	35		25		20	
Safety Area (ft.)						
Width (ft.)	500		500		300	
Length Beyond End (ft.)	1,000		1,000		600	
Object Free Area (ft.)						
Width (ft.)	800		800		600	
Length Beyond End (ft.)	1,000		1,000		800	
Runway Centerline to:						
Building Restriction Line (ft.) (35 ft. clearance)	745		745		495	
Taxiway Centerline (ft.)	400		400		300	
Taxiways						
Width (ft.)	75		75		75	
Shoulder Width (ft.)	35		25		20	
Centerline to:						
Fixed or Movable Object (ft.)	160		130		93	
Parallel Taxiway (ft.)	267		215		152	
Runway Protection Zones	8	26	3	21	12	30
Inner Width (ft.)	1,000	500	1,000	500	500	500
Length (ft.)	2,500	1,700	2,500	1,700	1,000	1,000
Outer Width (ft.)	1,750	1,010	1,750	1,010	700	700

RUNWAY 3-21

Since being upgraded in the 1990s, Runway 3-21 has served as a secondary commercial service runway. Its location and configuration allows for some simultaneous operations with Runway 8-26 so it enhances the capacity of the airfield. Runway 3-21 is ideal for serving the general aviation area located on the east side of the airport. The runway does not intersect with the primary runway so it also serves as a back-up for commercial operations whenever the primary runway is inoperable.

The runway is currently 10,000 feet long, but the plan allows the runway to be extended by 1,000 feet to the southwest if needed in the future. This will occur only if a demand for the longer length is presented by an existing or proposed operator that would justify the project. It is recommended that the landing threshold to Runway 3 remain at its existing location even if the Runway is extended. This will ensure that landing aircraft are no lower on approaches over the communities to the southwest.

Besides the extension, an additional taxiway exit is recommended as shown on **Exhibit V-5-A**. This exit will permit aircraft to exit the runway sooner, increasing efficiency. A partial parallel taxiway to the east side of Runway 3-21 is also planned. This taxiway is not a priority but could improve circulation and efficiency, especially in west flow. The partial parallel taxiway would be required if or when aviation uses are developed on the east side of this runway.

Runway 3 already has Category I approach minimums with its instrument landing system (ILS). A global positioning system (GPS) approach with minimums of one mile or more could be considered for Runway 21. Lower minimums would not be necessary due to the minimal use this approach gets.

RUNWAY 12-30

Runway 12-30 will continue to serve as the general aviation crosswind runway. The runway was rehabilitated and extended to 6,000 feet in the 1990s to serve ARC B-III aircraft. This includes propellor aircraft and some small business jets. Its primary purpose is to provide crosswind coverage for smaller general aviation aircraft.

Runway 12-30's location and configuration south of Runway 8-26 also allows it to be utilized to enhance airfield capacity as well. This works well using Runway 12 for departures in east flow and Runway 30 for arrivals in west flow. As with Runway 21, the approach to Runway 12 is expected to see minimal use.

A GPS approach should be planned to Runway 30. The parallel taxiway system is adequate for the runway's present and planned use. No other improvements are planned for Runway 12-30.

RUNWAY 17-35

The major portion of the airfield analysis has centered on Runway 17-35. The previous master plan recommended the north-south runway be closed. This master plan has re-evaluated and confirmed the previous recommendation.

As shown in the previous airfield sections, the $18 to $27 million cost to reconstruct and maintain Runway 17-35 in any form is more significant than its contribution to the airfield system at Albuquerque International Sunport.

It has been determined that Runway 17-35 does not contribute significantly to the capacity of the airfield. In fact, if utilized more than the limited use it receives now, it would begin to reduce capacity. In addition, it provides less than a one percent improvement to the airfield wind coverage.

From an airfield safety standpoint, eliminating Runway 17-35 would eliminate runway intersections at two locations, including the intersection of three runways at one point. The closing would also reduce the potential for airfield incursions.

Eliminating Runway 17-35 does open up other space for development. It also removes approach and departure overflights off the residential area closest to the airport. The bottom line, however, is still that the cost to continue the operation of this runway outweighs the benefits, making it infeasible to maintain the runway beyond the next few years.

OTHER AIRFIELD IMPROVEMENTS

Most of the taxiway projects were discussed above with the runway projects. There is one additional taxiway project recommended to improve circulation in the midfield area. This involves the construction of a connecting taxiway between Taxiways C and D. This taxiway would be parallel to and south of Taxiway E as shown on **Exhibit V-5-A**.

AIRFIELD CAPITAL IMPROVEMENT PROGRAM

Once the specific needs and improvements for the airfield have been established, the next step is to determine a realistic schedule and costs for implementing the plan. This subsection examines the overall cost of development and a demand-based schedule for airfield improvements.

The development schedule can be initially established dividing the improvement needs into three planning horizons of short term, intermediate term, and long range. For the airfield, the key activity indicator is aircraft operations. **Table V-5-B** summarizes the operational milestones for each planning horizon.

The short term horizon covers items of highest priority as well as items that should be developed as the airport approaches the short term activity milestones. Priority items should include improvements related to safety and major maintenance. Improvements to facilities that are inadequate for present demand should also be included in the short term. Because of their priority, these items will need to be incorporated into FAA and Aviation Department five-year programming. With the number of improvements done to the airfield in recent years, there are no airfield projects listed in the short term.

TABLE V-5-B
Airfield Planning Horizons
Albuquerque International Sunport

Annual Operations	Current	Short Term	Intermediate Term	Long Range
Air Carrier/Air Taxi	116,558	128,600	145,100	192,000
General Aviation	72,202	84,300	91,400	109,400
Military	44,731	44,000	44,000	44,000
Total Operations	233,521	256,900	280,500	345,400

When short term horizon activity milestones are reached, it will be time to program for the intermediate term based upon the next milestones. Maintenance and rehabilitation projects that are not likely to be necessary within the next five years are also included in the intermediate term. **Table V-5-C** presents the projects anticipated to be needed in the intermediate term.

Runway 17-35 is expected to close by the intermediate term as the pavement will have deteriorated to the point where it would be unsafe to use. The connecting taxiway between Taxiways C and D is included in the intermediate phase as well as the extension to Runway 3-21 and the additional taxiway exit for the runway.

A partial parallel taxiway on the southeast side of Runway 3-21 is a long term project. This is not anticipated to be needed until the area on the southeast side of the runway is developed for an aviation use.

ENVIRONMENTAL OVERVIEW

The protection and preservation of the local environment are essential concerns in the master planning process. Chapter One provided an inventory of known environmental issues at Albuquerque International Sunport. These issues were considered during the preparation of this master plan's final recommendations. Now that a program for the use and development of Albuquerque International Sunport has been finalized, it is necessary to review environmental issues to ensure that this program can be implemented in compliance with applicable environmental regulations, standards, and guidelines.

TABLE V-5-C Airfield Capital Improvement Program Albuquerque International Sunport				
No.	**Project**	**Total Costs**	**FAA-AIP Eligible**	**ABQ Match**
Short Term Planning Horizon				
	No Short Term Airfield Projects Proposed	$0	$0	$0
Intermediate Planning Horizon				
1	Close/Remove Runway 17-35	$3,850,000	$2,887,500	$962,500
2	Connecting Taxiway Between C&D	940,000	705,000	235,000
3	Extend Runway 3-21 1,000 feet SE	2,600,000	1,950,000	650,000
4	Taxiway Exit on Runway 3-21	663,000	497,240	165,750
Intermediate Term Project Costs		**$8,053,000**	**$6,039,750**	**$2,013,250**
Long Range Planning Horizon				
1	Eastside Partial Parallel Taxiway	**$8,500,000**	**$6,375,000**	**$2,125,000**
TOTAL AIRFIELD COSTS		**$16,553,000**	**$12,414,750**	**$4,138,250**

All of the improvements planned for Albuquerque International Sunport as depicted on the Airport Layout Plan (ALP) will require compliance with the *National Environmental Policy Act (NEPA) of 1969*, as amended. Many of the improvements will be categorically excluded and will not require formal NEPA documentation; however, some improvements will likely require further NEPA analysis and documentation. These improvements include the following projects: closure of Runway 17-35, extension of Runway 3-21 1,000 feet southwest, construction of the southeast access road, and the construction of the second passenger terminal building. Compliance with the provisions of NEPA for these projects will be required prior to project implementation and is outside the scope of the master plan. As detailed in *FAA Order 5050.4A, Airport Environmental Handbook*, compliance with NEPA is generally satisfied with the preparation of an Environmental Assessment (EA). In cases where a categorical exclusion is issued, environmental issues such as wetlands, threatened or endangered species, and cultural resources are further evaluated during the federal, state, and/or local permitting processes.

This section of the master plan is not intended to satisfy NEPA's requirements for an EA; it is intended only to supply a preliminary review of environmental issues that would need to be analyzed in more detail within the NEPA or the permitting process.

Consequently, this analysis ***does not*** address mitigation or the resolution of environmental issues. The following pages consider the environmental resources as outlined in *FAA Order 5050.4A*.

A review of existing documents and coordination with appropriate federal, state, and local agencies contributed to this analysis. Issues of concern that were identified as part of this process are presented on the following pages.

TABLE V-5-D
Review of Environmental Resources
Proposed Airfield Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Noise. The Yearly Day-Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the Federal Aviation Administration (FAA), Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. These three federal agencies have each identified the 65 DNL noise contour as the threshold of incompatibility.	• As depicted on **Exhibit V-5-B**, the closure of Runway 17-35 and the extension of Runway 3-21 1,000 feet southwest will not result in any new impacts to noise-sensitive development southwest of the airport. The only noise-sensitive development, contained within the 2006 65 DNL noise contour, is part of Kirtland Air Force Base military housing. • Should Runway 17-35 not be closed, existing noise impacts on residential development north of the airport would likely continue into the future. Currently, residential uses immediately to the north, east, and west of Puerto Del Sol Golf Course are affected by noise greater than 65 DNL. • NEPA documentation will be required to fully assess the impact of the runway closure and runway extension; however, as depicted on **Exhibit V-5-B**, less-than-significant noise impacts are anticipated with implementation of the proposed project.
Compatible Land Use. F.A.R. Part 150 recommends guidelines for planning land use compatibility within various levels of aircraft noise exposure. In addition, *Advisory Circular 150/5200-33* identifies land uses that are incompatible with safe airport operations because of their propensity for attracting birds or other wildlife, which in turn results in an increased risk of aircraft strikes and damage. Finally, F.A.R. Part 77 regulates the height of structures within the vicinity of the airport.	• Implementation of the proposed runway closure and runway extension do not result in additional noise impacts on noise-sensitive development. In fact, implementation of the proposed projects alleviates the noise impact of the airport to the north. • The proposed airport improvements will not provide wildlife attractants, nor will any development impede the airport's Part 77 surface.

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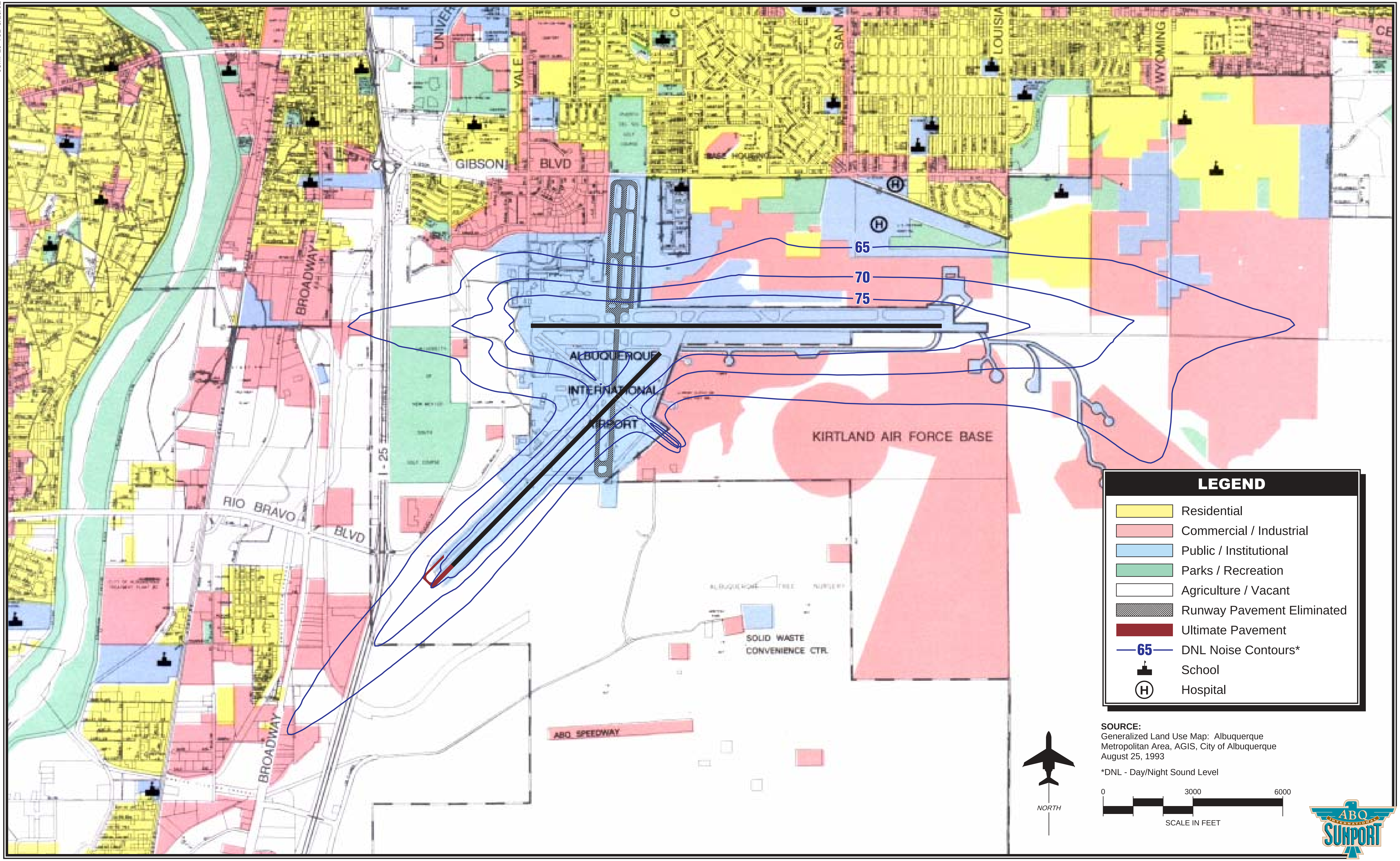


Exhibit V-5-B
2006 NOISE CONTOURS

TABLE V-5-D (Continued)
Review of Environmental Resources
Proposed Airfield Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Social Impacts. These impacts are often associated with the relocation of residences or businesses or other community disruptions.	• No residences or businesses will be relocated for project implementation.
Induced Socioeconomic Impacts. These impacts address those secondary impacts to surrounding communities resulting from the proposed development, including shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity to the extent influenced by the airport development.	• Significant shifts in patterns of population movement or growth, or public service demands are not anticipated as a result of the proposed development. It is expected, however, that the proposed new airport development would potentially induce positive socioeconomic impacts for the community over a period of years. The airport, with expanded facilities and services, would be expected to attract additional users. It is also expected to encourage tourism, industry, and trade, and to enhance the future growth and expansion of the community's economic base. Future socioeconomic impacts resulting from the proposed development would be primarily positive in nature.
Air Quality. The U.S. Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants which include: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_x), Nitrogen Oxide (NO_x), Particulate matter (PM_{10}), and Lead (Pb). Various levels of review apply within both NEPA and permitting requirements. For example, an air quality analysis is typically required during the preparation of a NEPA document if enplanement levels exceed 3.2 million enplanements or general aviation operations exceed 180,000.	• Two detailed air quality assessment studies have been completed in recent years at the airport as part of an EA and the *Landside Master Plan*. Results of these previous studies indicate that with the use of best management practices, the impacts to air quality are negligible. Therefore, it is not anticipated that the proposed projects will have a dramatic affect on air quality. However, a new air quality assessment will most likely be required during the NEPA documentation process for the proposed runway projects.

TABLE V-5-D (Continued)
Review of Environmental Resources
Proposed Airfield Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Water Quality. Water quality concerns associated with airport expansion most often relate to domestic sewage disposal, increased surface runoff and soil erosion, and the storage and handling of fuel, petroleum, solvents, etc.	• As discussed in Chapter One, the airport will need to continue to comply with their current NPDES operations permit requirements. • With regard to construction activities, the airport and all applicable contractors will need to comply with the requirements and procedures of the construction related NPDES General Permit, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan*, prior to the initiation of project construction activities.
Section 4(f) Lands. These include publicly-owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state or local significance, or any land from a historic site of national, state or local significance.	• No impacts anticipated.
Historical and Cultural Resources	• As discussed in Chapter One, a number of potentially significant historical and cultural resource sites were identified during the preparation of the EA in 1994. • Correspondence received from the State Historic Preservation Officer (SHPO) indicated that additional resources may be present on airport property. • Further coordination with the SHPO will be required prior to project implementation and field surveys may be required.
Threatened or Endangered Species and Biological Resources	• Correspondence received from the U.S. Fish and Wildlife Service (FWS) indicated that no federally-listed threatened or endangered species are present and thus will not be affected by the proposed projects. • Under the Migratory Bird Treaty Act (MBTA) the taking of migratory birds, nests, and eggs is prohibited. To minimize the likelihood of a taking, the FWS recommended that construction activities occur outside the nesting season of March through August, or a survey be completed prior to construction to determine the potential affect on these protected species.

TABLE V-5-D (Continued)
Review of Environmental Resources
Proposed Airfield Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Waters of the U.S. including Wetlands	• No impacts anticipated.
Floodplains	• No impacts. The airport is not contained within a designated floodplain.
Wild and Scenic Rivers	• No impacts. The airport is not near any designated wild and scenic rivers.
Farmland	• No impacts. The proposed development will not affect prime or unique farmland.
Energy Supply and Natural Resources	• No impacts anticipated.
Light Emissions	• No significant impacts anticipated.
Solid Waste	• No impacts anticipated.

Chapter Six

Air Cargo Facilities

Section One

FACILITY REQUIREMENTS

Chapter Six
Air Cargo Facilities

Section One
FACILITY REQUIREMENTS

This chapter of the Master Plan focuses on the air cargo facilities at Albuquerque International Sunport. Air cargo facilities primarily consist of cargo buildings, aircraft parking aprons, vehicle parking and truck docks.

This chapter includes three sections: Facility Requirements, Alternatives, and Recommended Program. Section One includes a description of available facilities, compares forecast demand to the capacity of the available facilities, and estimates the type and size of facilities needed to accommodate future demand. Section Two evaluates alternatives for future development which forms the basis for recommended air cargo development at Albuquerque International Sunport. Section Three describes the recommended air cargo development plan and includes the future capital projects required to implement the plan.

INVENTORY

The functions of air freight/air mail are accommodated in three separate areas on the airport. Air mail is processed through the U.S. Postal Service facility located along Yale Boulevard off George Road.

The belly freight building, located west of the passenger terminal building, is used primarily to process air freight carried by the scheduled passenger airlines. This building totals approximately 39,900 square feet. Tenants of the air carrier air freight building include: American Airlines, Southwest Airlines, Trans World Airlines (TWA), America West Airlines, Combs Freightair, Continental Airlines, Northwest Airlines, Delta Airlines and United Airlines.

Exhibit VI-1-A depicts the air cargo center used by the dedicated all-cargo carriers. Totaling approximately 52,000 square feet, the cargo building was constructed in 1992. The building floorplan is also depicted on **Exhibit VI-1-A**. Segregated lease spaces provide areas for individual all-cargo carriers to store and sort air freight. Tenants of the air cargo building include: FedEx, United Parcel Service, Airborne Express and Integrated Airline Services.

The air cargo center is accessed from Spirit Drive from either Clark Carr Road (via access roads) or University Boulevard. University Boulevard provides the connection to the regional roadway system. A diamond interchange is located at University Boulevard along Interstate 25, approximately two miles south of the air cargo facility.

Located west of Runway 3-21, airfield access to the air cargo building is from Taxiway F. An 89,700 square yard concrete apron is available for aircraft movement and parking. Taxiways F2, F3, F4, and F5 connect the air cargo apron to Taxiway F. Ground servicing equipment (GSE) used by the all-cargo airlines to load and unload air freight from aircraft is stored outside along the northwest portions of the apron.

REQUIREMENTS

Nearly 90 percent of the total freight tonnage is handled by the all-cargo carriers. Forecasts have been prepared for enplaned and deplaned tonnages, projecting each category to the year 2025. While the tonnages handled by the passenger airlines are expected to double through the planning period, the tonnages handled by the all-cargo airlines are expected to increase four-fold.

Most of the air freight is handled by the all-cargo companies, however, just the opposite is true for air mail. Nearly 90 percent of the air mail handled through the Airport is handled by the passenger airlines. Projections for air mail have also been developed for both enplaned and deplaned tonnages.

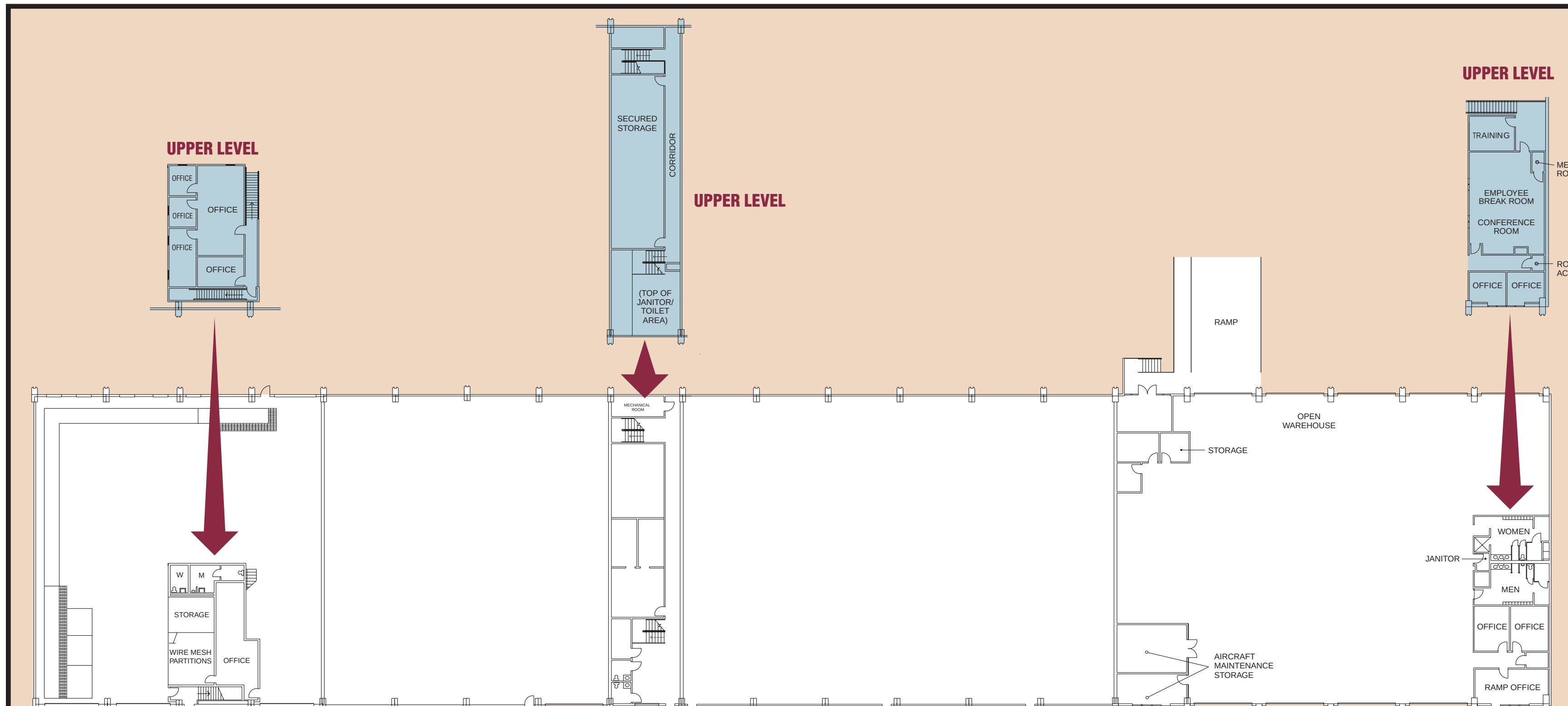
The number of leases has a direct impact on the need (and timing) of additional cargo building construction, since demand will be dependent on the total number of carriers and leasing conditions.

All of the all-cargo companies use the apron, even though only four companies lease building space. Therefore, the entire all-cargo carrier fleet mix needs to be examined in the capacity evaluations. To examine the adequacy of this ramp, the capacity of the ramp was calculated from the standpoint of the projected mix (as previously forecast). Each aircraft in the fleet mix requires a specified envelope on the ramp which allows for loading/ unloading of aircraft. These parking envelopes are estimated by calculating the area defined by the square of 150 percent of the length of the aircraft. These calculations are summarized for aircraft currently using ABQ, or included in the potential fleet mix, in **Table VI-1-A**.

98MP19-VI1A-6/5/00

1) AIR CARGO BUILDING - 52,000 s.f.

2) AIR CARGO APRON - 89,700 s.y.



AIR CARGO CENTER FLOORPLAN

ABQ INTERNATIONAL SUNPORT

TABLE VI-1-A
Cargo Aircraft Parking Requirements

Aircraft	Length (ft.)	Parking Requirements (sq. yds.)
DC-9-30F	119.3	3,600
B727-200F	153.2	5,900
B757-200F	155.3	6,000
A310-300F	153.1	5,900
A300-600F	177.4	7,900
B767-300F	180.3	8,100
DC-8-63F	187.4	8,800
DC-10-30CF	181.6	8,200
MD-11F	202.2	10,200
M747-200F	231.9	13,400
M747-400F	231.8	13,400

Source: Coffman Associates' analysis.

The base year (1999) mix consisted of daily activity by B-727F, A-300-600F, B-757-200F, B-767-300F, DC-8-63F, and DC-9-30F aircraft, with occasional use by DC-10-30F or other heavy aircraft. The current ramp can accommodate up to ten jets of varying sizes simultaneously, although current schedules generally place only six or seven aircraft on the ramp at any given time. However, smaller feeder aircraft are also handled on the ramp, reducing the capacity of the ramp for jets.

Since forecasts of air cargo operations have been developed based upon an increasing average lift capacity and load factors (refer to Table II-U), apron requirements may be calculated using the forecast assumptions. However, it should be noted that these requirements are based upon average day departures and average load conditions by the commercial jets used in cargo service. Peak holiday activity generally requires greater ramp capacity, as will the accommodation of feeder aircraft on the ramp.

Future apron requirements have been developed using the forecasts of annual cargo operations and the projected fleet mix composition. The capacity of the existing ramp is not expected to be exceeded until the intermediate planning period. The calculations have been summarized in **Table VI-1-B**.

CARGO BUILDING

Another capacity limitation is the size of the cargo building, and area for truck parking adjacent to the building. These limitations were expressed by current tenants during initial interviews. At least one major carrier has expressed their intent to expand their trucking operation, since trucking is viewed as a less expensive option to handle second or third-day freight. Therefore, the need for additional building and truck court is viewed as a greater need at this time than additional apron.

TABLE VI-1-B **Apron Requirements** **All-Cargo Fleet**			
Year/Stage	**Daily Departures (avg.)**	**Apron Required (sq. yds.)**	**Deficiency (sq. yds.)**
1999	11	60,100	None
Short Term	14	75,500	None
Intermediate	17	93,900	4,200
Long Term	27	169,900	80,200
Source: Coffman Associates' analysis.			

The annual tons of cargo handled through the Air Cargo Building (60,617) have been compared to the total square footage (52,000) to determine existing utilization rates, for comparison to other facility utilization in the U.S. Surveys of the top 50 cargo airports in the U.S. have determined that the current utilization rate is approximately 1.75 square feet per ton. The range of adequacy for an airport on average is between 1.00 and 2.50 square feet per ton. ABQ's current utilization rate of 0.86 would indicate that the facilities are over utilized (and exceeding capacity) and that some near-term expansion may be required.

In providing future sortation building requirements, it is important to consider the goals of airport management. If additional tenants are being pursued, then provisions need to be made for this when examining future building space. Based upon initial tenant interviews, the tenant handling the most cargo through the building has indicated a need for approximately twice as much space. Taking this need into consideration, future requirements have been based upon a utilization factor of 1.25. However, it needs to be noted that the total number of carriers and individual utilization characteristics of each tenant will have a bearing on the adequacy of the cargo building over time. Cargo building requirements have been summarized in **Table VI-1-C**.

TABLE VI-1-C Cargo Building Requirements			
Year/Stage	**Total Freight (tons)**	**Building Space (sq. ft.)**	**Deficiency (sq. ft.)**
1999	60,617	75,770	23,770
Short Term	86,300	108,000	56,000
Intermediate	114,400	143,000	91,000
Long Term	241,700	302,000	250,000
Source: Coffman Associates' analysis.			

The existing Air Cargo Building has a total of 30 truck dock positions. Truck dock requirements are based on a planning factor of 0.3 truck docks per 1,000 square feet of building space. The truck dock projections have been summarized in **Table VI-1-D**.

TABLE VI-1-D Truck Dock Requirements			
Year/Stage	**Building Space (sq. ft.)**	**Truck Docks**	**Deficiency (sq. ft.)**
1999	75,770	23	None
Short Term	108,000	32	2
Intermediate	143,000	43	13
Long Term	302,000	91	61
Source: Coffman Associates' analysis.			

In addition to providing truck docks, area must be provided adjacent to the building for staging activities and employee parking. Reviewing the current configuration, approximately 25,000 square yards of area is provided adjacent to the building, although additional area south of the lot is also used for trailer storage. Normally, an area approximately three times the building area is provided for these activities. However, since a larger area (approximately five times the building area) is used at ABQ, a similar factor has been applied to future requirements. Based upon comments received from air cargo companies with regard to increasing levels of trucking in conjunction with the local operation, the capacity of the existing area is being exceeded, and larger areas need to be planned for parking and staging areas. The results of the analysis are summarized in **Table VI-1-E**.

TABLE VI-1-E **Truck Staging and Parking Area Requirements**			
Year/Stage	**Building Space (sq. ft.)**	**Staging/Parking Area (sq. yd.)**	**Deficiency (sq. yd.)**
1999	75,770	42,000	17,000
Short Term	108,000	60,000	35,000
Intermediate	143,000	80,000	55,000
Long Term	302,000	168,000	143,000
Source: Coffman Associates' analysis.			

AIR MAIL FACILITIES

Air mail is handled through a 49,800 square foot postal facility. In 1999, this facility handled 23,911 tons of mail, a utilization rate of 2.1 square feet per ton. A utilization rate of 0.67 square feet per ton is considered the capacity of such a facility; therefore, future requirements have been based upon a factor of 1.0. The results of this analysis have been summarized in **Table VI-1-F**.

TABLE VI-1-F **Air Mail Facility Requirements**			
Year/Stage	**Total Mail (tons)**	**Building Area (sq. ft.)**	**Deficiency (sq. ft.)**
1999	23,911	24,000	None
Short Term	32,000	32,000	None
Intermediate	43,000	43,000	None
Long Term	77,000	77,000	34,000
Source: Coffman Associates' analysis.			

AIR FREIGHT BUILDING

The Air Freight Building handles cargo transported on the scheduled passenger airlines. Based upon tonnages handled each year, the passenger carriers handle only ten percent of the total air freight on the airport (excluding air mail). Since these tonnages (7,067 tons in 1999) are relatively small compared to the square footage of the Air Freight Building (39,900 square feet), and the forecasts for this segment of air freight is projected to increase to only 16,300 tons by 2025, the facility is considered to have adequate capacity through the planning period to meet anticipated demands.

The air cargo requirements have been summarized in **Exhibit VI-1-B**.

98MP19-VI1B-12/6/00

	AVAILABLE	CURRENT	SHORT TERM	INTERMEDIATE	LONG RANGE
 APRON (sq. yds.)	89,700	60,100	75,500	93,900	169,900
 CARGO BUILDING (sq. ft.)	52,000	75,770	108,000	143,000	302,000
 TRUCK DOCKS	30	23	32	43	91
 TRUCK STAGING/AUTO PARKING (sq. yds.)	25,000	42,000	60,000	80,000	168,000
 AIR MAIL FACILITY (sq. ft.)	49,800	24,000	32,000	43,000	77,000
 AIR FREIGHT (Belly Haul) (sq. ft.)	39,900	ADEQUATE THROUGH PLANNING PERIOD.			

ABQ INTERNATIONAL SUNPORT

Exhibit VI-1-B
AIR CARGO REQUIREMENTS

Chapter Six

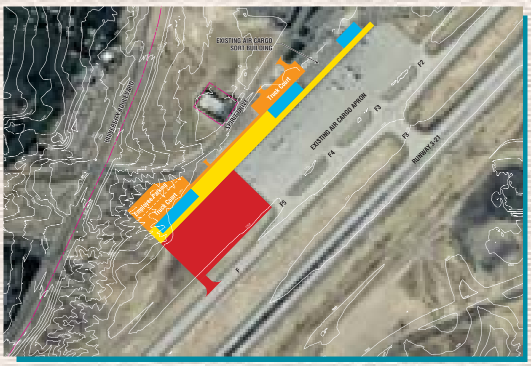
Air Cargo Facilities

Section Two

ALTERNATIVES

Chapter Six
Air Cargo Facilities

Section Two
ALTERNATIVES



This section focuses on exploring options for the development of air cargo facilities at Albuquerque International Sunport to accommodate forecast demand. Requirements for new facilities to accommodate projected growth in air cargo activity were previously presented in Section Two, Requirements.

Table VI-2-A summarizes the requirements for air cargo facilities at Albuquerque International Sunport for each planning horizon. As shown in the table, there is a potential need for an additional 250,000 square feet (s.f.) of building space to accommodate cargo processing in the Long Term Planning Horizon. An additional 143,000 square yards (s.y.) of automobile parking areas and truck staging areas are also anticipated. This would accommodate employee parking and provide areas for the transfer of air cargo from the planes to ground vehicles for delivery and distribution. An additional 80,200 square yards of apron area are projected to accommodate aircraft parking. While the existing air freight building (which primarily accommodates the needs of passenger airline belly freight) is anticipated to be adequate through the planning period, an additional 27,200 square feet of space is projected for the air mail facility.

EVALUATION CATEGORIES AND CRITERIA

The evaluation of development alternatives includes both quantitative and subjective criteria. Quantitative criteria include (but are not limited to) the type and size of facility development, costs and regulatory requirements. Subjective criteria could include preferences for facility layout and efficiency. The weight given to each criteria can be as subjective as the criteria themselves. Therefore, the best manner in which to evaluate each alternative is to define evaluation categories and criteria which aid the evaluator in understanding the advantages and/or disadvantages of the proposed alternative.

TABLE VI-2-A
Summary of Projected Air Cargo/Air Freight/Air Mail Facility Requirements

	Currently Available	Short Term Need	Intermediate Term Need	Long Term Need
Cargo Building (s.f.)	52,000	108,000	143,000	302,000
Apron (s.y.)	89,700	75,500	93,900	169,900
Truck Staging/Auto Parking (s.y.)	25,000	60,000	80,000	168,000
Air Mail Facility (s.f.)	49,800	32,000	43,000	77,000
Belly Freight Building (s.f.)	39,900	*Adequate Through Planning Period*		

Table VI-2-B lists four evaluation categories and evaluation criterions which can be used to evaluate each of the proposed alternatives. This list is not necessarily all-inclusive and other criteria can be used as appropriate. Additionally, these categories are not intended to develop a ranking for the proposed alternatives. The intent of these criteria is to allow the evaluator to develop a full understanding of the alternative by applying similar criteria to each alternative. This provides the evaluator with a sound basis for the acceptance or rejection of a particular alternative. Following a description of each alternative in this chapter, an evaluation of each alternative following this criterion will be made to assist in the evaluation of the preferred development direction for the airport.

EXISTING FACILITIES SUMMARY

The functions of air freight/air mail are accommodated in three separate areas on the airport. Air mail is primarily processed through the U.S. Postal Service facility located along Yale Boulevard off George Road. The building is owned and operated by the United States Postal Service (USPS). While a requirement for additional air mail processing area has been projected by the Master Plan, expansion of the air mail facility would be at the discretion of the USPS. This Master Plan assumes any expansion would be contiguous with the existing air mail facility should this facility remain in its existing location. An expansion of passenger terminal facilities to the west could cause the relocation of the air mail facility. Alternatives for the relocation of this facility are included within the passenger terminal building alternatives.

TABLE VI-2-B Evaluation Categories and Criteria	
Category	**Description/Evaluation Criteria**
1. Ability to Meet Program Requirements	1. Does the proposed alternative fully meet the requirements identified in Section Two, Requirements? If not, what are the constraints?
2. Development Strategy	2. What are the impacts on existing facilities? Are existing facilities displaced by the proposal? Can the proposed alternative be developed in phases? Are the expansion capabilities beyond the proposed alternative?
3. Financial Considerations	3. Are the development costs of the proposed alternative more or less than other proposed alternatives? Does the proposed alternative provide a revenue enhancement for the airport?
4. Regulatory Requirements	4. Are there regulatory or environmental requirements which could constrain the proposed alternative? Is the proposed alternative required to meet a Federal, State or Local regulatory requirement?

The passenger airlines' air freight building, located west of the passenger terminal building, is used by the major airlines to sort air freight carried by the scheduled passenger airlines. Owned by the Albuquerque International Sunport, this building totals approximately 39,900 square feet. As discussed previously, the requirements analysis presented in Section One determined that this facility is appropriately sized to accommodate projected demand for air carrier air freight needs through the planning period. While an expansion of the building is not anticipated, a relocation of the building may be needed to accommodate an expansion of the passenger terminal building to the west. Alternatives for the relocation of this facility are included within the passenger terminal building alternatives.

The primary air cargo facility used by the all-cargo carriers is located west of Runway 3-21, south of Runway 8-26, along Spirit Drive. Present air cargo facilities include an 89,700 square-yard apron, 52,000 square-foot building and approximately 25,000 square yards of truck staging and automobile parking areas. The initial cargo building and apron area were constructed in 1992. The air cargo facilities are owned and operated by the Albuquerque International Sunport.

Conceptually, consideration could be given to developing air cargo facilities at Double Eagle II Airport; however, this Master Plan will focus on alternatives that accommodate all projected air cargo activities at Albuquerque International Sunport. Double Eagle II Airport is not currently equipped to accommodate the large transport aircraft used for air cargo services at Albuquerque International Sunport.

The longest runway at Double Eagle II Airport is 7,400 feet long, 100 feet wide, and has a pavement strength rating of 30,000 pounds single wheel loading. In comparison, Runway 8-26 at Albuquerque International Sunport is 13,793 feet long, 150 feet wide, and has a pavement strength rating of 100,000 pounds single wheel loading, 210,000 pounds dual wheel loading, 360,000 pounds dual tandem wheel loading, and 720,000 pounds dual tandem wheel loading. The strength rating and length of Runway 8-26 is required to serve the mix of air cargo aircraft currently using and expected to use Albuquerque International Sunport. To accommodate air cargo activity at Double Eagle II Airport, the primary runway strength would need to be significantly upgraded and the runway extended.

While the infrastructure requirements to accommodate air cargo activity at Double Eagle II Airport are significant, consideration must also be given to the role of Double Eagle II Airport. Double Eagle II Airport is designated as a reliever airport for Albuquerque International Sunport. In this manner, Double Eagle II Airport is intended to provide an alternate landing area for general aviation activity. Transferring air cargo activity to Double Eagle II Airport does not fit this role. From a regional and national planning perspective, air cargo activity is expected to be accommodated at Albuquerque International Sunport.

AIR CARGO DEVELOPMENT ALTERNATIVES

The remainder of this section will examine development options to expand the air cargo facilities for the dedicated all-cargo air carriers at Albuquerque International Sunport. Since both the air mail facility and passenger airlines' belly freight facility are primarily served by the passenger airlines, these facilities are best placed near the passenger terminal. Therefore, this Master Plan incorporates requirements for these facilities within the overall passenger terminal building alternatives.

The airfield and passenger terminal building alternatives presented previously in Chapters Three and Four have been considered in the presentation of the development alternatives for facilities to serve the dedicated all-cargo carriers. The air cargo alternatives to follow consider the development opportunities available should Runway 17-35 be closed and the development opportunities available should Runway 17-35 remain open. The air cargo alternatives also consider the potential for the relocation of passenger terminal facilities south of Runway 8-26, which causes a displacement of both the existing air cargo facilities and general aviation facilities.

The air cargo alternatives are organized as follows:

Alternative A1 - expand existing cargo facilities to the south.

Alternative A2 - expand existing cargo facilities to the north.

Alternative B1 - develop air cargo facilities east of Runway 3-21 (Runway 17-35 is closed).

Alternative B2 - develop air cargo facilities east of Runway 3-21 (Runway 17-35 remains open).

Alternative C1 - develop air cargo facilities north of Runway 8-26 (passenger terminal building relocated south of Runway 8-26; Runway 17-35 is closed).

Alternative C2 - develop air cargo facilities north of Runway 8-26 (passenger terminal building relocated south of Runway 8-26; Runway 17-35 remains open).

AIR CARGO ALTERNATIVE A1

Air Cargo Alternative A1, shown on **Exhibit VI-2-A**, considers expansion potential at the existing air cargo facility. This alternative specifically assumes the passenger terminal building would remain in its existing location and not be relocated south of Runway 8-26. Should the passenger terminal facilities be relocated south of Runway 8-26, this alternative would not be viable as the existing air cargo facilities would need to be relocated to provide for the development of passenger terminal facilities.

Alternative A1 considers expanding the existing air cargo building and truck court (staging) area. In this alternative, the existing air cargo building is expanded both to the north and south. The northerly expansion totals approximately 30,000 square feet, while the southerly expansion totals approximately 35,000 square feet. The existing truck court is expanded to the south, providing an additional 8,000 square yards for truck staging and circulation at the existing cargo building site.

This alternative further considers an expansion of the apron to the south and development of a separate air cargo building, truck court, and automobile parking area. This area would be linked to the existing air cargo facility by a roadway extending parallel with the air cargo apron. This alternative provides for a 46,600 square-yard expansion of the apron, the development of 120,000 square feet of cargo buildings, and 30,000 square yards of automobile parking and truck court areas.

This alternative is influenced by the existing terrain features in the area south of the existing air cargo apron. As shown by the white ground contour lines on the exhibit, the terrain in this area significantly declines to the west, declining more than 70 feet from its highest point near the existing air cargo apron. While the proposed expansion of the apron in this alternative is along an existing contour line level with the existing air cargo apron, the area would need to be graded and filled. The further expansion of facilities to the south would require significant grading and fill.

Evaluation

The following provides an evaluation of this alternative using the evaluation criterion described at the beginning of this chapter.

1. **Ability to Meet Program Requirements** - This alternative does not fully meet projected long term air cargo needs. As shown in **Table V-3-C**, this alternative only provides 136,300 square yards of air cargo apron. This is 33,600 square yards short of the projected long term need. Similarly, this alternative is 65,000 square feet short of fully meeting long term cargo building needs and 105,000 square yards short of meeting long term parking/access needs.

2. **Development Strategy** - This alternative would require grading and fill to provide for the development of the cargo building and parking/access areas. Further expansion to the south is limited by the existing terrain features, which generally decline to the west towards University Boulevard.

3. **Financial Considerations** - Development costs are increased by the requirements for grading and fill for the expansion of facilities to the south.

4. **Regulatory Requirements** - This alternative would be subject to federal environmental review prior to implementation.

AIR CARGO ALTERNATIVE A2

Air Cargo Alternative A2, shown on **Exhibit VI-2-B**, considers expanding existing air cargo facilities to the north. Similar to Alternative A1, this alternative specifically assumes the passenger terminal building would remain in its existing location and not be relocated south of Runway 8-26. Should the passenger terminal facilities be relocated south of Runway 8-26, this alternative would not be viable as the existing air cargo facilities would need to be relocated to provide for the development of passenger terminal facilities.

In this alternative, the existing air cargo apron is expanded north to the general aviation apron. This provides an additional 32,500 square yards of apron. A new 70,000 square-foot cargo building is constructed along the apron. The existing truck court is expanded to the north, and an employee parking lot is constructed along an existing entrance to the air cargo building truck court.

Exhibit VI-2-A
AIR CARGO ALTERNATIVE A1

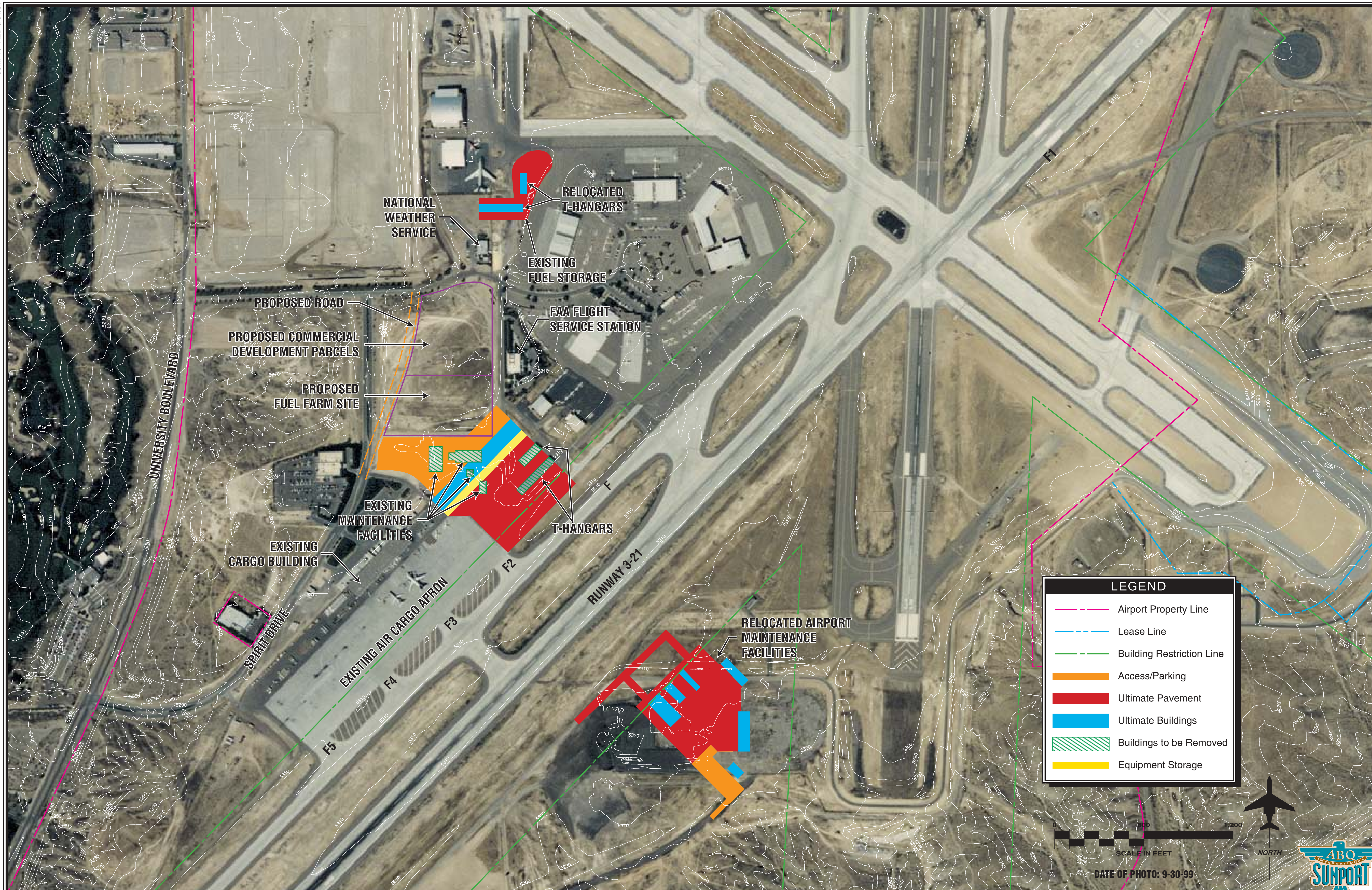


Exhibit VI-2-B
AIR CARGO ALTERNATIVE A2

TABLE VI-2-C Summary of Air Cargo Alternative A1			
	Apron (s.y.)	**Building (s.f.)**	**Parking/ Access (s.y.)**
Area Provided by Alternative	46,600	185,000	38,000
Existing Area Available	89,700	52,000	25,000
Combined Total	136,300	237,000	63,000
Projected Long Term Need	169,900	302,000	168,000
Area in Excess/(Deficient) of Long Term Need	(33,600)	(65,000)	(105,000)
Planning Horizon Requirement Met	> Intermediate	> Intermediate	< Short Term

To provide for this expansion, the existing airport maintenance facilities and two general aviation T-hangars are displaced. **Exhibit VI-2-B** depicts the relocation of the general aviation T-hangars within the existing general aviation area.

The airport maintenance facilities in this alternative would be relocated to the east side of Runway 3-21. There is adequate area for the replacement of existing facilities, expansion of facilities, and for segregated operations. This area also allows for direct access to the airfield. This is important for airport maintenance facilities, as airfield snow removal equipment is stored and maintained in this area. This area, however, is not served by an existing public roadway. A new public access road may be needed for support and vendors supplying airport maintenance activities.

As an alternative to relocating the maintenance facilities east of Runway 3-21, consideration could be given to relocating these facilities immediately north of the existing facilities. While the area immediately north of the existing maintenance facility is presently vacant and is served by public roadway access via Spirit Drive, this area has been considered for the development of a consolidated fuel farm. The fuel farm could be located further north to provide for additional air cargo parking areas.

Evaluation

The following provides an evaluation of this alternative using the evaluation criterion described at the beginning of this chapter.

1. **Ability to Meet Program Requirements** - This alternative does not fully meet projected long term air cargo needs. As shown in **Table VI-2-D**, this alternative is 47,700 square yards short of meeting long term air cargo apron needs. Similarly, this alternative is 180,000 square feet short of

fully meeting long term cargo building needs and 123,000 square yards short of meeting long term parking/access needs.

2. **Development Strategy** - This alternative would require the relocation of all existing airport maintenance facilities and two general aviation T-hangar facilities. Further expansion to the north is limited by existing general aviation development and the FAA Flight Service Station.

3. **Financial Considerations** - Development costs are increased by the requirements for relocation of the general aviation and airport maintenance facilities.

4. **Regulatory Requirements** - This alternative would be subject to federal environmental review prior to implementation.

TABLE VI-2-D
Summary of Air Cargo Alternative A2

	Apron (s.y.)	Building (s.f.)	Parking/ Access (s.y.)
Area Provided by Alternative	32,500	70,000	20,000
Existing Area Available	89,700	52,000	25,000
Total	122,200	122,000	45,000
Projected Long Term Need	169,900	302,000	168,000
Area in Excess/(Deficient) of Long Term Need	(47,700)	(180,000)	(123,000)
Planning Horizon Requirement Met	> Intermediate	< Intermediate	< Short Term

AIR CARGO ALTERNATIVE B1

Air Cargo Alternative B1 is shown on **Exhibit VI-2-C.** Alternative B1 considers developing air cargo facilities east of Runway 3-21, assuming the closure of Runway 17-35. Should Runway 17-35 remain open, this alternative would not be viable. Alternative B2 considers air cargo expansion opportunities east of Runway 3-21 while considering that Runway 17-35 remains open. This alternative is not impacted by the ultimate location of the passenger terminal building. This alternative could be implemented whether the terminal remains in its existing location or is relocated south of Runway 8-26, but it is dependent upon the closure of Runway 17-35.

Alternative B1 develops new cargo facilities along a new parallel taxiway located 450 feet east of Runway 3-21. As shown on the exhibit, the initial

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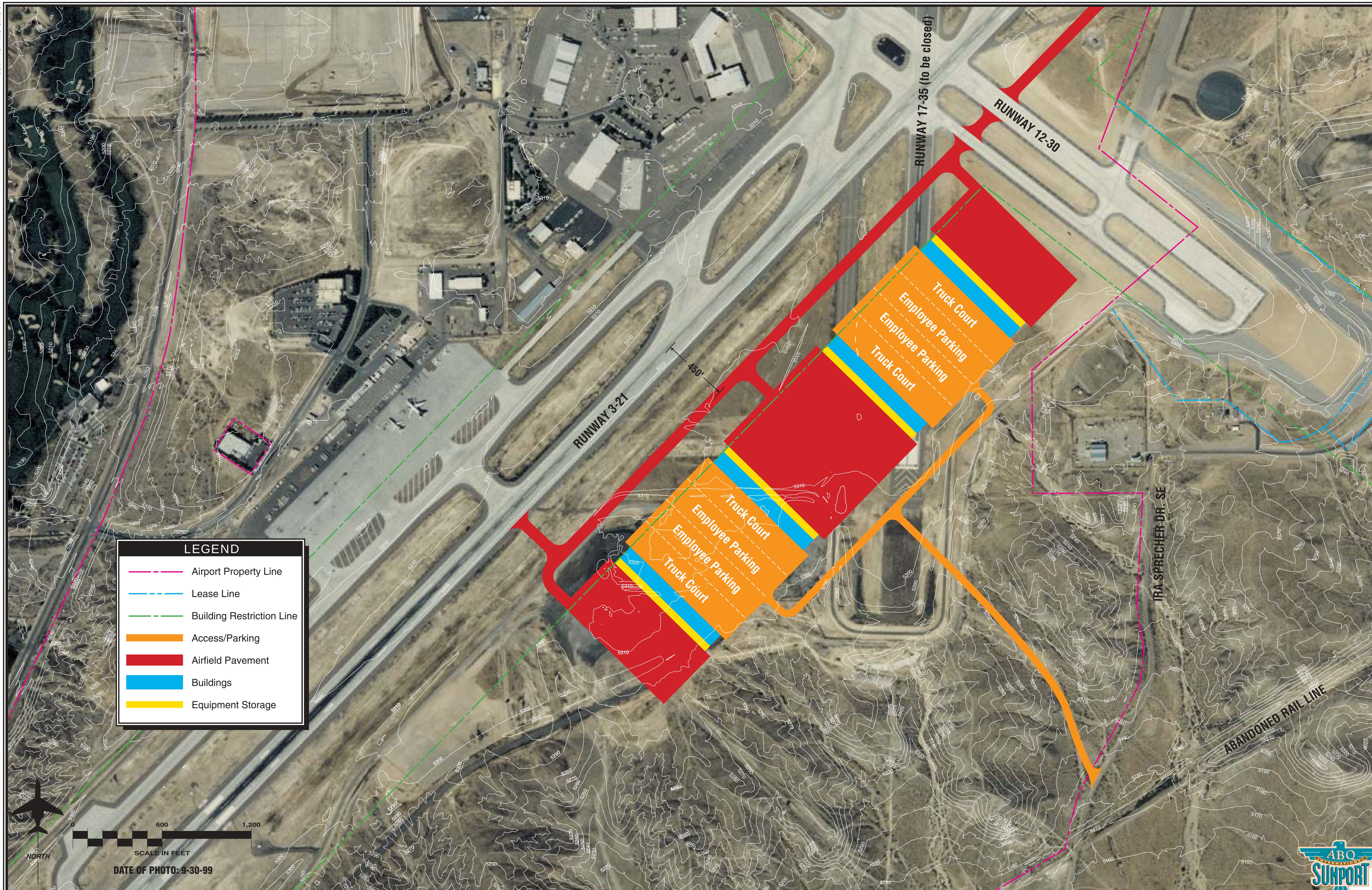

Exhibit VI-2-C
AIR CARGO ALTERNATIVE B1

cargo apron would be developed near the Runway 3-21/Runway 12-30 intersection to take maximum advantage of the existing level terrain near the intersection. Future facilities could be constructed to the south of the initial apron area.

Roadway access is proposed via a direct connection to Ira Sprecher Drive. Ira Sprecher Drive connects with Bobby Foster Road, southeast of the airport. Bobby Foster Road presently extends to the west under Interstate 25, connecting with Broadway Boulevard. Access to Interstate Highway 25 can be made from Broadway Boulevard at Gibson Boulevard, University Boulevard and the Broadway Boulevard intersection with Interstate Highway 25 south of the airport. Regional roadway access would be greatly enhanced with the development of an interchange at Bobby Foster Road from Interstate 25.

Public roadway access could also be developed following the existing construction road alignment. This road would connect with the proposed University Boulevard Extension and is more clearly shown on **Exhibit VI-2-D**.

Evaluation

The following provides an evaluation of this alternative using the evaluation criterion described at the beginning of this chapter.

1. **Ability to Meet Program Requirements** - As shown in **Table VI-2-D**, this alternative has the ability to fully meet projected long term air cargo needs. Should the passenger terminal ultimately be located south of Runway 8-26, this alternative could fully accommodate long term air cargo needs. Should the existing air cargo area be retained, however, this alternative could provide for a substantial reserve for air cargo growth beyond those levels forecast in this Master Plan or for compatible development, such as large aircraft maintenance.

2. **Development Strategy** - This alternative requires the closure of Runway 17-35, development of a new parallel taxiway 450 feet east of Runway 3-21, and extension of utilities. In this alternative, air cargo facilities could be expanded to the south, provided the terrain in the area south of the apron is graded and filled level with the proposed apron areas. This alternative requires the development of a new public access road.

3. **Financial Considerations** - Development costs are increased by the requirements for the development of a parallel taxiway and public roadway improvements.

4. **Regulatory Requirements** - This alternative would be subject to federal environmental review prior to implementation.

TABLE VI-2-E Summary of Air Cargo Alternative B1	Apron (s.y.)	Building (s.f.)	Parking/ Access (s.y.)
Retain Existing Air Cargo Area			
Area Provided by Alternative	190,000	340,000	168,800
Existing Area Available	89,700	52,000	25,000
Total	279,700	392,000	193,800
Projected Long Term Need	169,900	302,000	168,000
Area in Excess/(Deficient) of Long Term Need	+109,800	+92,000	+25,800
Planning Horizon Requirement Met	> Long Term	> Long Term	>Long Term
Convert Existing Cargo Area To Passenger Terminal Facilities			
Area Provided by Alternative	190,000	340,000	168,800
Existing Area Available	N/A	N/A	N/A
Total	190,000	340,000	168,800
Projected Long Term Need	169,900	302,000	168,000
Area in Excess/(Deficient) of Long Term Need	+21,000	+38,000	0
Planning Horizon Requirement Met	> Long Term	> Long Term	Long Term

AIR CARGO ALTERNATIVE B2

Air Cargo Alternative B2 is shown on **Exhibit VI-2-D**. Alternative B2 considers air cargo expansion opportunities east of Runway 3-21 should Runway 17-35 remain open. This alternative is not impacted by the ultimate location of the passenger terminal building. This alternative could be implemented whether the terminal remains in its existing location or is relocated south of Runway 8-26. However, should the terminal be relocated south of Runway 8-26 and Runway 17-35 remains open, this alternative could not fully meet long term air cargo facility needs. This is shown in the lower half of **Table VI-2-E**. As shown in the table, this area falls short of meeting long term air cargo needs for apron, building, and parking/access areas. When retaining the existing air cargo apron, this alternative can meet long term apron needs but falls short of cargo building and access/parking needs.

Similar to Alternative B1, Alternative B2 develops a new cargo apron along a new parallel taxiway constructed 450

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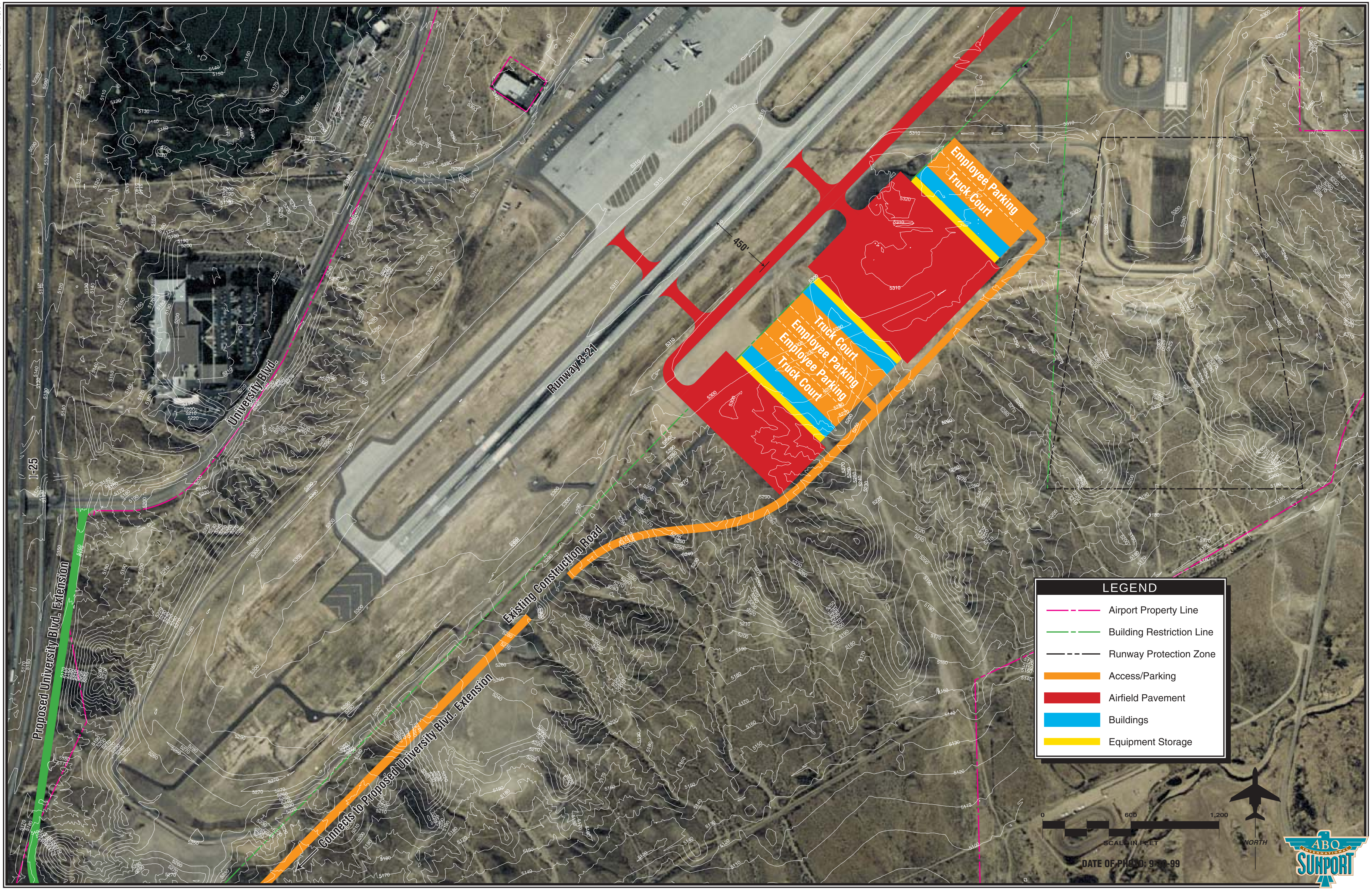


Exhibit VI-2-D
AIR CARGO ALTERNATIVE B2

feet east of Runway 3-21. This 95,000 square-yard apron accommodates 80,000 square-foot cargo buildings along both the north and south sides. For this alternative, public roadway access is proposed to be developed from the proposed University Boulevard Extension, following the alignment of an existing construction road. This is in contrast to Alternative B1 which proposed public roadway access be developed via Ira Sprecher Drive which connects with Bobby Foster Road, southeast of the airport.

Evaluation

The following provides an evaluation of this alternative using the evaluation criterion described at the beginning of this chapter.

1. **Ability to Meet Program Requirements** - As shown in **Table VI-2-F**, this alternative can only meet long term air cargo apron needs when the existing cargo apron is retained. However, it would not provide sufficient building and parking/ access needs. Should the existing air cargo area be converted for passenger terminal facilities, this alternative would only accommodate intermediate term apron and building requirements.

2. **Development Strategy** - This alternative requires the development of new public roadway access and a parallel taxiway to Runway 3-21. In comparison to Alternative B1, this alternative proposes the development of this roadway on existing airport property, connecting directly to the proposed University Boulevard Extension. Expansion capability to the south is limited by the existing terrain features which rapidly decline to the southeast. Expansion to the north is limited by the operational protection areas for both Runway 17-35 and Runway 3-21. Similar to Alternative B1, this alternative requires the extension of all utility services.

3. **Financial Considerations** - Development costs are increased by the requirements to develop a new parallel taxiway and public roadway access.

4. **Regulatory Requirements** - This alternative would be subject to federal environmental review prior to implementation.

AIR CARGO ALTERNATIVE C1

Alternative C1 is shown on **Exhibit VI-2-E**. Alternative C1 considers the relocation of air cargo facilities north of Runway 8-26. This has been developed to consider options for the redevelopment of the existing passenger terminal area should the alternative to relocate passenger terminal facilities south of Runway 8-26 be included in the final development program for the airport. Relocating passenger terminal facilities south of Runway 8-26 causes the displacement of the existing air cargo facilities. This alternative is only valid with the relocation of passenger terminal facilities south of Runway 8-26. Air cargo and passenger terminal facilities require segregation for reasons of security, access, and efficiency. The alternative further assumes the closure of Runway 17-35.

TABLE VI-2-F
Summary of Air Cargo Alternative B2

	Apron (s.y.)	Building (s.f.)	Parking/ Access (s.y.)
Retain Existing Air Cargo Area			
Area Provided by Alternative	142,500	240,000	33,300
Existing Area Available	89,700	52,000	25,000
Total	232,200	292,000	58,300
Projected Long Term Need	169,900	302,000	168,000
Area in Excess/(Deficient) of Long Term Need	+ 62,300	(10,000)	(109,700)
Planning Horizon Requirement Met	> Long Term	> Intermediate	< Short Term
Convert Existing Cargo Area To Passenger Terminal Facilities			
Area Provided by Alternative	142,500	240,000	33,300
Existing Area Available	N/A	N/A	N/A
Total	142,500	240,000	33,300
Projected Long Term Need	169,900	302,000	168,000
Area in Excess/(Deficient) of Long Term Need	(27,400)	(62,000)	(134,700)
Planning Horizon Requirement Met	> Intermediate	> Intermediate	< Short Term

This alternative retains Taxiway D. A parallel taxilane is developed west of Taxiway D to provide dual taxilane access for the air cargo facilities. This reduces congestion and potential bottlenecks created by two aircraft traveling in different directions on the same taxiway. Dual taxilanes could provide segregated access to and from the apron areas. Air cargo facilities are developed west of the dual taxilanes. Public roadway access is developed from a realigned Girard Boulevard.

Evaluation

The following provides an evaluation of this alternative using the evaluation criterion described at the beginning of this chapter.

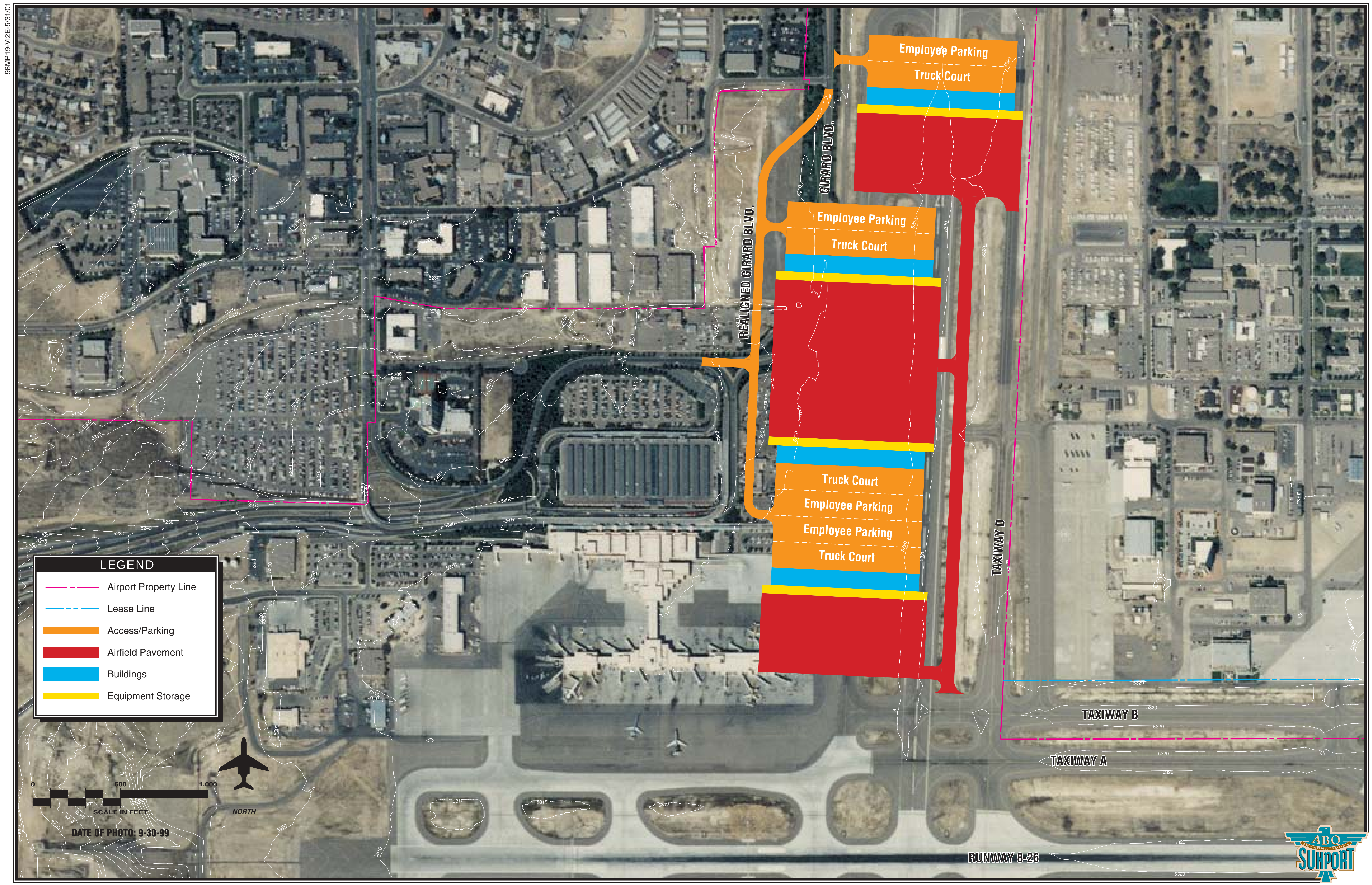


Exhibit VI-2-E
AIR CARGO ALTERNATIVE C1

1. **Ability to Meet Program Requirements** - As shown in **Table VI-2-G**, this alternative meets long term requirements for air cargo apron and building needs; however, this alternative falls 54,700 square yards short of meeting long term parking/access needs.

2. **Development Strategy** - This alternative would require the closure of Runway 17-35. This alternative retains existing Taxiway D to provide taxiway access to this area. Expansion capability to the north is limited by the location of Gibson Boulevard. Expansion to the south is limited by the need to retain Taxiway A and Taxiway B for access to the Runway 8 end for aircraft from Kirkland Air Force Base.

3. **Financial Considerations** - Development costs are influenced by the requirements for the development of a parallel taxilane to Taxiway D, the need to realign Girard Boulevard and demolish existing passenger terminal facilities which are redeveloped as part of this alternative.

4. **Regulatory Requirements** - This alternative would be subject to federal environmental review prior to implementation.

TABLE VI-2-G
Summary of Air Cargo Alternative C1

	Apron (s.y.)	Building (s.f.)	Parking/ Access (s.y.)
Area Provided by Alternative	190,000	340,000	113,300
Existing Area Available	N/A	N/A	N/A
Total	190,000	340,000	113,300
Projected Long Term Need	169,900	302,000	168,000
Area in Excess/(Deficient) of Long Term Need	+21,000	+38,000	(54,700)
Planning Horizon Requirement Met	> Long Term	> Long Term	> Intermediate Term

AIR CARGO ALTERNATIVE C2

Air Cargo Alternative C2 is shown on **Exhibit VI-2-F**. Similar to Alternative C1, this alternative has been developed considering the relocation of passenger terminal facilities south of Runway 8-26. In contrast to Alternative C1, this alternative assumes that Runway 17-35 would remain open.

In this alternative, the existing passenger terminal apron is retained for use as an air cargo apron. The existing passenger terminal building is removed to allow for the development of air cargo buildings, and access and parking. To meet long term cargo apron and building requirements, a cargo apron and building are developed to the west along an extended Taxiway A. This requires the relocation of five existing facilities as noted on the exhibit. The westerly apron area was positioned to retain the existing air freight building and old terminal building. Roadway access is developed along a new road developed parallel with the apron areas, extending between Yale Boulevard and Girard Boulevard. The Yale Boulevard bridge would be constructed to provide entrance/exit ramps to Sunport Boulevard from Yale Boulevard.

Evaluation

The following provides an evaluation of this alternative using the evaluation criterion described at the beginning of this chapter.

1. **Ability to Meet Program Requirements** - As shown in **Table VI-2-G**, this alternative meets long term requirements for air cargo apron and building needs; however, this alternative falls 54,700 square yards short of meeting long term parking/access needs.

2. **Development Strategy** - This alternative displaces all existing buildings within the existing passenger terminal, with the exception of the air freight building and old terminal (which is retained for its historical value). This alternative has limited expansion capabilities beyond what is shown. Expansion to the east and south are prevented by the location of Runway 17-35 and Runway 8-26, respectively. Expansion to the west and north is influenced by the grade changes in each direction.

3. **Financial Considerations** - Development costs are influenced by the requirements to demolish existing passenger terminal facilities and relocate other facilities within this area.

4. **Regulatory Requirements** - This alternative would be subject to federal environmental review prior to implementation.

SUMMARY

This section has provided an analysis of development options available for accommodating growth in dedicated all-cargo services at Albuquerque International Sunport. These alternatives have been developed in an effort to meet the overall program objectives for air cargo services at the airport in a balanced manner. Through coordination with the planning committees, the public and the City of Albuquerque, the alternatives (or a combination thereof) will be refined and modified as necessary to develop the recommended air cargo development program. Therefore, the alternatives presented in this chapter can be

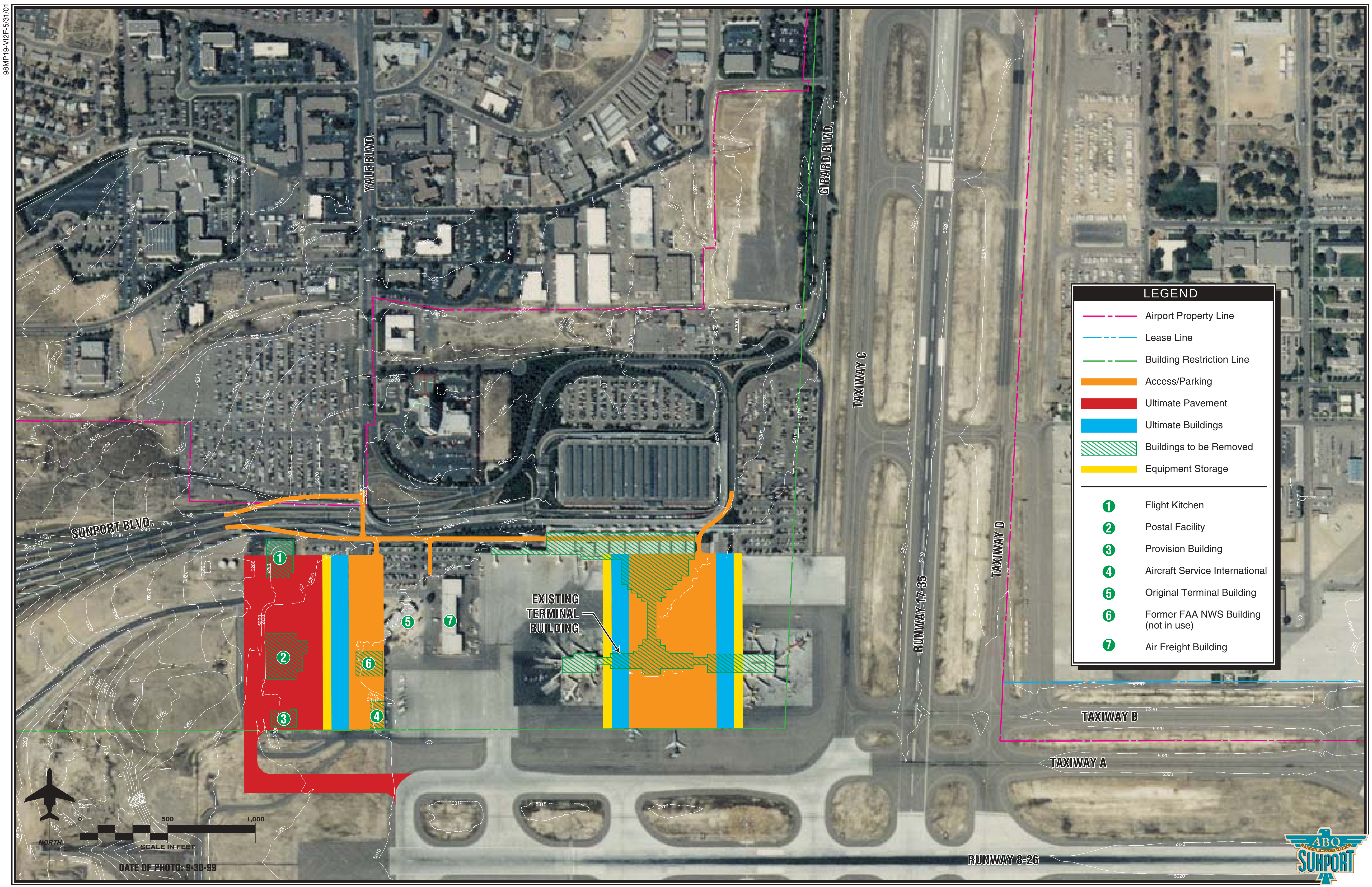


Exhibit VI-2-F
AIR CARGO ALTERNATIVE C2

considered a beginning point in the development of the recommended master plan development program and input will be necessary to defining the resultant development program.

TABLE VI-2-H
Summary of Air Cargo Alternative C2

	Apron (s.y.)	Building (s.f.)	Parking/ Access (s.y.)
Area Provided by Alternative	177,800	300,000	77,800
Existing Area Available	N/A	N/A	N/A
Total	177,800	300,000	77,800
Projected Long Term Need	169,900	302,000	168,000
Area in Excess/(Deficient) of Long Term Need	+7,900	(2,000)	(90,200)
Planning Horizon Requirement Met	> Long Term	Long Term	> Short Term

The determination of a final development program for air cargo facilities at Albuquerque International Sunport will be dependent upon the final airfield configuration and passenger terminal facility location. As described above, only Alternatives B1, C1 and C2 can substantially meet the program requirements for air cargo independently. All remaining alternatives require either the retention of the existing air cargo area and/or be combined with another alternative.

Table VI-2-J summarizes the potential combinations of air cargo alternatives considering the underlying airfield and passenger terminal facility issues. As shown in the table, should Runway 17-35 be closed and the passenger terminal facilities retained in their existing location, Alternatives A1, A2, B1, and B2 become viable alternatives for consideration. However, should Runway 17-35 remain open and the passenger terminal facilities be retained in their existing location, only Alternatives A1, A2, and B2 would be viable options.

TABLE VI-2-J
Alternative Combinations

Close Runway 17-35		Runway 17-35 Remains Open	
Retain Existing Passenger Terminal Location	**Relocate Passenger Terminal Facilities**	**Retain Existing Passenger Terminal Location**	**Relocate Passenger Terminal Facilities**
Alternative A1 Alternative A2 Alternative B1 Alternative B2	Alternative B1 Alternative B2 Alternative C1 Alternative C2	Alternative A1 Alternative A2 Alternative B2	Alternative B2 Alternative C2

Chapter Six

Air Cargo Facilities

Section Three

RECOMMENDED PROGRAM

Chapter Six
Air Cargo Facilities

Section Three
RECOMMENDED PROGRAM

The master planning process for air cargo facilities at Albuquerque International Sunport has evolved through several analytic efforts presented in the preceding sections of this chapter. The intent of these analyses was to establish potential aviation demand, determine facility needs, and evaluate options for the improvement of facilities to accommodate projected demand and deficiencies in facilities. From these analyses, a plan for the use and improvement of air cargo facilities at Albuquerque International Sunport has evolved. This plan has considered the input of the City of Albuquerque, airport users, airport tenants, and the public. The purpose of this section of Chapter Five is to provide a graphic and narrative description of the plan for accommodating air cargo activities at Albuquerque International Sunport.

RECOMMENDED PLAN

The recommended plan for accommodating air cargo activities at Albuquerque International Sunport considers the requirements for commercial air freight carried by the passenger airlines, commercial air freight carried by the dedicated air cargo airlines and air mail, which is carried by both the commercial passenger airlines and dedicated air cargo airlines. The plan calls for these activities to be accommodated exclusively at Albuquerque International Sunport with no portion of these activities being transferred to Double Eagle II Airport.

Double Eagle II Airport is not equipped to accommodate the large transport aircraft used for air cargo services at Albuquerque International Sunport.

To accommodate air cargo activity at Double Eagle II Airport, the primary runway strength would need to be significantly upgraded and the runway extended.

Double Eagle II Airport is designated as a general aviation reliever airport for Albuquerque International Sunport. In this manner, Double Eagle II Airport is intended to provide an alternate landing area for general aviation activity. Transferring air cargo activity to Double Eagle II Airport does not fit this role. From a regional and national planning perspective, air cargo activity is expected to be accommodated at Albuquerque International Sunport.

AIR MAIL

Air mail is primarily processed through the U.S. Postal Service facility located along Yale Boulevard off George Road. The building is owned and operated by the United States Postal Service (USPS). While a requirement for additional air mail processing area has been projected by the Master Plan, expansion of the air mail facility would be at the discretion of the USPS. This Master Plan assumes any expansion would be contiguous with the existing air mail facility, which is planned to remain in its existing location.

PASSENGER AIRLINE AIR FREIGHT

The passenger airlines' air freight building, located west of the passenger terminal building, is used by the major airlines to sort air freight carried by the scheduled passenger airlines. To accommodate an expansion of the terminal building departure concourse to the west, this building is planned to be removed. This building is planned to be replaced at the west end of the apron at the terminus of Yale Boulevard. The existing building accommodating the administrative and operations activities for the airline refueling contractor is planned to be removed to accommodate the new air freight building.

A second air freight building is planned along Gibson Boulevard with access from Girard Boulevard. This building would be located near the end of the existing Runway 17-35 alignment, parallel with Gibson Boulevard. Runway 17-35 is planned to be closed. This air freight building is planned to serve the scheduled air carriers using the planned second terminal building. The location of each air freight building was previously shown in Chapter Four, Section Five.

AIR CARGO

The primary air cargo facility used by the all-cargo carriers is located west of Runway 3-21, south of Runway 8-26, along Spirit Drive. Present air cargo facilities include an 89,700 square-yard apron, 52,000 square-foot building, and approximately 25,000 square yards of truck staging and automobile parking areas.

The plan for accommodating air cargo activity at Albuquerque International Sunport is shown on **Exhibit VI-3-A**. The plan is a combination of Alternatives A1 and A2 presented

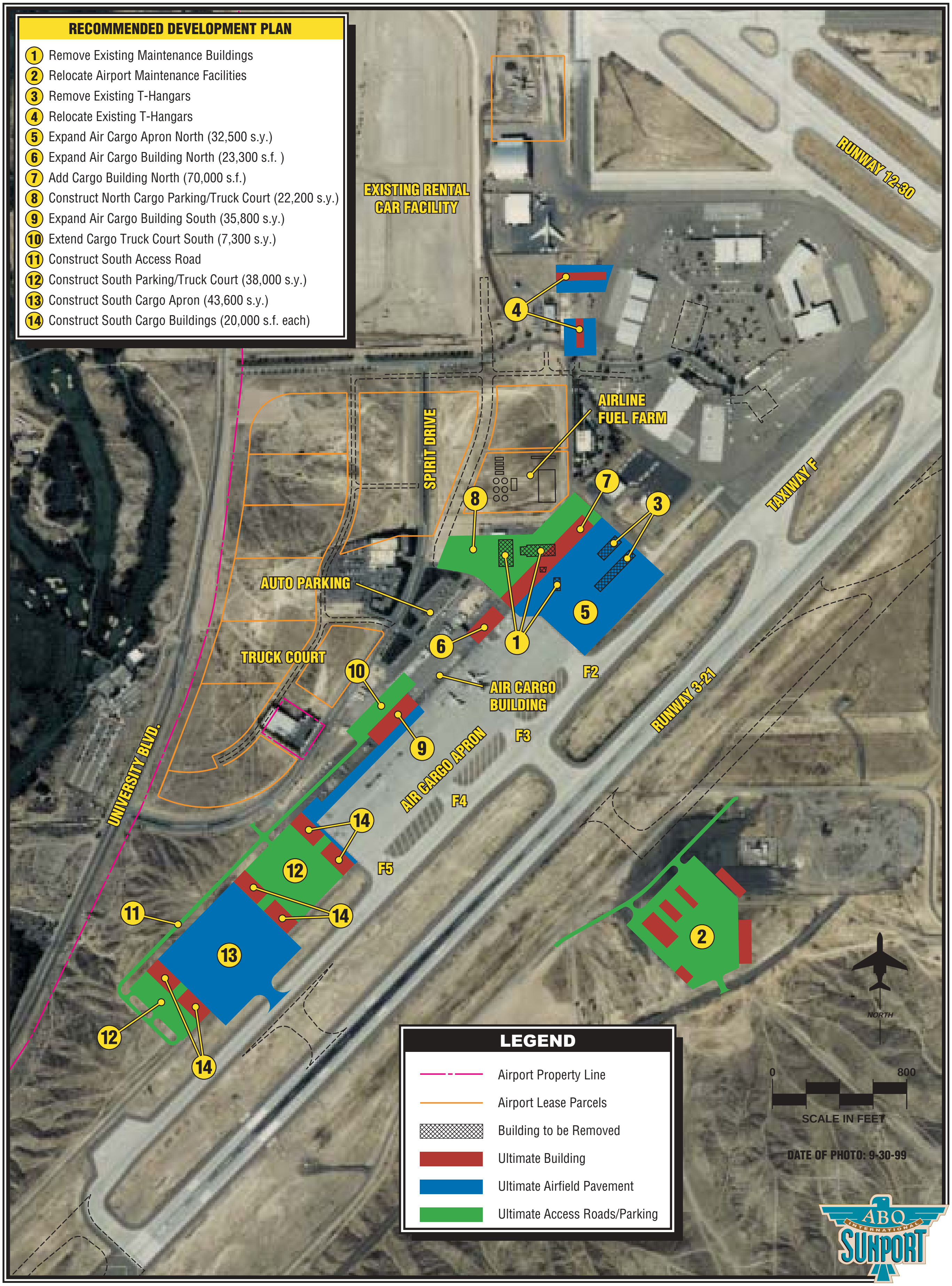


Exhibit VI-3-A
AIR CARGO PLAN

previously in Section Three of this chapter. Alternatives B1, B2, C1, and C2 are not included in the recommended plan. As discussed previously in Chapter Four, Alternatives B1, B2, C1, and C2 were developed as consideration had been given to relocating passenger terminal facilities south of Runway 8-26. This would have caused the displacement of the existing air cargo area. Having concluded that the passenger terminal area will remain, and be expanded in present location, Alternatives B1, B2, C1, and C2 presented in Section Three no longer need to be considered.

The plan builds upon the investments made in the existing air cargo facilities to accommodate future demand. The existing air cargo area is expanded to the north and south to accommodate apron, building, truck courts, and automobile parking areas.

The plan calls for contiguous extensions to the north and south sides of the existing cargo building as shown on the exhibit. The northerly extension encompasses approximately 23,300 square feet (s.f.), while the southerly extension encompasses approximately 35,800 s.f. The existing truck court is expanded to the south (approximately 7,300 square yards [s.y.]) to serve the southerly extension of the existing cargo building.

The northerly extension of the air cargo apron encompasses approximately 32,500 s.y. Prior to extending the apron to the north, two existing T-hangar facilities and four airport maintenance buildings would need to be removed. The T-hangar facilities are planned to be relocated to the western portion of the general aviation area as shown on **Exhibit VI-3-A**. The airport maintenance facilities would be replaced east of Runway 3-21.

A separate air cargo building totaling 70,000 s.f. is planned along the western edge of the northerly air cargo apron expansion. This building would be served by an expanded truck court and automobile parking area encompassing approximately 22,200 s.y.

This plan includes an expansion of the apron to the south and development of separate air cargo buildings, truck courts, and automobile parking areas. The southern air cargo area would be linked to the existing air cargo facility by a roadway extending parallel with the air cargo apron. The southerly expansion of the air cargo area provides for a 43,600 s.y. expansion of the apron, the development of 120,000 s.f. of cargo buildings, and 30,000 s.y. of automobile parking and truck court areas.

The southern apron area is limited by terrain features in the area south of the existing air cargo apron. The terrain in this area significantly falls to the west, declining more than 70 feet from its highest point near the existing air cargo apron. The planned expansion of the apron is along an existing contour line level with the existing air cargo apron, however, the area to the west would need to be graded and filled. The further expansion of facilities to the south would require significant grading and fill.

CAPITAL IMPROVEMENTS AND DEVELOPMENT STAGING

Approximately $49 million in investments is programmed for facility developments to accommodate the air cargo needs of scheduled air carriers and dedicated air cargo airlines. Of this total, $250,000 is programmed for existing facility maintenance. The remaining $48.8 million is a function of future demand for facility expansions. Funding for these facilities would need to be programmed only as required by demand.

The capital program for air cargo development is separated in three planning horizons: Short Term Planning Horizon, Intermediate Term Planning Horizon, and Long Range Planning Horizon. Each planning period represents a specific demand level calling for facility development. **Table VI-3-A** summarizes projected enplaned air cargo, air mail, and air freight through the planning period.

TABLE VI-3-A
Project Air Cargo, Air Freight, and Air Mail Volumes

	Currently Available	Short Term	Intermediate Term	Long Range
Air Freight (tons)	67,684	95,000	125,000	258,000
Air Mail (tons)	23,911	32,000	43,000	77,000

The programmed projects in each planning horizon shown in **Table VI-3-B** have been related to these demand levels and indicate the anticipated facility developments required to meet those demand levels. As Short Term Planning Horizon demand levels are reached, planning should begin for Intermediate Term Planning Horizon levels of demand. Planning and developing to demand levels provides flexibility within the capital improvement program as the capital investments can be accelerated or slowed, depending upon air cargo demand levels.

Approximately $11.1 million is programmed for the development of the scheduled air carrier air freight buildings. Of this, approximately $4.9 million is required for the relocation of the existing air freight building. As mentioned previously, the removal and replacement of this building would be needed to accommodate an extension of the existing terminal Departure Concourse B. Should the departure concourse be extended to the west, this building would need to be removed to allow for taxi access to the gate positions. This building is also reaching the end of its useful life. The replacement of this building is programmed for the Short Term Planning Horizon considering these factors.

The remaining $6.2 million programmed for air freight building construction is related to the second air freight building planned along Gibson

Boulevard. This building will be needed after the construction of the second terminal building and will be completely dependent upon the needs of the air carriers using that terminal. The construction of this building is programmed for the Long Term Planning Horizon as the air freight building planned for the Short Term Planning Horizon is anticipated to serve scheduled air carrier air freight demand through the planning period.

TABLE VI-3-B
Capital Improvement Program
Air Cargo

No.	Project	Total Cost
Short Term Planning Horizon		
1.	Remove Existing Belly Freight Building	$624,000
2.	Construct Belly Freight Building	2,848,000
3.	Construct Belly Freight Building Parking/Truck Court	634,000
4.	Construct Belly Freight Building Airside Access	790,000
5.	New Maintenance Area Civil and Utilities	2,155,000
6.	New Maintenance Area Buildings	5,049,000
7.	Relocate Existing T-Hangars	570,000
8.	Expand Air Cargo Apron North	3,400,000
9.	Extend Cargo Building North	2,280,000
10.	Extend Cargo Truck Court North	375,000
11.	Add Cargo Building North	2,314,000
12.	Add Cargo Parking/Truck Court North	871,000
Subtotal Short Term Planning Horizon		**$21,910,000**
Intermediate Term Planning Horizon		
1.	Extend Cargo Building South	$2,492,000
2.	Extend Cargo Truck Court South	860,000
Subtotal Intermediate Term Planning Horizon		**$3,352,000**
Long Range Planning Horizon		
1.	Construct North Belly Freight Building	$2,848,000
2.	Construct North Belly Freight Building Parking/Truck Court	1,800,000
3.	Construct North Belly Freight Building Access Road	300,000
4.	Construct North Belly Freight Building Airside Access	1,250,000
5.	Construct Cargo Buildings South End of Apron	2,848,000
6.	Construct South Cargo Access Road/Utilities - Phase I	500,000
7.	Construct South Cargo Parking/Truck Court - Phase I	1,800,000
8.	Construct South Air Cargo Apron	5,120,000
9.	Construct South Cargo Buildings	5,696,000
10.	Construct South Cargo Access Road/Utilities - Phase II	500,000
11.	Construct South Cargo Parking/Truck Court - Phase II	875,000
12.	Existing Cargo Apron Rehabilitation	225,000
13.	Existing Parking/Truck Court Rehabilitation	25,000
Subtotal Long Range Planning Horizon		**$23,787,000**
Total Air Cargo Development Costs		**$49,049,000**

Exhibit VI-3-B depicts development staging for the existing air cargo area. Approximately $38 million is programmed for the maintenance and expansion of the existing air cargo area through the planning period. This includes approximately $17 million in the Short Term Planning Horizon for northerly extension of the existing cargo building, northerly extension of the apron, development of the north cargo building, and construction of the northerly truck court and automobile parking. This includes the costs to remove and relocate the T-hangars and replace the maintenance area, which will need to be completed prior to expansion of the apron to the north.

Approximately, $3.3 million is programmed for the Intermediate Term Planning Horizon. This provides for the southerly extension of the existing air cargo building and truck court.

Approximately $17.3 million is programmed in the Long Term Planning Horizon for the development of the southern air cargo facilities and is programmed in two phases. Phase One includes the development of the two air cargo buildings located along the southern portion of the existing apron, and development of the access road, truck court, and auto parking to these buildings. Phase Two includes the development of the southern apron area, remaining cargo buildings, truck court, auto parking and access road.

ENVIRONMENTAL OVERVIEW

As mentioned previously, all of the improvements planned for Albuquerque International Sunport will require compliance with the *National Environmental Policy Act (NEPA) of 1969*, as amended. As detailed in *FAA Order 5050.4A, Airport Environmental Handbook*, the planned air cargo facility improvements described previously in this chapter will be categorically excluded and will not require formal NEPA documentation. However, these projects will be further evaluated to ensure compliance with environmental issues such as wetlands, threatened or endangered species, and cultural resources during the federal, state, and/or local permitting processes.

Table VI-3-C summarizes a preliminary review of environmental issues that would need to be analyzed in more detail within the permitting processes. This review considers the main environmental resources required to be studied by FAA Order 5050.4A. This analysis ***does not*** address mitigation or the resolution of environmental issues. Mitigation measures are determined in the permitting processes. A complete description of the environmental resources is provided in Section Five of Chapter Five.

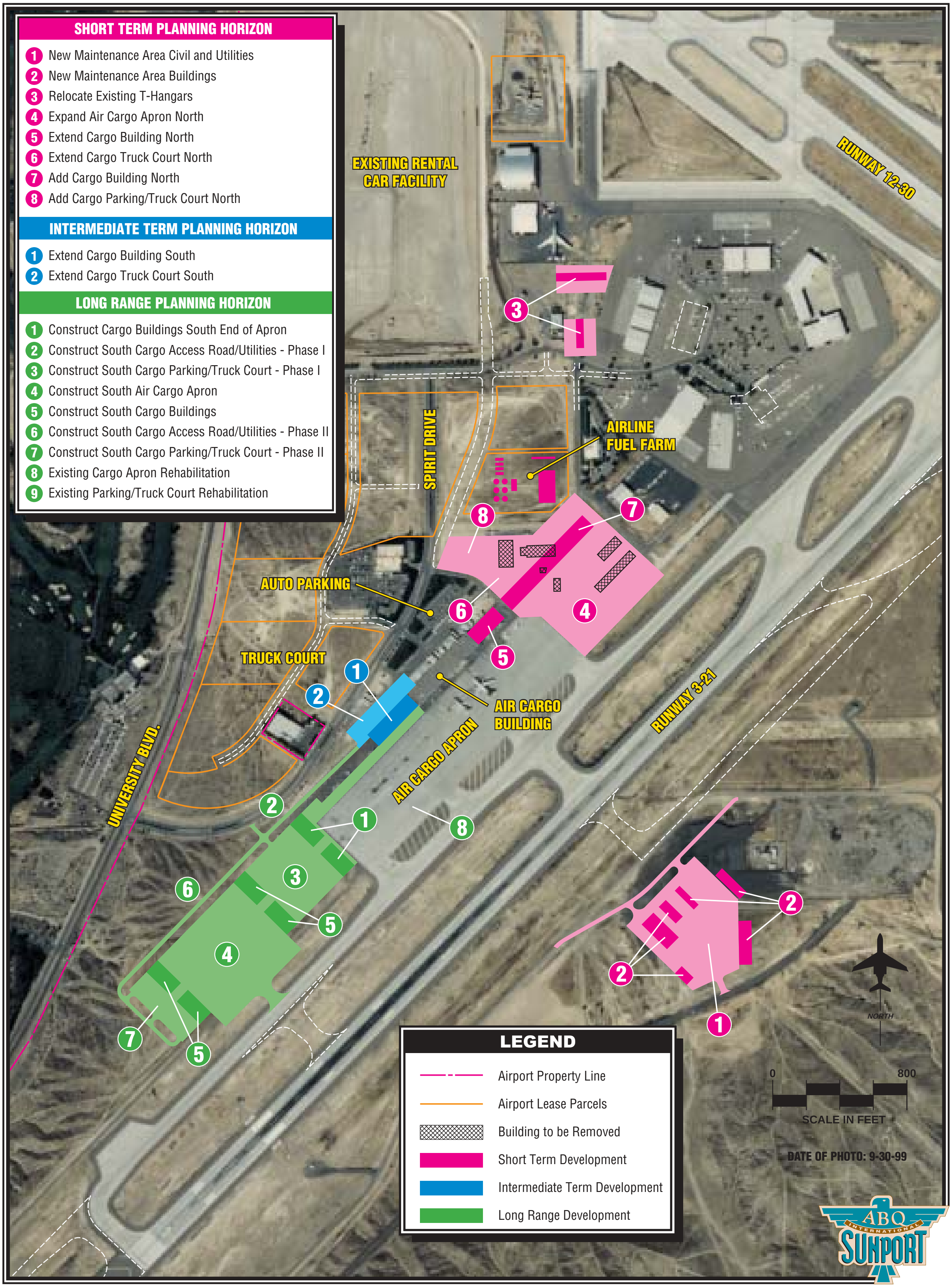


Exhibit VI-3-B
AIR CARGO
DEVELOPMENT STAGING

TABLE VI-3-C
Review of Environmental Resources
Proposed Cargo Facility Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Noise	• No impacts anticipated.
Compatible Land Use	• No impacts anticipated.
Social Impacts	• No impacts anticipated.
Induced Socioeconomic Impacts	• No impacts anticipated.
Air Quality	• No impacts anticipated. The use of best management practices during construction activities will reduce any air quality impacts.
Water Quality	• As discussed in Chapter One, the airport will need to continue to comply with their current NPDES operations permit requirements. • With regard to construction activities, the airport and all applicable contractors will need to comply with the requirements and procedures of the construction related NPDES General Permit, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan*, prior to the initiation of project construction activities.
Section 4(f) Lands	• No impacts anticipated.
Historical and Cultural Resources	• Further coordination with the State Historic Preservation Officer (SHPO) will be required prior to project implementation and field surveys may be required.
Threatened or Endangered Species and Biological Resources	• Correspondence received from the U.S. Fish and Wildlife Service (FWS) indicated that no federally-listed threatened or endangered species are present and thus will not be affected by the proposed projects. • Under the Migratory Bird Treaty Act (MBTA) the taking of migratory birds, nests, and eggs is prohibited. To minimize the likelihood of a taking, the FWS recommended that construction activities occur outside the nesting season of March through August, or a survey be completed prior to construction to determine the potential affect on these protected species.

TABLE VI-3-C (Continued)
Review of Environmental Resources
Proposed Cargo Facility Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Waters of the U.S. including Wetlands	• No impacts anticipated.
Floodplains	• No impacts.
Wild and Scenic Rivers	• No impacts.
Farmland	• No impacts.
Energy Supply and Natural Resources	• No significant impacts anticipated.
Light Emissions	• No significant impacts anticipated.
Solid Waste	• No significant impacts anticipated.

SUMMARY

The recommended plan for accommodating air cargo activities at Albuquerque International Sunport has been developed in cooperation with input from advisory committees, interested citizens, and the City of Albuquerque. It is designed to assist the City in making decisions relative to the future growth in air cargo activities at Albuquerque International Sunport over the next 25 years and beyond.

Flexibility will be a key to the plan since activity may not occur exactly as forecast. The plan has considered demands that could be placed upon the airport even beyond the 25-year planning period to ensure that the facility is capable of accommodating a variety of circumstances. Following the general recommendations of the plan, the airport can maintain it's long-term viability and continue to provide efficient air cargo services to the region.

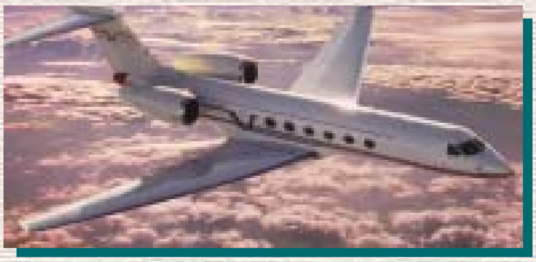
Chapter Seven

General Aviation Facilities

Section One
INVENTORY

Chapter Seven
General Aviation Facilities

Section One
INVENTORY



This chapter of the Master Plan focuses on facilities serving general aviation at Albuquerque International Sunport. General aviation facilities primarily consist of aircraft maintenance and storage hangars and aircraft parking aprons.

This chapter includes three sections: Facility Requirements, Alternatives, and Recommended Program. Section One is includes a description of available facilities, compares them to forecast demand, and estimates the type and size of facilities needed to accommodate future demand. Section Two evaluates alternatives for future development which will form the basis for recommended general aviation development at Albuquerque International Sunport. Section Three describes the recommended general aviation development plan and includes the future capital projects required to implement the plan.

INVENTORY

The general aviation facilities are located in the southwest quadrant, west of the Runway 12-30/Runway 3-21 intersection as shown in **Exhibit VII-1-A**. These facilities are accessed primarily via Clark Carr Road from Spirit Drive or Access Road B. Spirit Drive and Access Road B intersect with University Boulevard. Clark Carr Road previously intersected with University Boulevard. This intersection was eliminated during the construction of the consolidated rental car facility.

The general aviation complex includes the primary Fixed Based Operator (FBO) area and adjacent T-hangars and aircraft storage/maintenance hangars. The primary FBO area is roughly pentagonal in shape, being initially designed to accommodate five separate FBO pods. Constructed in the early 1980's, this area provides approximately 200,000 square yards of apron area. Several private companies provide services to general aviation users at Albuquerque International Sunport.

Cutter Flying Service provides a full-range of services to general aviation aircraft including: fuel services, aircraft sales, aircraft maintenance and repair. Cutter Flying Service operates two facilities. The primary building totals approximately 65,600 squa re feet which includes both office and hangar space. The Cutter West hangar totals approximately 56,500 square feet and is used primarily for aircraft storage. The New Mexico Aviation Department and U.S. Customs Service lease offices at Cutter Flying Service.

Seven Bar Aviation, Seven Bar Flying Service, Mountain Aviation, Robertson Aircraft and Bode Aviation operate from a single 65,400 square-foot facility located on the southwest portion of the FBO area. Seven Bar Aviation provides fuel and line services and aircraft storage. Seven Bar Flying Service provides aircraft charter and air ambulance services. Robertson Aircraft provides aircraft maintenance services. Mountain Aviation and Bode Aviation provide aircraft charter and flight training services. The U.S. Forest Service also operates from this facility. The U.S. Forest Service operates a fleet of Beechcraft Barons and Cessna 206s from Albuquerque International Sunport in support of aerial firefighting operations.

A third FBO facility is leased by the City to Eclipse Aviation, who is developing a prototype business jet aircraft. The facilities include a 41,500 square-foot hangar and 55,000 square-foot office complex.

The Century Hangar and FAA/AANC NDI Validation Center are located northwest of the primary FBO area along Taxiway E1. The Century Hangar totals approximately 50,000 square feet. This hangar is served by a 7,700 square yard apron. The FAA/AANC NDI Validation Center operates from a 26,000 square-foot building. This facility is served by an 8,100 square yard apron area. These hangars are not considered to be available for purposes of aircraft storage/maintenance.

The Four Seasons and Western Air hangars are located northwest of Taxiway F. Access is provided from Access Road C. The Four Seasons hangar totals approximately 10,000 square feet. The Western Air facility totals approximately 9,200 square feet. An 11,900 square yard apron is located along the northeast side of the hangars.

Southwest of Western Air aircraft are two rows of T-hangars. T-hangars are a specific hangar design that provides for segregated aircraft storage areas within one larger facility. A total of 16 hangar units are aviable in the two T-hangar units. This is comprised of a 10-unit T-hangar and 6-unit T-hangar facility.

REQUIREMENTS

The master plan forecasts provide consideration for an increase in general aviation activity at ABQ. The long range horizon suggests a 38 percent

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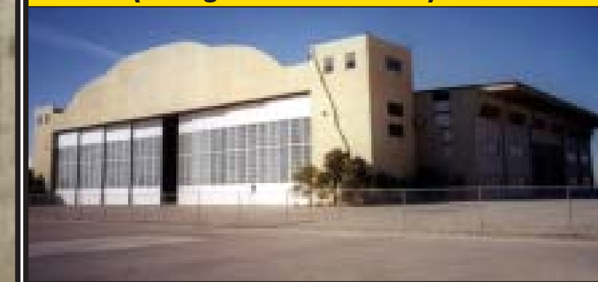
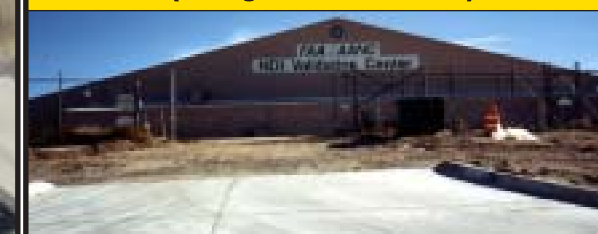
1) CENTURY HANGAR - 50,000 s.f. (non-general aviation)



2) FAA/AANC NDI VALIDATION CENTER - 26,000 s.f. (non-general aviation)



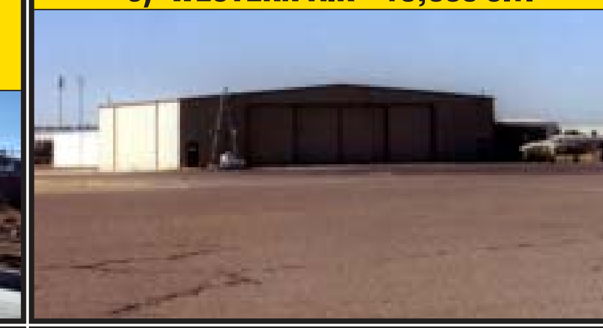
3) CUTTER WEST HANGAR - 56,500 s.f.

4) CUTTER FLYING SERVICE - 65,600 s.f.

5) ECLIPSE HANGAR - 41,500 s.f.
6) ECLIPSE BUILDING - 55,000 s.f.

7) SEVEN BAR AVIATION - 65,400 s.f.

8) WESTERN AIR - 10,000 s.f.



9) FOUR SEASONS - 10,000 s.f.

10) T-HANGARS - 8,900 s.f.

11) T-HANGARS - 15,880 s.f.

Exhibit VII-1-A
GENERAL AVIATION
FACILITIES

increase in based aircraft and a 50 percent increase in general aviation operations. Even with these horizon levels, activity is expected to do no more than recapture the levels of activity experienced in the early 1980's.

The development of Double Eagle II Airport in the 1980's as a general aviation reliever airport for ABQ has provided general aviation users an alternative to ABQ. It has been the policy of the Aviation Department to encourage the use of Double Eagle II Airport by general aviation.

The facility requirements reflect this policy in recognizing that any significant growth beyond the existing facility will be directed to Double Eagle II Airport. Improvements and upgrades of the existing general aviation area to support the increasing percentage mix of business-class aircraft will be supported. The existing and future fleet mix projections are summarized in **Table VII-1-A.**

TABLE VII-1-A
Fleet Mix Projections

		FUTURE FLEET MIX		
Aircraft Type	**Existing Need**	**Short Term**	**Intermediate Term**	**Long Term**
Single Engine	135	146	153	178
Multi-Engine	64	65	66	69
Turboprop	15	18	20	29
Jet	8	12	16	28
Helicopter	5	6	7	9
Total	227	247	262	313

Upon review of information collected during the initial inventory, more than 50 percent of the locally based fleet is hangared, with a much higher percentage of the multi-engine aircraft in hangars. For purposes of projecting future hangar requirements, similar percentages have been assumed. The assumptions with regard to hangaring and tie-down requirements is summarized in **Table VII-1-B**.

A planning standard of 1,200 square feet per based aircraft is used to project hangar storage requirements for helicopters and piston-powered fixed wing aircraft. A planning standard of 2,500 square feet is used for each turbine aircraft assumed to be hangared. A 15 percent factor is added to large hangars to reflect aircraft maintenance requirements.

TABLE VII-1-B **Hangaring and Tie-Down Requirements**				
		FUTURE REQUIREMENTS		
Aircraft to be Hangared	**Existing Need**	**Short Term**	**Intermediate Term**	**Long Term**
Rotorcraft, Piston Aircraft	93	98	102	115
Turbine Aircraft	23	30	36	57
Total	116	128	138	172
Aircraft to Tie Down	111	119	124	141

The future hangar requirements are summarized in **Table VII-1-C.** The analysis indicates that additional hangar space is adequate. Currently, some cross-utilization of space and storing aircraft within less space that the planning standard has provided sufficient hangar storage. There could ultimately be a need for additional hangars and existing hangar improvements to accommodate the growing business jet fleet. For example, one fixed base operator has indicated a need for a 30-foot hangar door to accommodate the high end corporate aircraft.

TABLE VII-1-C **Hangar Requirements**				
		FUTURE REQUIREMENTS		
	Existing Need	**Short Term**	**Intermediate Term**	**Long Term**
Piston Engine, Rotorcraft (Positions)	93	98	102	115
Area (s.f.)	112,000	118,000	122,000	138,000
Turbine (Positions)	23	30	36	57
Area (s.f.)	58,000	75,000	90,000	142,000
Subtotal	160,000	193,000	212,000	280,000
Maintenance Requirements (s.f.)	24,000	29,000	32,000	42,000
Total Conventional Hangar Area (s.f.)	184,000	222,000	244,000	322,000

Parking apron is necessary for both locally based aircraft and transient aircraft. The number of locally based aircraft which need tie-down positions were identified in **Table VII-1-B**. The number of transient parking positions are derived from the forecast of busy day operations, itinerant operations percentage, and peaking characteristics. Apron for local tie-downs is estimated at 360 square yards per aircraft.

For ABQ, the itinerant operations in the general aviation category reflect 85 percent of the total general aviation activity. The number of transient parking positions are based upon a planning standard which uses 25 percent of the busy day itinerant operations.

A planning standard of 700 square yards per position was assigned to the transient apron.

The results of the parking apron requirements analysis have been summarized in **Table VII-1-D.** The capacity of the existing apron appears to satisfy existing need, long-term requirements.

TABLE VII-1-D
Aircraft Parking Apron Requirements

		FUTURE REQUIREMENTS		
	Existing Need	Short Term	Intermediate Term	Long Term
Transient Aircraft Positions/Apron Area (s.y.)	62 43,400	69 48,300	75 52,500	91 63,700
Locally-Based Aircraft Positions Apron Area (s.y.)	111 36,400	119 39,800	124 41,400	141 48,200
Total Positions Total Apron Area (s.y.)	163 79,800	178 88,100	189 93,900	232 111,900

General aviation terminal/office facilities provide area for pilot's lounge, flight planning, concessions, FBO management, classrooms, and offices. These facilities are generally provided by the individual operators, in structures attached to their main hangars. For example, the Cutter Flying Service facility has 21,000 square feet in one building, and another 5,000 square in another building. Seven Bar Aviation has a similar amount of area dedicated to offices, pilot's lounge and flight planning.

Generally, the methodology for determining future general aviation terminal facility needs uses typical design hour passengers, assigning 2 to 2.5 passengers per design hour operation, then assigns a required square footage per passenger (usually 90-100 square feet). For ABQ, this would yield a square footage requirement of approximately 7,200-8,000 square feet. Obviously, the individual FBOs are providing significantly more area than this methodology supports.

Another methodology which can be examined applies office space to large hangar development at a ratio of one square foot for each five square feet of hangar space.

Public parking requirements have also been assigned, based upon a need to provide one parking space for each

1,000 square feet of hangar and office area. The office and parking requirements have been summarized in **Table VII-1-E**.

The general aviation requirements have been summarized in **Exhibit VII-1-B**.

TABLE VII-1-E
Terminal/Office and Public Parking Requirements

		FUTURE REQUIREMENTS		
	Existing Need	**Short Term**	**Intermediate Term**	**Long Term**
Hangar Area (sq. ft.)	184,000	222,000	244,000	322,000
Terminal/Office Area (sq. ft.) (1 sq. ft./4 sq. ft. of hangar)	37,000	44,000	49,000	79,000
Public Parking (spaces) (space/1,000 sq. ft. of hangar)	184	222	244	322
Public Parking Area (sq. ft.)	65,000	78,000	86,000	113,000

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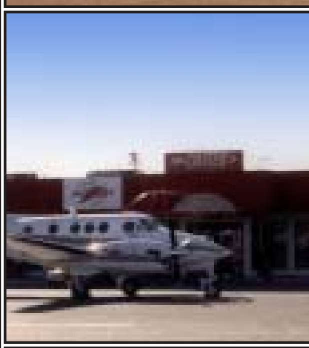
		Available	Current	Short Term	Intermediate	Long Range
	Conventional Hangars (sq. ft.)	281,700	184,000	222,000	244,000	322,000
	Positions	150±	116	128	138	172
	Parking Apron (sq. yds.)	126,500	79,800	88,100	93,900	111,900
	Transient Positions	100±	62	69	75	91
	Local Positions	140	111	119	124	141
	Terminal/ Office Space (sq. ft.)	55,000	37,000	44,000	49,000	64,000
	Public Parking Area (sq. ft.)	300,000	65,000	78,000	86,000	113,000
	Parking Spaces	953	184	222	244	322

ABQ INTERNATIONAL SUNPORT

Exhibit VII-1-B
GENERAL AVIATION REQUIREMENTS

Chapter Seven

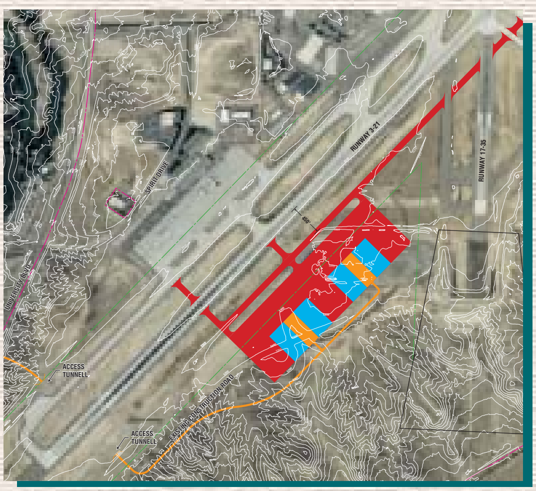
General Aviation Facilities

Section Two

ALTERNATIVES

Chapter Seven
General Aviation Facilities

Section Two
ALTERNATIVES



This second section of Chapter Seven examines the development options available for the orderly expansion of general aviation facilities at Albuquerque International Sunport. General aviation facilities primarily consist of aircraft maintenance and storage hangars, general aviation terminal buildings, automobile parking areas and aircraft parking aprons.

Requirements for general aviation facility needs were presented previously in Section One. **Table VII-2-A** summarizes the projected general aviation facility needs for Albuquerque International Sunport. As shown in the table, the requirements analysis determined that existing general aviation facilities could be expected to accommodate projected general aviation demand through at least the Intermediate Term Planning Horizon demand levels. At Long Term Planning Horizon demand levels, the Master Plan projected a need for an additional 40,300 square feet of conventional hangar space and 9,000 square feet of terminal building space.

While the existing hangar space appears to be adequate, the facility requirements analysis did indicate the need for hangar facilities to more adequately accommodate the tail heights of common business class aircraft utilizing Albuquerque International Sunport. For example, one of the fixed base operators is considering the development of a new hangar facility to accommodate 30-foot tail heights.

TABLE VII-2-A General Aviation Facility Requirements				
	Currently Available	Short Term Need	Intermediate Term Need	Long Term Need
Conventional Hangars (s.f.)	281,700	222,000	244,000	322,000
Aircraft Parking Apron (s.y.)	126,500	88,100	93,900	111,900
Terminal / Office Space (s.f.)	55,000	44,000	49,000	64,000
Automobile Parking (s.f.)	300,000	78,000	86,000	113,000

Prior to examining opportunities for general aviation development, it is important to consider the role of general aviation activity at Albuquerque International Sunport. As mentioned previously in this chapter, it is the policy of the Aviation Department to encourage the use of Double Eagle II Airport by general aviation. Double Eagle II Airport was specifically constructed to serve as a general aviation reliever airport for Albuquerque International Sunport. As a reliever airport, Double Eagle II Airport is expected to relieve traffic at Albuquerque International Sunport by providing an alternate landing area for general aviation aircraft. By contrast, the role of Albuquerque International Sunport in the regional and national aviation system is to primarily accommodate commercial air service which includes both scheduled passenger airlines and air cargo.

The Aviation Department policy should not be viewed as diminishing the role of general aviation at Albuquerque International Sunport. General aviation services will be needed for the foreseeable future at Albuquerque International Sunport. There is a segment of general aviation, particularly business-class aircraft, that use Albuquerque International Sunport because of the capabilities of the airfield system at Albuquerque International Sunport and the general aviation services provided at the airport.

Additionally, Double Eagle II Airport is not currently equipped to accommodate the largest business-class aircraft. The present pavement strength rating at Double Eagle II Airport is 30,000 pounds single wheel loading. This is not sufficient to accommodate business-class aircraft on a regular basis. This leaves Albuquerque International Sunport to primarily serve business-class aircraft for the community.

The general aviation facility requirements for Albuquerque International Sunport were developed to reflect the Aviation Department policy for general aviation use of the airport and the role that Albuquerque International Sunport plays in serving business-class aircraft. The general aviation facility requirements for Albuquerque International Sunport recognize that any significant growth in general aviation beyond the capabilities of the existing general aviation area will be accommodated at Double Eagle II Airport or other general aviation airports. Future improvements to the existing general aviation area at Albuquerque International Sunport should primarily focus on the support of the increasing numbers of business-class aircraft utilizing the airport.

DEVELOPMENT ALTERNATIVES

The general aviation development alternatives have been organized to examine the opportunities for new conventional hangar development within the existing general aviation area and consider the impacts of the previously identified passenger terminal alternatives. As discussed previously in Chapter Four, consideration has been given to relocating passenger terminal facilities south of Runway 8-26. This would cause the displacement of the existing general aviation area. Two alternate development areas have been identified for the relocation of general aviation facilities, should the relocation of passenger terminal facilities be included in the final Master Plan recommendations.

The general aviation development alternatives are presented as follows:

Alternative A - development opportunities at the existing general aviation area.

Alternative B1 - relocate general aviation facilities east of Runway 3-21 to accommodate the relocation of passenger terminal facilities south of Runway 8-26.

Alternative B2 - relocate general aviation facilities north of Runway 8-26 to accommodate the relocation of passenger terminal facilities south of Runway 8-26.

GENERAL AVIATION ALTERNATIVE A

Exhibit VII-2-A depicts General Aviation Alternative A. This alternative identifies locations within the existing general aviation area for the development of new aircraft hangars and reflects hangar projects currently under consideration. This alternative also considers the relocation of the existing T-hangars as required to implement Air Cargo Alternative A2.

Hangar development Area A is located along the apron area east of the Cutter Flying Service west hangar. This area, presently used for outside aircraft tiedown, provides approximately 45,000 square feet of space for hangar development. Should a hangar be developed in this area, it should be constructed at least 162 feet from the Cutter Flying Service west hangar to provide for Airplane Design Group III (wingspans to 118 feet) aircraft to access the hangar.

Hangar development Area B is located along the western edge of the general aviation apron, adjacent to the National Weather Service parcel. This area has been designed to accommodate the potential need for the development of a hangar for the individual storage of aircraft. Typically, this involves the development of a clear span hangar. Three leasable parcels are reserved in this area which could accommodate hangars to approximately 8,000 square feet. A hangar of this size could accommodate typical business jet aircraft. It should be noted that the existing general aviation underground fuel storage tanks and glycol storage tanks for the Aviation Department are located in this area. These tanks would have to be relocated to provide for hangar development in this area. The existing fuel storage tanks could ultimately be located in the proposed fuel farm site along Access Road C (shown on **Exhibit VII-2-A**). Similar to Area A, the hangar facilities in Area B should be developed at least 162 feet from the Cutter Flying Service west hangar to provide for ADG III aircraft access in this area.

The area north of Hangar Area B is reserved for the relocation of the existing general aviation T-hangars. The relocation of these hangars may be required should Air Cargo Alternative A2 be implemented. The relocation of the T-hangars would also require the relocation of existing fuel storage facilities.

A 5.4-acre leasable parcel (Area C) is shown along Taxiway E1. This parcel is best utilized for a commercial operation such as aircraft maintenance, repair, or manufacturing. The lack of apron area and proximity to the airfield could limit its use for Fixed Base Operator (FBO) operations which typically require large apron areas adjacent to the primary FBO hangar.

GENERAL AVIATION ALTERNATIVE B1

General Aviation Alternative B1 is shown on **Exhibit VII-2-B**. Alternative B1 depicts the development of general aviation facilities east of Runway 3-21 should the passenger terminal facilities ultimately be relocated south of Runway 8-26, displacing the existing general aviation facilities. This alternative shall only be given consideration should the passenger terminal facilities be relocated south of Runway 8-26. In the event that the passenger terminal facilities remain in their existing location, this alternative would no longer be valid as the existing general aviation area has the capacity to accommodate projected long-term general aviation demand and should be retained.

In this alternative, general aviation facilities are developed along a new apron area constructed along a new parallel taxiway constructed 450 feet east of Runway 3-21. This alternative allows for Runway 17-35 to remain open. This alternative depicts the development of a public access roadway from University Boulevard since this area is not presently served by public roadway access. This alternative would propose to tunnel under Runway 3-21 to provide direct roadway access.

Section Three of Chapter Five depicted two other alternatives for the development of public roadway access to this area. This included developing a surface roadway, which extends beyond the Runway 3 end and connects with University Boulevard near the University Boulevard/Interstate Highway 25 interchange. A second alternative considered providing public roadway access via a new roadway connecting with Ira Sprecher Drive southeast of the airport.

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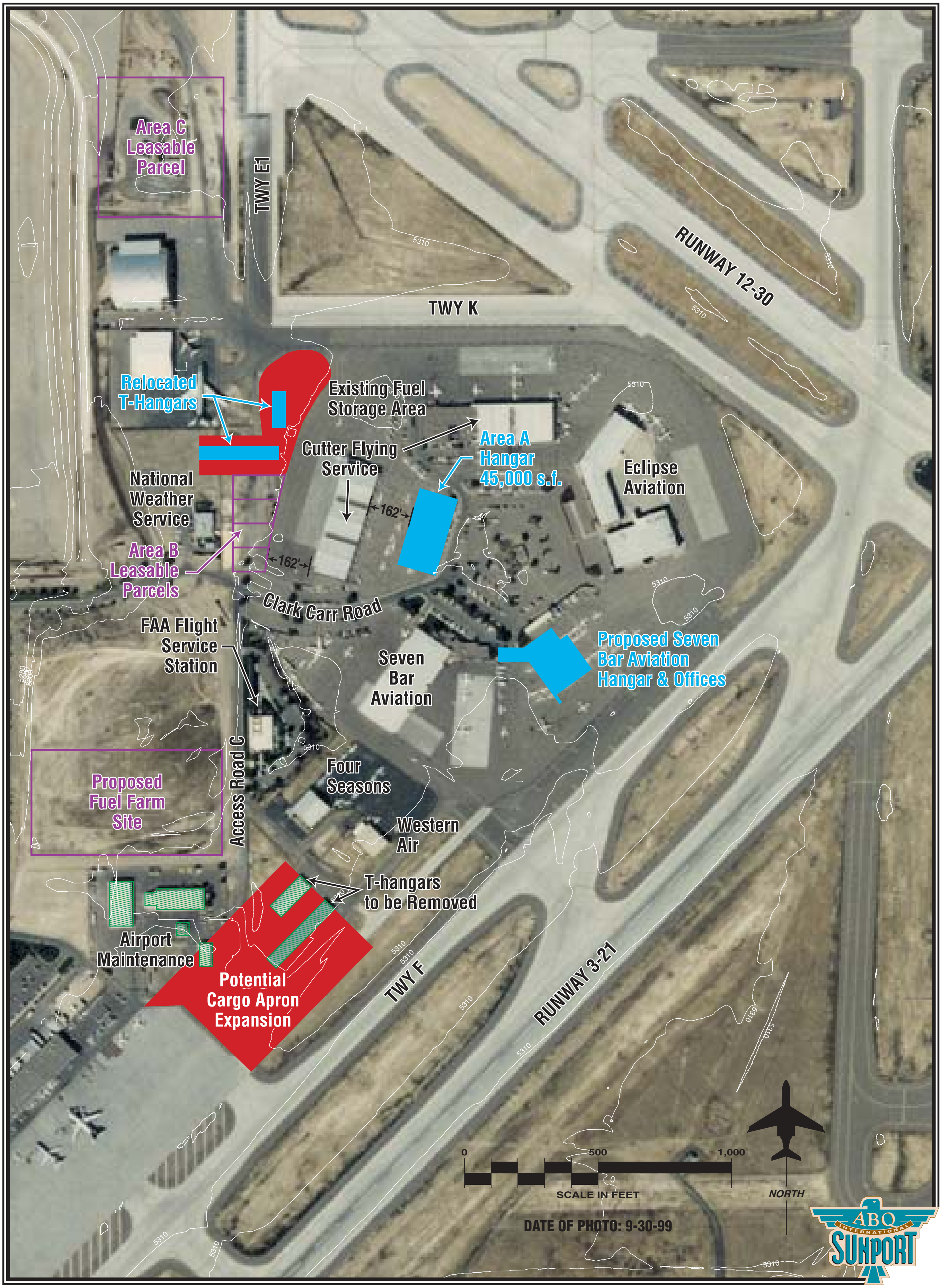

Exhibit VII-2-A
GENERAL AVIATION ALTERNATIVE A
DEVELOPMENT OPPORTUNITIES

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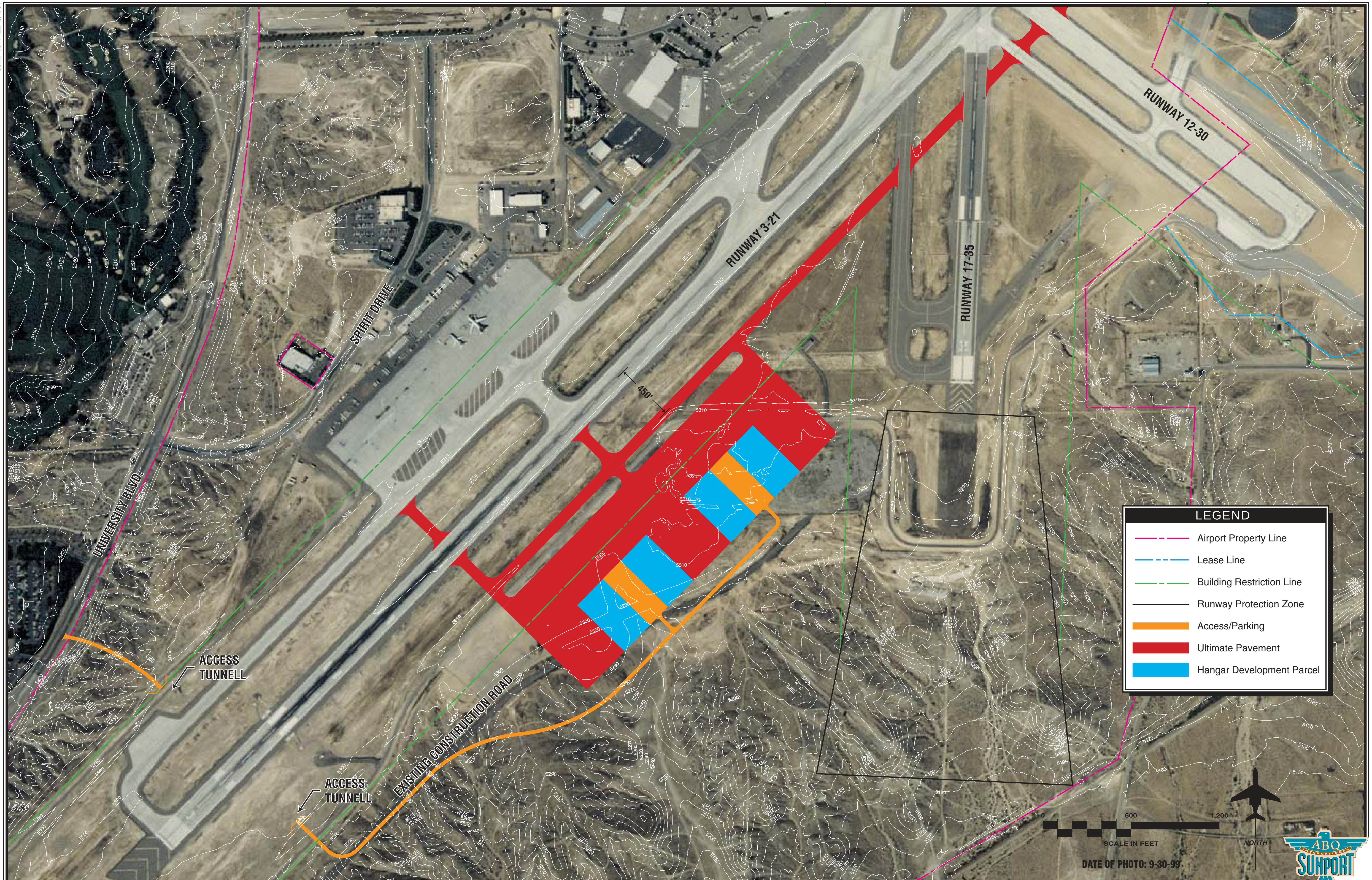

Exhibit VII-2-B
GENERAL AVIATION ALTERNATIVE B1

GENERAL AVIATION ALTERNATIVE B2

General Aviation Alternative B2 is shown on **Exhibit VII-2-C**. Alternative B2 depicts the development of general aviation facilities west of Runway 17-35 along Taxiway C. Similar to Alternative B1, this alternative shall only be given consideration should the passenger terminal facilities be relocated south of Runway 8-26, displacing the existing aviation facilities. In the event that the passenger terminal facilities remain in their existing location, this alternative would no longer be valid as the existing general aviation area has the capacity to accommodate projected long-term general aviation demand.

Alternative B2 provides for general aviation development by closing Girard Boulevard to allow for general aviation development along Taxiway C. Roadway access from Gibson Boulevard would be from existing secondary streets. A new access road would be developed from Sunport Boulevard and connect with the new general aviation access road. This alternative allows for Runway 17-35 to remain open.

COMPARISON OF ALTERNATIVES B1 AND B2

While both Alternatives B1 and B2 can accommodate projected long term general aviation needs, Alternative B2 would inherently have less development costs. Alternative B1 requires the development of a parallel taxiway to Runway 3-21, the development of an entirely new public access roadway and extension of primary utility services. Alternative B2 locates general aviation facilities along an existing public roadway, taxiway and in an area served by all primary utility services.

SUMMARY

General aviation activity is an integral component of the total aviation activity at Albuquerque International Sunport. The role of general aviation activity at the airport is changing to include a larger number of business-class aircraft operating at the airport. This is the result of the maturing of Double Eagle II Airport, which is serving the remaining segments of general aviation. Albuquerque International Sunport also has the airfield capabilities necessary to serve business-class aircraft on a regular basis. The existing general aviation area has the capability to accommodate growth beyond the projected Long Term Planning Horizon demand levels. Therefore, this area should be retained and optimized to the extent possible. This preserves the public and private infrastructure investments made in this area.

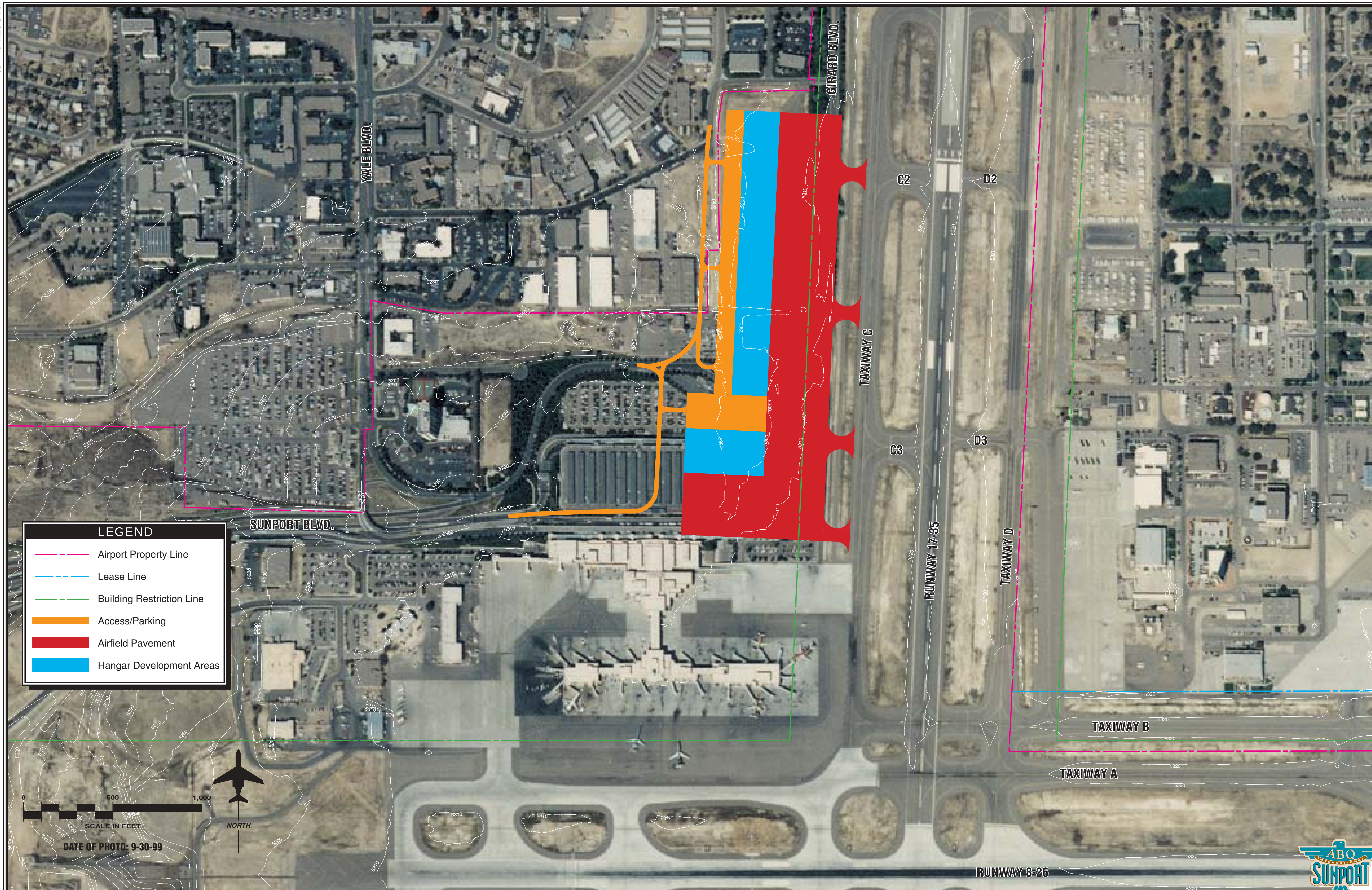

Exhibit VII-2-C
GENERAL AVIATION ALTERNATIVE B2

Chapter Seven

General Aviation Facilities

Section Three

RECOMMENDED PROGRAM

Chapter Seven

General Aviation Facilities

Section Three

RECOMMENDED PROGRAM

The planning process for general aviation facilities at Albuquerque International Sunport has included projections of future general aviation demand and the type of landside facilities required to accommodate that demand. An evaluation has also been made of the options available for the future development of the general aviation complex at Albuquerque International Sunport. Through this process, a basic concept for the use and improvement of general aviation facilities at Albuquerque International Sunport has evolved. The purpose of this chapter is to describe, in narrative and graphic form, this plan. This plan has considered the input of the City of Albuquerque, airport users, airport tenants, and the public.

Albuquerque International Sunport and Double Eagle II Airport together serve general aviation demand for the region. Unlike the commercial airline and air cargo activities, which are accommodated exclusively for the region from Albuquerque International Sunport, Double Eagle II Airport serves general aviation activity exclusively. Since the construction of Double Eagle II Airport, it has been the policy of the Aviation Department to encourages the use of Double Eagle II Airport by general aviation aircraft. This ensures that each airport can fulfill its particular role in the aviation system.

Double Eagle II Airport was specifically constructed to serve as a general aviation reliever airport for Albuquerque International Sunport. In this manner, Double Eagle II Airport provides an alternate landing area for general aviation aircraft, allowing Albuquerque International Sunport to fulfill its role in the regional and national aviation system to accommodate commercial air service, including both scheduled passenger airlines and air cargo.

General aviation is an important component of aviation activity at Albuquerque International Sunport, a role which is not easily replaced by Double Eagle II Airport. Albuquerque International Sunport is home to nearly 230 general aviation aircraft and accommodates more than 70,000 general aviation operations annually. There is a segment of general aviation, particularly business class aircraft, that use Albuquerque International Sunport because of the capabilities of the airfield system at Albuquerque International Sunport and the general aviation services provided at the airport. Double Eagle II Airport is not fully equipped to serve business class aircraft.

RECOMMENDED PLAN

The recommended plan for accommodating general aviation activity at Albuquerque International Sunport is shown on **Exhibit VII-3-A**. This plan closely follows Alternative A presented previously in Section Three of this chapter. Alternative B and Alternative C are not included in the recommended plan. As discussed previously in Chapter Four, Alternatives B and C were developed as consideration had been given to relocating passenger terminal facilities south of Runway 8-26. This would have displaced the existing general aviation area. Having concluded that the passenger terminal area will remain, and be expanded in its present location, Alternatives B and C presented in Section Three no longer need to be considered.

The recommended general aviation plan considers opportunities for new conventional hangar development within the existing general aviation area to serve business aircraft use of the airport. This includes two potential hangar areas along the existing apron area and a hangar development parcel along Taxiway E1.

As shown on **Exhibit VII-3-A**, Seven Bar Aviation has proposed hangar development for the portion of the apron between Eclipse Aviation and existing Seven Bar Aviation facility. A second hangar development area is reserved along the apron area east of the Cutter Flying Service west hangar. This area, presently used for outside aircraft tiedowns, provides approxi-mately 45,000 square feet of space for hangar development. Should a hangar be developed in this area, it should be constructed at least 162 feet from the Cutter Flying Service west hangar to provide for Airplane Design Group III (wingspans to 118 feet) aircraft to access the hangar. A final development area is reserved along Taxiway E1. This is a 5.4-acre parcel designed to accommodate an FBO hangar and apron area. Vehicle access is available from Access Road B.

The recommended general aviation plan reserves areas for the relocation of the existing T-hangar facilities. Relocation of the T-hangar facilities will be required prior to the expansion of the air cargo apron to the north. The T-hangar facilities will be relocated to the west portion of the existing general

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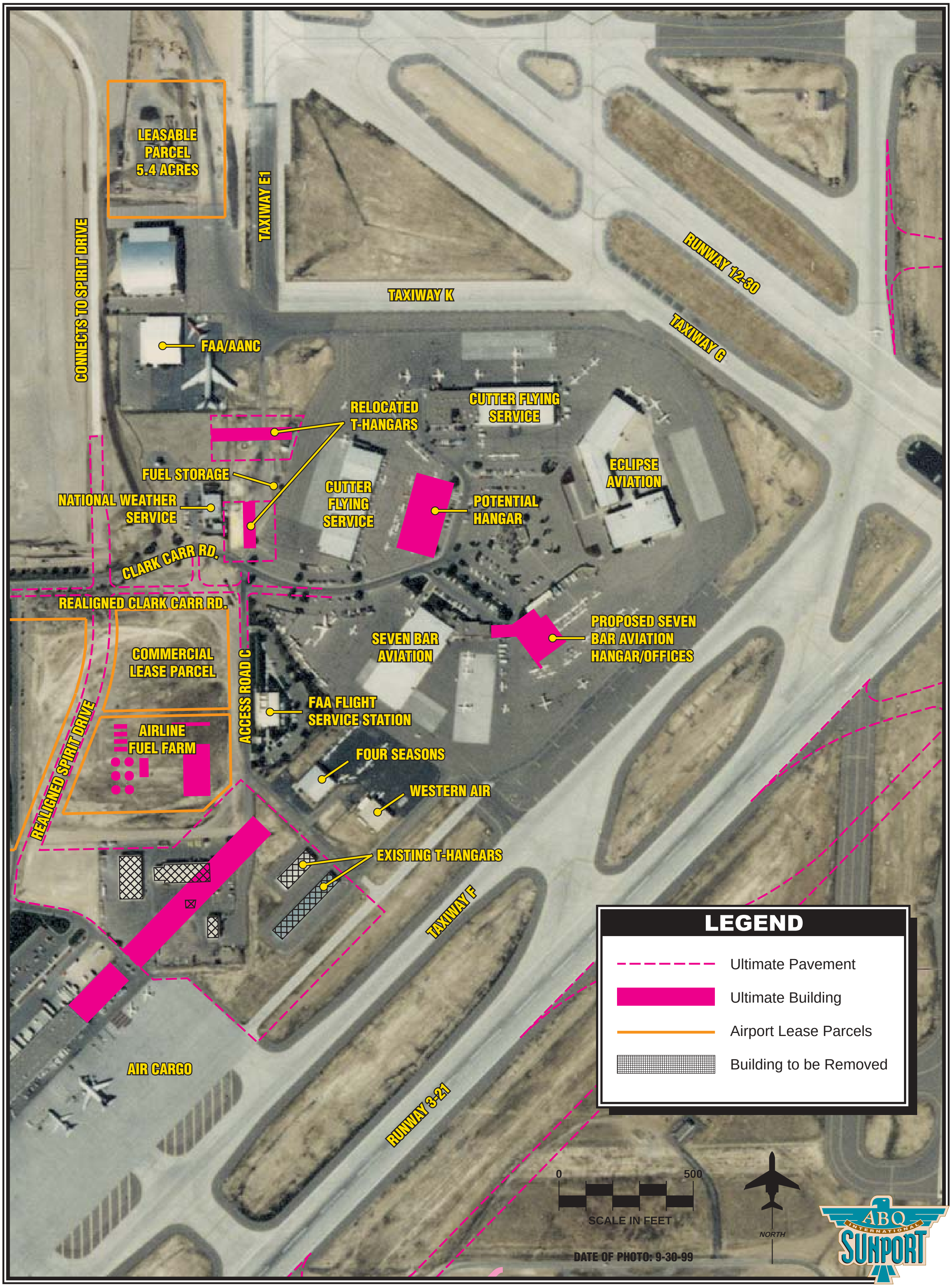

Exhibit VII-3-A
RECOMMENDED GENERAL
AVIATION PLAN

aviation area as shown on **Exhibit VII-3-A**. Clark Carr Road will be realigned to provide for the relocation of the hangars. The T-hangar facilities have been located to ensure the integrity of the existing underground fuel storage tanks and not require the relocation of these facilities.

Approximately $9.3 million in investments are programmed for the general aviation area as shown in **Table VII-3-A**. These investments focus on maintaining the existing infrastructure and include rehabilitating the apron area, Clark Carr Road, and the automobile parking area. Any new hangar developments are assumed to be developed privately. The relocation of the T-hangars is also programmed.

TABLE VII-3-A
Capital Improvement Program
General Aviation

No.	Project	Total Cost
1.	Relocate Existing T-Hangars	$570,000
2.	South General Aviation Apron Rehabilitation	8,200,000
3.	Clark Carr Road Rehabilitation	75,000
4.	Auto Parking Rehabilitation	500,000
Total General Aviation Development Costs		**$9,345,000**

ENVIRONMENTAL OVERVIEW

As mentioned previously, all of the improvements planned for Albuquerque International Sunport will require compliance with the *National Environmental Policy Act (NEPA) of 1969*, as amended. As detailed in *FAA Order 5050.4A, Airport Environmental Handbook*, the planned general aviation facility improvements described previously in this chapter will be categorically excluded and will not require formal NEPA documentation. However, these projects will be further evaluated to ensure compliance with environmental issues such as wetlands, threatened or endangered species, and cultural resources during the federal, state, and/or local permitting processes.

Table VII-3-B summarizes a preliminary review of environmental issues that would need to be analyzed in more detail within the permitting processes. This review considers the main environmental resources required to be studied by FAA Order 5050.4A. This analysis ***does not*** address mitigation or the resolution of environmental issues. Mitigation measures are determined in the permitting processes. A complete description of the environmental resources is provided in Section Five of Chapter Three.

TABLE VII-3-B
Review of Environmental Resources
Proposed General Aviation Facility Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Noise	• No impacts anticipated.
Compatible Land Use	• No impacts anticipated.
Social Impacts	• No impacts anticipated.
Induced Socioeconomic Impacts	• No impacts anticipated.
Air Quality	• No impacts anticipated. The use of best management practices during construction activities will reduce any air quality impacts.
Water Quality	• As discussed in Chapter One, the airport will need to continue to comply with their current NPDES operations permit requirements. • With regard to construction activities, the airport and all applicable contractors will need to comply with the requirements and procedures of the construction related NPDES General Permit, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan*, prior to the initiation of project construction activities.
Section 4(f) Lands	• No impacts anticipated.
Historical and Cultural Resources	• Further coordination with the State Historic Preservation Officer (SHPO) will be required prior to project implementation and field surveys may be required.
Threatened or Endangered Species and Biological Resources	• Correspondence received from the U.S. Fish and Wildlife Service (FWS) indicated that no federally-listed threatened or endangered species are present and thus will not be affected by the proposed projects. • Under the Migratory Bird Treaty Act (MBTA) the taking of migratory birds, nests, and eggs is prohibited. To minimize the likelihood of a taking, the FWS recommended that construction activities occur outside the nesting season of March through August, or a survey be completed prior to construction to determine the potential affect on these protected species.

TABLE VII-3-B (Continued) Review of Environmental Resources Proposed General Aviation Facility Improvements Albuquerque International Sunport	
Environmental Resource	**Resources Potentially Affected**
Waters of the U.S. including Wetlands	• No impacts anticipated.
Floodplains	• No impacts.
Wild and Scenic Rivers	• No impacts.
Farmland	• No impacts.
Energy Supply and Natural Resources	• No significant impacts anticipated.
Light Emissions	• No significant impacts anticipated.
Solid Waste	• No significant impacts anticipated.

SUMMARY

The recommended general aviation plan focuses on retaining and optimizing the existing general aviation area at Albuquerque International Sunport. This preserves the public and private infrastructure investments made in this area and allows the airport to continue to efficiently serve the growing number of business class aircraft using the airport. When considered in conjunction with Double Eagle II Airport, there is ample capacity to accommodate general aviation growth for the City of Albuquerque and regional area.

Chapter Eight

Passenger Terminal Facilities

Section One
INVENTORY

Chapter Eight
Passenger Terminal Facilities

Section One
INVENTORY

This chapter of the Master Plan focuses on the passenger terminal building serving commercial airline passengers at Albuquerque International Sunport. This chapter includes five sections: Inventory, Demand/Capacity, Facility Requirements, Alternatives and Recommended Program. Section One is a description of available facilities. Section Two compares forecast demand to the capacity of the available facilities to estimate when new facilities may be needed. Section Three establishes the type and size of facilities needed to accommodate future demand. Section Four evaluates alternatives for future development which will form the basis for recommended passenger terminal building development at Albuquerque International Sunport. Section Five will describe the recommended development plan and include the future capital projects required to implement the plan. Passenger terminal facilities are identified on **Exhibit VIII-1-A**.

HISTORY

ORIGINAL TERMINAL

The first terminal built for scheduled airline service was constructed in 1939 as part of a Works Projects Admini-stration (WPA) project. This genuine adobe structure still exists and is listed in The National Register of Historic Buildings. It is currently being restored and a reuse plan is being developed (see **Exhibit VIII-1-A**).

SECOND TERMINAL

A second terminal was constructed in 1965 to accommodate growing demand for air service. This terminal, also built in the southwest style, consisted of a passenger handling building one level below the apron. After ticketing, passengers would circulate to the center of the building, then up to the Great Hall passenger holdroom or by tunnel under the apron to a "satellite building" common passenger holdroom. Aircraft were ground boarded from both the Great Hall and the Satellite holdroom. Surface parking was immediately across the road north of the terminal. Baggage was adjacent to ticketing with baggage make-up behind, accessed via a ramp from the apron. Concessions were located on both sides of the Great Hall.

PRESENT TERMINAL BUILDING

The current "Sunport" terminal design was initiated in 1985 and construction was completed 1989. The project included modification and additions to the 1965 terminal. Ticketing and departures processing were moved to a remodeled and expanded second level at the apron level on both sides of the Great Hall and an adjacent upper Departures Drive was added to improve curb frontage. The existing on grade terminal was modified and expanded to accommodate additional baggage claim capacity. The Great Hall was retained as the central feature and primary circulation node. The tunnel and the satellite building were abandoned and replaced by an above grade circulation link to a nineteen gate concourse. Commuter carriers are accommodated in expanded facilities to the south of the Great Hall. The $120 million renovation, including the two level drives and parking structure, more than doubled the size of the terminal and provided second level loading for major carrier jet aircraft.

PARKING STRUCTURE

A four-story parking structure with 3,400 stalls was added north of the terminal. The parking structure is connected to the terminal by a tunnel, which extends to the north under the Arrivals Drives. On axis with the tunnel is a central four-story atrium that runs the width of the parking structure. The atrium space is enclosed by skylights. North of the parking structure is a 482-stall long-term surface lot. Terminal area parking and ground access is discussed in detail in Chapter Seven.

CHANGES AND ADDITIONS

In 1997, four new gates were added to the east end of Concourse A with supporting restroom and additional concessions space. The project included 20,055 square feet at level two and 2,385 square feet of enclosed space plus 17,670 square feet of covered unenclosed space at apron level. The project cost was $10 million dollars.

In 1998, the Observation Deck and Food Court were added at the center of airside, at a cost of $2 million dollars. The project area included 4,570 square feet of new observation space on a mezzanine with access from the concourse by a glass sided elevator and two open stairs. The food court and seating area at the concourse total 6,670 square feet of remodeled space.

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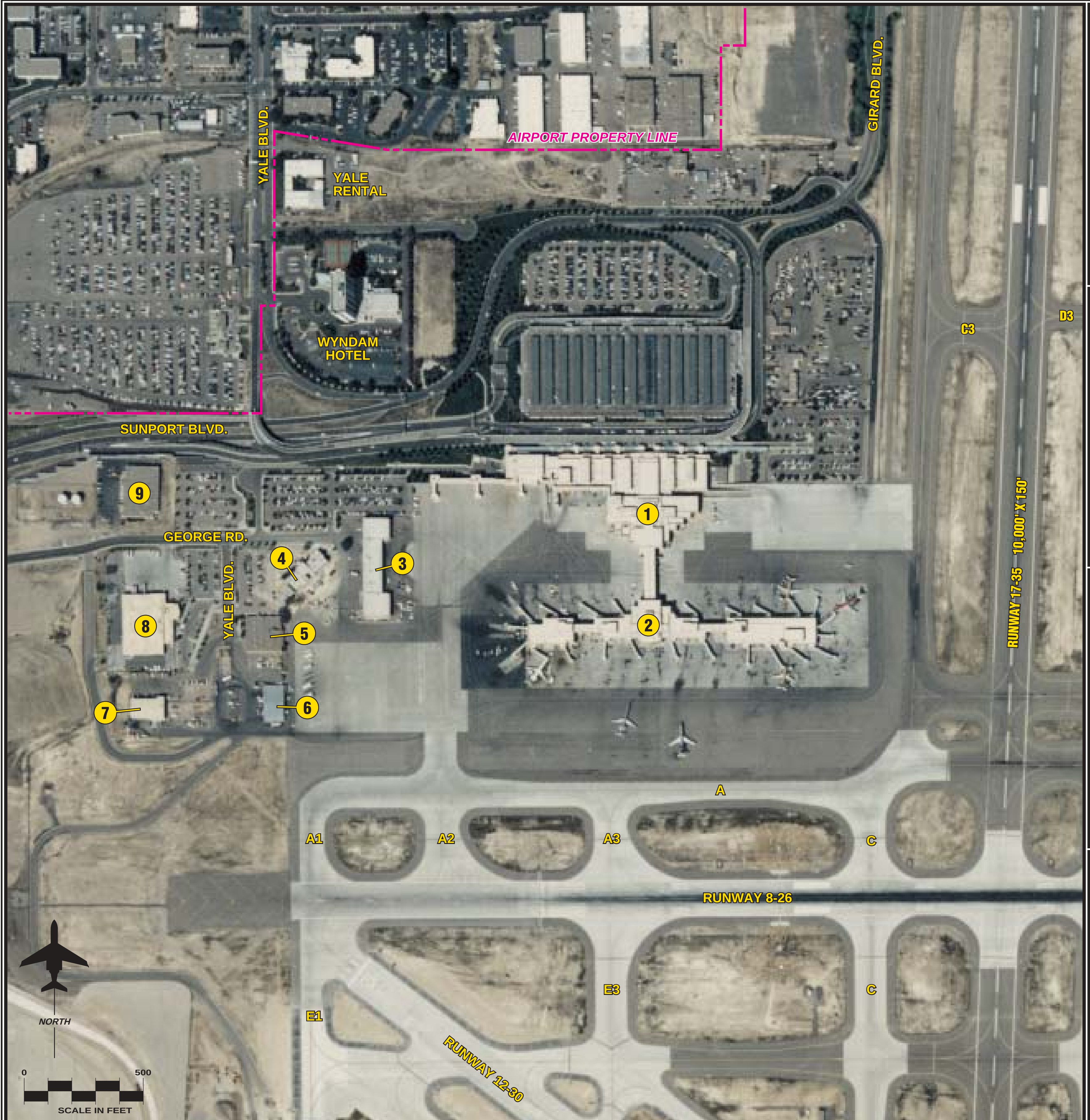
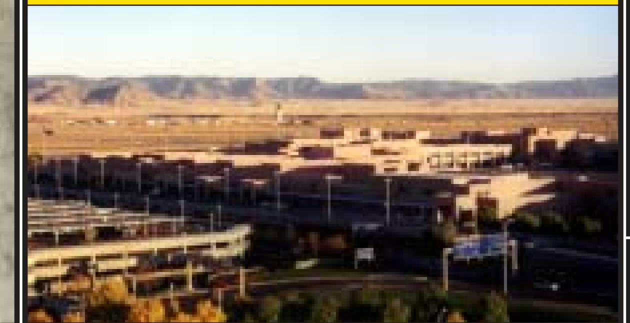


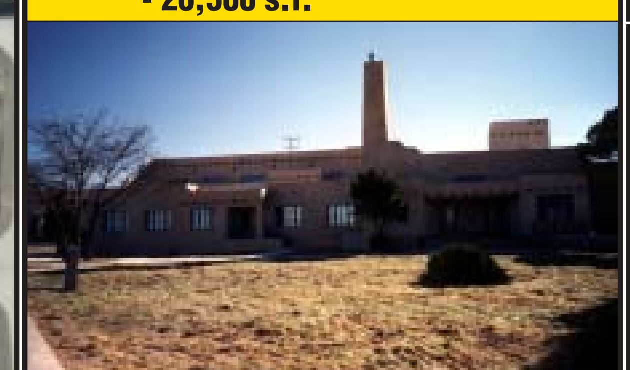
1) MAIN TERMINAL AREA (ticketing, bag claim, ground transportation) - 509,000 s.f.



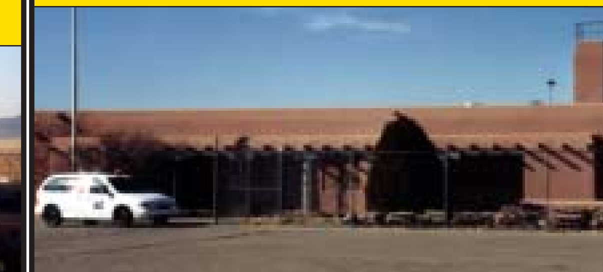
2) DEPARTURE CONCOURSE

3) AIR FREIGHT BUILDING - 39,900 s.f.

4) ORIGINAL TERMINAL BUILDING - 26,500 s.f.



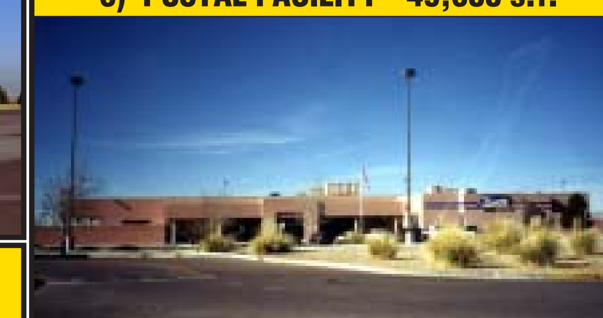
5) FORMER FAA/NWS BUILDING (not in use) - 21,400 s.f.



6) AIRCRAFT SERVICE INTERNATIONAL GROVE - 12,200 s.f.

7) PROVISION BUILDING - 10,800 s.f.

8) POSTAL FACILITY - 49,800 s.f.



9) FLIGHT KITCHEN - 28,600 s.f.

Exhibit VIII-1-A
PASSENGER TERMINAL AREA

TERMINAL ARCHITECTURE

FORM AND MASSING

The terminal is composed of rectangular volumes decreasing in size at each level as shown on **Exhibit VIII-1-B**. The building elements are detailed to recall traditional adobe construction and the overall stacking of the building is evocative of Pueblo architecture of the Southwest.

COLOR AND MATERIALS

The colors of the terminal were inspired by the colors of the natural environment. The colors that were used include shades of blue, green, lavender and pink. The exterior of the airport is a buff color, inspired by the color of the earth found in the area. Blue and turquoise were used throughout the terminal and in the airport signage system. These colors strongly evoke the southwest, the wide expanse of sky and regional turquoise jewelry. Blue was used on doors, railings, and windows throughout the airport. Turquoise was used on the loading bridges and in the airport signage. **Exhibit VIII-1-B** provides a representative sample of color and materials.

The interior walls in the terminal were finished with plaster and painted off white. To contrast the solidity of the walls, the ceilings were articulated in textured wood ceiling panels and the floors were done in a brick pattern inspired by Indian weavings as shown on **Exhibit VIII-1-B**.

FURNISHINGS AND INTERIORS

Seating areas, both in the ticketing & baggage claim street and in the Great Hall, are denoted by the placement of woven rugs. Seating in these areas consist of low cube-like cushioned ottomans, with similarly designed tables (**Exhibit VIII-1-B**). The ottomans and tables were made of precast concrete. The ottoman's cushions are covered in patterned blue fabric, and the table has a matching blue plastic laminate top.

The seating in the Holdrooms incorporated original wood and leather chairs, which were designed for the airport in 1965 (**Exhibit VIII-1-B**). The original chairs were reconditioned and new identical furniture had been fabricated to match. The chairs come in units of two and four. Four chairs typically make up a row and the chairs are placed back to back.

The geometry of Indian motifs and patterns also appear throughout the airport. The wing form inspired the design of light fixtures, balcony railings and the signage gateway located in the Great Hall (**Exhibit VIII-1-B**).

WAY FINDING AND SIGNAGE

The airport terminal is divided into three circulation elements. The Ticketing & Baggage Claim street, the Main Boulevard or spine, and the Holdroom street. The ceilings of these elements share a similar ceiling treatment. Wood ceiling panels were used throughout all areas of public circulation. Adjacent areas, such as

Ticketing & Baggage Claim, and the Holdrooms have acoustical ceiling tile. At the location where the three circulation elements overlap, the areas of intersection are identified as higher spaces. At the intersection of the Ticketing & Baggage Claim Street with the Main Boulevard, a passenger will find the Great Hall with concessions, the airport's art collection, and retail. At the location of the Main Boulevard with the Holdroom Street, a passenger will find the Observation Deck, the Food Court, and a major sculptural piece. These points of intersection are also identified in the terminal's floor pattern. The floor is paved in a brick pattern. At the locations where the paths of circulation cross, this intersection is expressed in a change in the brick pattern. Therefore, through the use of materials and volumes, the architecture helps signify to the passenger that this is a decision point.

The signage in the terminal is extremely legible. The airport signage has a turquoise background, with large white lettering and three small pink squares designed into each corner of the signs. The serified font suggests an ornamental flourish typical of the metal work of the region. Signage is located high in the circulation spaces and is lighted from a linear fixture above (**Exhibit VIII-1-B**). Signage is consistent throughout the terminal and out onto the airport roads.

TERMINAL ORGANIZATION

The terminal is organized in four major elements. The first element is a landside passenger processing element running east and west adjacent to a level drive. The second element is a circulation connector running north and south from the center of the processing element to the center of the third element, airside concourse that runs east and west, and fourth element, the five level parking structure which also runs east and west.

TERMINAL LEVELS

TERMINAL LEVEL ONE AND PARKING TUNNEL

Level One is dedicated to the passenger arrivals functions of baggage claim (**Exhibit VIII-1-C**) and ground transportation, and is linked with, and parallel to, the Arrivals Drive (**Exhibit VIII-1-C**). Level One is located below the level of the apron and is accessed by passengers at the center by escalators, elevators and stairs from the central Great Hall above. The circulation continues down to a tunnel access to the parking structure. Baggage is delivered at the south side of the claim space via a baggage tug tunnel from the apron. Delivery of baggage to the each claim device is through a conveyor tunnel below to the claim level floor. The floor area of Level One is 130,750 square feet including the tug tunnel and the tunnel access to the parking structure. **Table VIII-1-A** summarizes Terminal Level One floor areas. **Exhibit VIII-1-D** depicts the Level One floor plan.

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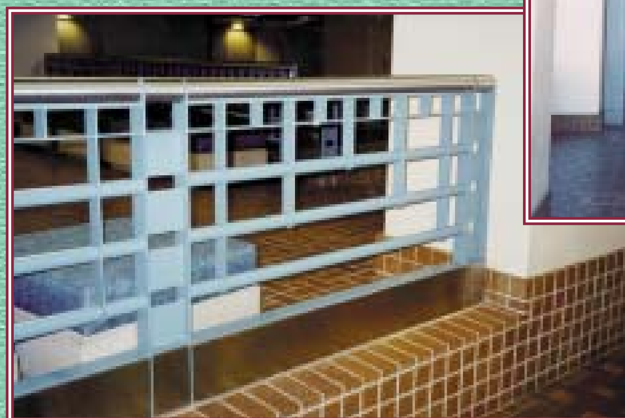
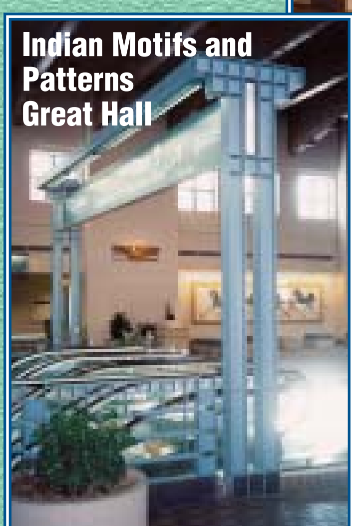
FORM AND MASSING



COLOR AND MATERIALS

FURNISHINGS AND INTERIORS

Hold Room Seating



Indian Motifs and Patterns Great Hall

Seating Areas Ticketing and Grand Hall

WAYFINDING AND SIGNAGE

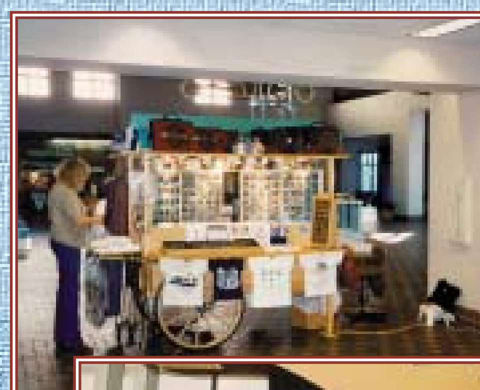
Concourses

ARRIVALS CURB

BAGGAGE CLAIM

TICKETING LOBBY

TICKETING COUNTER



GIFT CART

GREAT HALL

OBSERVATION LOUNGE

Exhibit VIII-1-C
PASSENGER TERMINAL
BUILDING FUNCTIONAL AREAS

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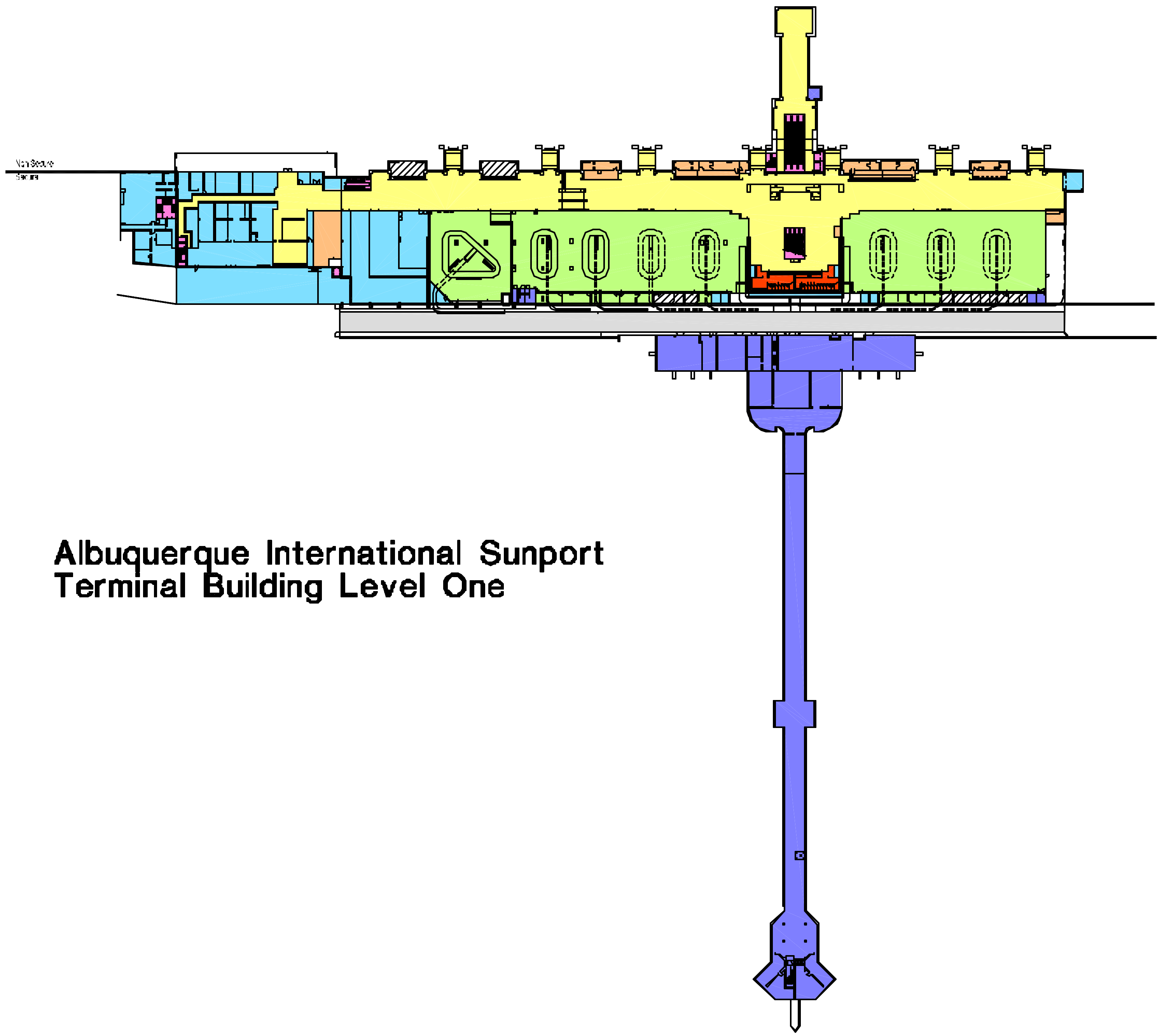

Albuquerque International Sunport
Terminal Building Level One

Terminal Level One

Concessions	4,360
Public Services	1,120
Vertical Circulation	2,410
Aviation Department	20,780
Airline	34,010
Public Area including Tunnel to Parking	31,880
Tug Drive	11,480
Mechanical	22,610
Vacant	2,100
Total Occupied/Unoccupied Level 1 Areas	130,750 S.F.

Exhibit VIII-1-D
LEVEL ONE FLOORPLAN

TABLE VIII-1-A **Terminal Level One - Functional Areas**	
	Area (sq. ft.)
Non-Secure	
Aviation Department	16,130
Bag Claim Office Area	1,720
Bag Claim/Inbound Area	32,290
Concessions-Car Rental	4,170
Public Area	31,880
Public Services (Toilets)	1,120
Transportation Counters	190
Loading Dock & Circ.	4,650
Vacant Bag Claim Office	1,170
Vacant Car Rental	930
Subtotal	94,250
Secure and Non-Secure	
Vertical Circulation (down from level only)	2,410
Secure	
Tug Drive tunnel	11,480
Mechanical	22,610
Subtotal	36,500
Level One Total	130,750

TERMINAL LEVEL TWO

Level Two of the terminal is at the elevation of the apron and is linked to the second level of structured Departures Drive by seven vestibule bridges. The northern landside portion is primarily dedicated to the processing of departing passengers and their baggage. The Great Hall, at the center of the landside was the major common hold room for the previous terminal configuration. Currently, the Great Hall is the major public space and is used for public waiting, entertainment, art display and as the primary circulation element of the terminal (**Exhibit VIII-1-C**). All passenger and public traffic circulates to and through the Great Hall. The airside of this level is devoted to outbound baggage handling and airline operations space. The floor area of level two is 223,700 square feet including covered unenclosed areas and tug drives under the building. **Table VIII-1-B** summarizes Terminal Level Two floor areas. **Exhibit VIII-1-E** depicts the Level Two floor plan.

TABLE VIII-1-B **Terminal Level Two - Functional Areas**	
	Area (sq. ft.)
<u>Non-Secure</u>	
Concessions	3,540
Curbside Check-In	2,900
Public Area	49,860
Public Services	1,750
Ticket Counter Area	7,400
Police	1,200
Subtotal	66,650
<u>Secure and Non-Secure</u>	
Unenclosed Storage Areas	13,500
Vacant Space	20,110
Vertical Circulation	1,180
Subtotal	34,790
<u>Secure</u>	
Airline Offices/Operations Area	15,520
Aviation Department	38,440
Bag Make-up Area	21,900
Commuter Area	14,670
Customs Areas	7,920
Ticket Office Area	10,660
Tug Drive Areas	9,150
Mechanical	4,000
Subtotal	122,260
Level Two Total	223,700

TERMINAL LEVEL THREE AND OBSERVATION MEZZANINE

Level Three consists of three parts. The first is a concession hall, a mezzanine connected to the Great Hall by escalators, stairs and elevators. This hall is flanked on the east by retail shops and on the west by food and beverage service. Access to the Sunport Aviation Department is also from this space. The south end of the hall is dedicated to passenger security screening. The second part of Level Three is a circulation connector between the landside terminal building and the airside concourse building. The connector consists of a pedestrian corridor with moving walkways in both directions with a walking area between them. The concourse terminus of the connector is the focus for airside

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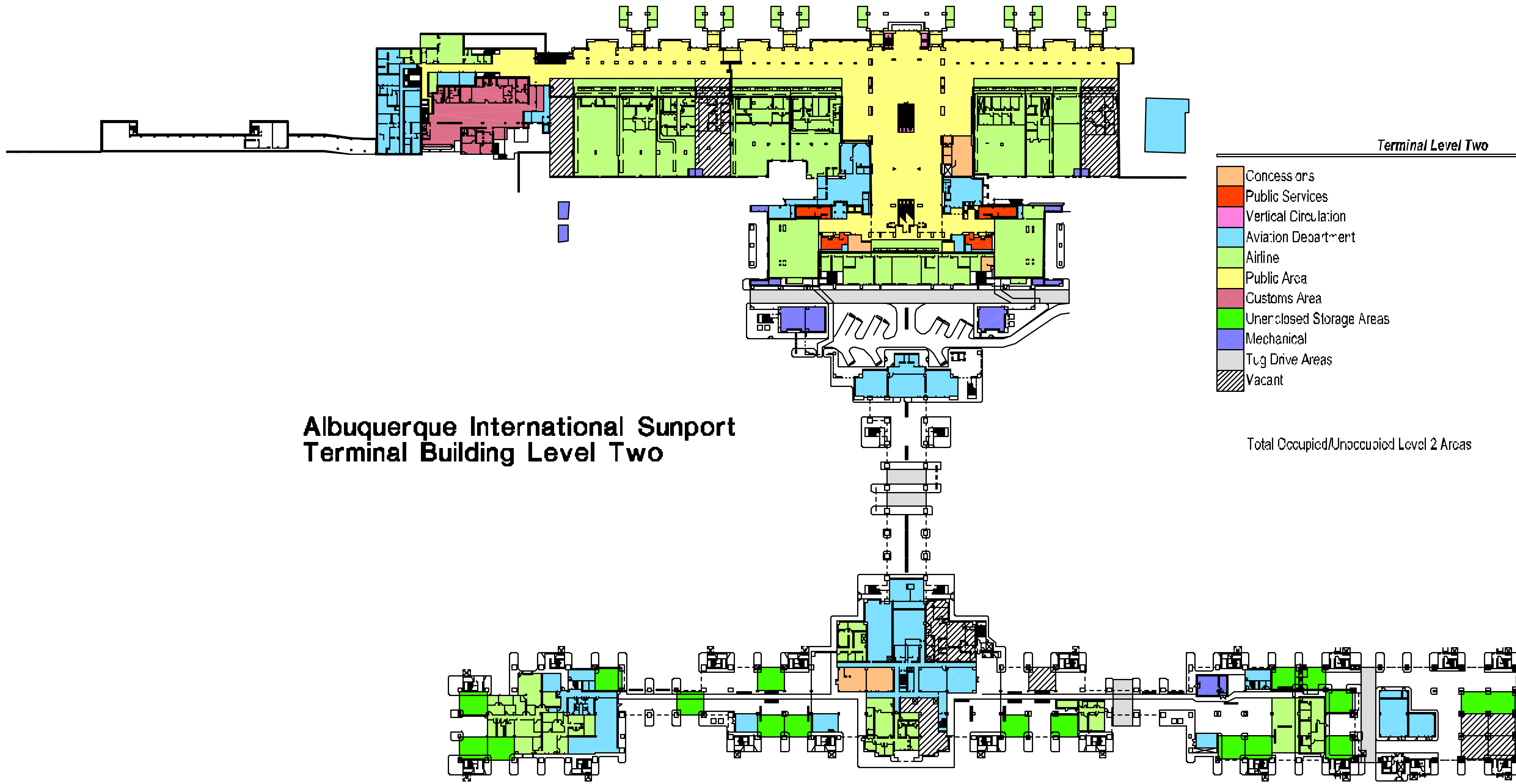

Albuquerque International Sunport
Terminal Building Level Two

Terminal Level Two

Concessions	3,540
Public Services	1,750
Vertical Circulation	1,180
Aviation Department	39,640
Airline	73,050
Public Area	49,860
Customs Area	7,920
Unenclosed Storage Areas	13,500
Mechanical	4,000
Tug Drive Areas	9,150
Vacant	20,110

Total Occupied/Unoccupied Level 2 Areas 223,700 S.F.

Exhibit VIII-1-E
LEVEL TWO FLOORPLAN

concessions consisting of a food court, retail, and a beverage concession. There is a new mezzanine observation lounge at the airside above the food court that is accessed by a central elevator and adjacent stairs. The third part is a concourse building which runs east/west at the end of the, consisting of a central corridor flanked on both sides by holdrooms serving 23 jet aircraft positions organized into four nodes. The end nodes at the east and west ends of the concourse building are supported with food and beverage service concessions and public services. The floor area of Level Three is 197,260 (not including mechanical) square feet including the 4,570 square feet of the mezzanine observation lounge. **Table VIII-1-C** summarizes Terminal Level Three floor areas. **Exhibit VIII-1-F** depicts the Level Three floor plan.

TABLE VIII-1-C
Terminal Level Three - Functional Areas

	Area (sq. ft.)
Non-Secure	
Aviation Department	29,630
Concessions	24,335
Public Area and Circulation	10,780
Mechanical in Building	350
Subtotal	65,095
Secure and Non-Secure	
Public Services (Toilets)	5,750
Vacant	7,440
Vertical Circulation	6,530
Subtotal	19,730
Secure	
Concessions	17,025
Holdroom Area	51,960
Mechanical Spaces (roof)	44,280
Observation Deck	4,570
Public Area and Circulation	34,940
Security	4,290
Mechanical in Building	160
Subtotal	157,225
Level Three Total	242,050
Terminal Total	595,300

ROOF TOP MECHANICAL ROOMS

There are mechanical penthouse units on the roof over Level Two. There are two units to the east and four to the west of the upper level of the Great Hall. These units serve both the baggage claim at Level One and ticketing at Level Two. The total area of these penthouses is 18,210 square feet. Nine additional mechanical units totaling 26,070 square feet in area are located on the roof of Level Three. Three of the units serve the areas on Level Two and Three south of the Great Hall. The five additional units serve the enclosed spaces at Level Two and the concourse at Level Three. They contain air handling and filtration and other associated equipment. Hot and cold water is supplied to the roof top units from the central boiler and chiller rooms at Level One, at the south side of the baggage tunnel.

TERMINAL TENANTS AND OCCUPANTS

AVIATION DEPARTMENT

The Aviation Department of the City of Albuquerque manages and operates Albuquerque International Sunport. The Aviation Department is composed of five groups and several individual special positions. Currently the total number of staff is more than two hundred and sixty people. At Level One, the Aviation Department occupies 20,750 square feet. At Level Two, a total 38,440 square feet is occupied by the Aviation Department including a Press Room and the Airport Development Offices, plus other spaces devoted to airport and airfield operations, and maintenance. On Level Three, main Aviation Department Offices are adjacent to the concessions mezzanine and there are two large assembly spaces on the west side behind the restaurant. These spaces total 29,630 square feet. **Table VIII-1-D** summarizes the floor areas occupied by the Aviation Department.

AIRLINE'S SPACE

Level One

Since the 1991 Master Plan, the number of carriers serving ABQ has increased from nine to twelve. On Level One, there is 2,920 square feet of space available for bag claim offices of which 1,720 (58%) square feet are leased to the carriers. While not leased by the carriers, the 32,290 square feet of baggage claim is an airline function. Tenant user charges are paid based on airline percentages of annual traffic.

Level Two

At the landside terminal, there is 60,920 square feet currently leased to the twelve carriers including 1,440 square feet of vacant space available for airline ticketing (**Exhibit VIII-1-C**), makeup and office functions. There are commuter carrier facilities totaling an area of 14,670 square feet at this level, which includes holdrooms D & E.

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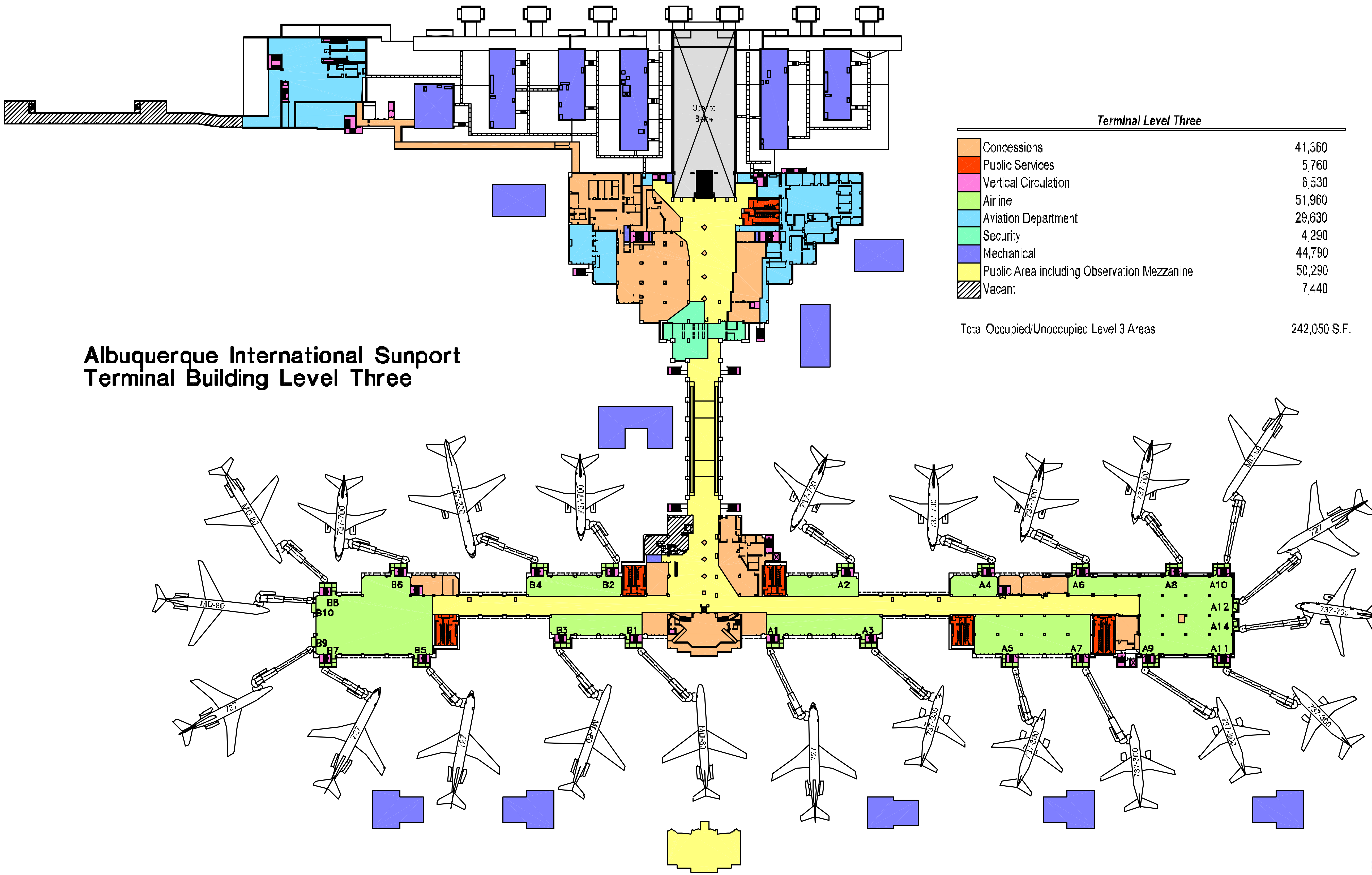
Albuquerque International Sunport Terminal Building Level Three



Terminal Level Three

Concessions	41,360
Public Services	5,760
Vertical Circulation	6,530
Airline	51,960
Aviation Department	29,630
Security	4,290
Mechanical	44,790
Public Area including Observation Mezzanine	50,290
Vacant	7,440
Total Occupied/Unoccupied Level 3 Areas	242,050 S.F.

Exhibit VIII-1-F
LEVEL THREE FLOORPLAN

TABLE VIII-1-D
Terminal Areas By Function

	Area (sq. ft.)
Aviation Department	
Aviation Department	16,130
Loading Dock & Circulation	4,650
Tug Drive Tunnel	11,480
Aviation Department	38,440
Tug Drive Area	9,150
Aviation Department	13,500
Aviation Department Offices	16,130
Subtotal	109,480
Airline Space	
Bag Claim Office Area	1,720
Bag Claim/Inbound Area	32,290
Curbside Check-in	2,900
Ticket Counter Area	7,400
Unenclosed Storage Areas	13,500
Commuter Area	14,670
Ticket Office Area	10,660
Airline Offices/Operations Area	15,520
Bag Make-up Area	21,900
Holdroom Area	51,960
Subtotal	172,520
Concessions	
Concessions - Car Rental/Food/Adv/Gift Cards	4,170
Concessions	3,540
Concessions	41,360
Subtotal	49,070
Public Space	
Public Area	31,880
Public Area	49,860
Public Area	45,720
Observation Deck	4,570
Subtotal	132,030
Public Services	
Transportation Counter	190
Public Services	1,120
Public Services	1,750
Public Services	5,760
Subtotal	8,820

TABLE VIII-1-D (Continued) Terminal Areas By Function	Area (sq. ft.)
Mechanical	
Mech Level 1	22,610
Mech Level 2	4,000
Mech Level 3 and Roof	44,790
Subtotal	71,400
Vacant Space	
Vacant Bag Claim Office	1,170
Vacant Car Rental	930
Vacant Aviation Department	20,110
Vacant Space Level 3	7,440
Subtotal	29,650
Vertical Circulation	
Vertical Circulation Level 1	2,410
Vertical Circulation Level 2	1,180
Vertical Circulation Level 3	6,530
Subtotal	10,120
Agency Tenants	
Customs	7,920
Police	1,200
Security	4,290
Subtotal	13,410
Terminal Total	595,300

Level Three

At Level Three of the airside concourse, there are 51,960 square feet of holdroom space occupied by the carriers, which like the baggage claim, is paid for by the airlines based on percentage of annual traffic.

The carriers occupy a total of 172,520 square feet in the terminal building including baggage claim space, ticketing functions, holdroom spaces and operations spaces. Of the total space, 68,160 square feet are leased and 84,258 square feet are paid for based on a percentage of annual traffic. There is an additional 20,110 square feet of vacant space for expansion of processing functions. **Table VIII-1-D** summarizes airline occupied floor space.

GROUND TRANSPORTATION

Rental Cars

Currently within the Terminal, on Level One there are rental car counters for eight companies occupying a total of 3,000 square feet. There are two additional vacant counter blocks totaling 928 square feet. When the Consolidated Rental Car Facility, now under construction, is activated the current rental car facilities will be vacated and available for other uses.

Other Ground Transportation

At the outer shuttle curb there is a small office that provides information and tickets for regional shuttle vans. City buses, rental car shuttles and hotel shuttles also use this outer curb.

CONCESSIONS

Food/Beverage

There is a variety of food and beverage service ranging from a large moderately expensive sit down restaurant and bar featuring Mexican cuisine, to snack bars with pre-packaged snacks, and hot and cold beverages. There are also three gourmet coffee and pastry shops distributed throughout the terminal.

At the south end of the connector on Level Three centered between Concourse A and Concourse B there is a food court featuring ice cream, pizza, and Mexican cuisine. Tables and seating are available in adjacent areas of concourses A&B and in the Observation Lounge on the mezzanine above.

In addition to the cocktail lounge at the central restaurant, there is a microbrewery at the food court, a sports bar on Concourse B and a small cocktail lounge next to the snack shop on Concourse A. There is also a very small snack shop in the commuter holdroom E. Food service facilities occupy 32,300 square feet including 1,687 square feet of concessions storage.

Retail Shops

The range of retail concession is more limited than is food service. In the nonsecure landside terminal at the Level Three lobby, there are two retail shops. A specialty shop offers southwestern jewelry, pottery, and other gift items. The second shop is a more traditional airport gift and news shop which sells magazines, souvenirs, candy, etc. Beyond Security, near the food court there is a second similar gift and news shop. In addition to the larger gift shops, there are several specialty gift carts which sell souvenirs and t-shirts (**Exhibit VIII-1-C**). The area leased for retail shops in the terminal totals 5,100 square feet. **Table VIII-1-D** summarizes floor areas occupied by concessions.

PUBLIC SPACES AND CIRCULATION

Public spaces consist of the primary circulation, the Great Hall, the Concessions Lobby and the paths; the Baggage Claim, Ticketing, Concourse streets and the central Circulation Boulevard and the Observation Lounge which total 132,030 square feet of floor area.

PUBLIC SERVICE CONCESSIONS

At the southeast corner of the Great Hall there is a full service bank with ATM and Fed-X drop. There is an ATM machine at the mezzanine lobby and another beyond Security Screening, and in each concourse.

Public telephones are adequate and are generally located along circulation paths and adjacent to building exit/entrance points.

At the southwest corner of the Great Hall, there is a barbershop and shoeshine stand. A second shoeshine stand is adjacent to the concourse news and gift shop.

PUBLIC RESTROOMS

In general, all restrooms are adequately sized and easily accessible with a maximum distance between them of 250 feet. At Level One, the restrooms are centered and to the south of the escalators to/from the "Great Hall". These restrooms are adequately sized, but somewhat remote from the farthest active claiming areas. There are some additional small restrooms at the west end of the terminal that are accessible but beyond the active passenger areas of the terminal. The area occupied by restrooms is 8,630 square feet.

Exhibit VIII-1-G indicates terminal functional area percentages.

AMENITIES

Art Program

The airport's art program currently maintains a 94-piece permanent art collection assembled by the City Of Albuquerque's Public Art Program in 1988. The collection represents the finest in artwork from over 70 New Mexican artists. Artwork can be found at the A & B concourses, the D & E gates, the Great Hall, Baggage Claim, and outside the ticketing level.

Entertainment

In 1998, the Sunport Arts Program expanded to include a year-round series of concerts in the Great Hall. The Sunport Serenades features an array of local talent ranging from classical, to mariachi, to jazz and polka. Each year over 75 concerts free to the public are produced to welcome visitors to the area.

The Meditation Room

The Meditation Room is located on the Second Level east of the Commuter Ticketing counter. It provides the busy traveler with a place to collect his/her thoughts and to get away from the hustle of the airport.

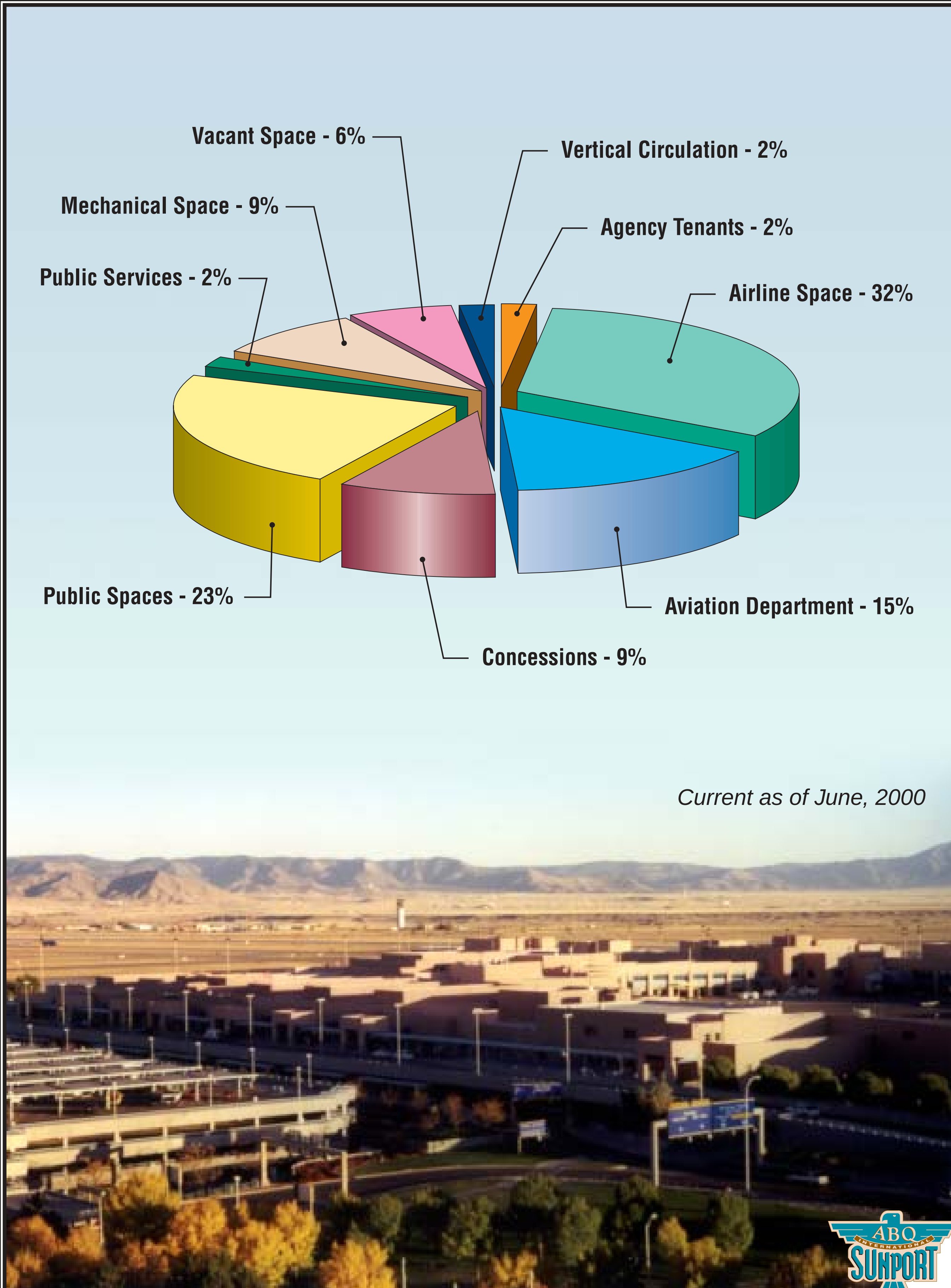


Exhibit VIII-1-G
PERCENTAGE OF TOTAL
TERMINAL FUNCTIONAL AREAS

Observation Lounge

The Observation Lounge is located on the Third Level at the end of the Main Boulevard between Concourses A & B. With floor to ceiling windows, the lounge provides passengers with a great view to the airfield activities (**Exhibit VIII-1-C**).

Public Information

The Public Information counters are located on the Level One and are centered on the main circulation spine between the baggage claim areas. The individuals that work at the counters provide invaluable information about hotels, car rentals, sightseeing, etc.

BUILDING SYSTEMS

HVAC SYSTEMS

The air conditioning system is a piped hot and cold water system. There are two gas-fired boilers; one 200 HP and one 150 HP to supply the hot water requirements. The boilers, chillers, and other mechanical equipment are located at the Level One in a band along the south side of the baggage tunnel. There are three chillers combined to provide efficient energy use. There are two large chillers of 600 to capacity and one smaller 300 ton capacity chiller. There are two cooling towers on the apron at the west side of the connector corridor and adjacent to the south side of ticketing. Air handling equipment is located in modular rooftop rooms in both the terminal building and the concourses.

ELECTRICAL SYSTEMS

Building Electrical

The major electrical substation and transformers are located to the south of commuter holdroom E. The supplier of electric power to the terminal has sufficient redundancy with three alternate sources.

Emergency Electrical Power

There are four gas-fired emergency electrical generators. The first pair is located at the apron level to the south of commuter holdroom D. A second pair of recently installed generators is located at the ramp level below gate A4. The four generators have a combined output of 800 amps.

Aircraft Loading Bridges

There are twenty-three aircraft gates with airport owned loading bridges. All bridges are two or three tunnel apron drive bridges providing maximum flexibility. All bridges are equipped with ground power packs but do not have conditioned air. There are also three fixed bridges on Concourse A that are no longer in use and no longer serviceable.

OTHER TERMINAL AREA FACILITIES

TERMINAL DRIVES AND CURBS

The 1989 expansion of the terminal area roadways extended from Yale Blvd. to provide structured elevated drives to serve the new Level Two departures facilities and expanded grade Level One arrivals facilities. In addition, access was provided to the parking structure and on grade parking within the road loop and to rental car facilities and lot at the perimeter. The terminal drives have been extended from Yale Boulevard west to a new interchange at Highway I-25 and are now called "Sunport Boulevard". Terminal drives and curbs are discussed in detail in Chapter Seven.

RENTAL CAR AREAS

The existing rental car facilities, which are located to the east and north of the terminal drives loop, currently occupy an area of approximately 17 (TBV) acres. The facilities and land will be vacated for development when the new Consolidated Rental Car Facilities are activated.

CARGO FACILITY

The existing cargo facility building is 40,000 square feet and is located to the west of the terminal adjacent to the apron. It was built in the early 1970s and is near the end of its useful life.

POSTAL FACILITY

The postal facility is a 25,800 square foot facility which serves as an airline mail transfer point and as a public post office for the airport community.

FLIGHT KITCHEN

The flight kitchen is a 28,600 square foot facility located west of the Post Office with access to the apron via a nearby card operated security gate. This building was built in the early 1970s when meal service was more common. Today it serves only two of the carriers for longer flights. The building is near the end of its useful life.

Chapter Eight

Passenger Terminal Facilities

Section Two

DEMAND/CAPACITY ANALYSIS

Chapter Eight
Passenger Terminal Facilities

Section Two
DEMAND/CAPACITY ANALYSIS

INTRODUCTION

PURPOSE

The purpose of the Terminal Demand/Capacity Analysis is to quantify and qualify, to the fullest extent possible, the level that the existing Terminal Facilities satisfies current demand of the traveling public at Albuquerque International Sunport (ABQ). This evaluation also provides a basis for determining facility requirements needed to satisfy forecast demand.

The four objectives to this effort are as follows:

1. To quantify the levels of activity related to the combined capacity of the individual passenger processing elements of the Terminal.

2. To determine what additional facilities would be required to optimize passenger processing by balancing the flow of the processing with the efficiency of space utilization.

3. To analyze the Terminal Building to identify physical conditions that may currently exist, or are likely to develop with increased demand, that will compromise functionality efficiency. In addition, existing vacant space and area for expansion are identified.

4. To provide the planning team with a comprehensive under-

standing of the existing Terminal Facilities as the basis to optimize the existing Facilities and to develop alternatives for future development at Albuquerque International Sunport.

METHODOLOGY

A spreadsheet model is used to accomplish the Demand /Capacity Evaluation of the Terminal Facilities. This model, based on industry standards, is calibrated specifically to represent this Terminal and its operations. The physical aspects of the Terminal, including numbers of processing units and function areas for all processing and support spaces, were derived from Inventory Element Two. The Forecast Demand of annual enplaned passengers and aircraft operations were derived from the Forecast Element Three. The Demand/ Capacity Analysis and the following Terminal Facilities Requirements are based on the Peak Hour **(PH)** demand on the Average Day of the Peak Month **(ADPM)**. The schedule for that day, June 12, 2000, provided the demand input for the model and is depicted on **Exhibit VIII-2-A**. ***(See Appendix C for Complete Schedule.)***

The operations input for processing of passengers was derived from observations, questionnaires, and meetings with airlines, the airport staff, and other tenants.

Calculations are based on the standard queuing theory, which simply stated is: Passengers arriving minus passengers processed equals passengers on Queue. The evaluation of individual processing elements is based on industry standards and formulas. Simulations are not employed in these evaluations.

TERMINAL DEMAND BASE

Passenger Demand

- ANNUAL DEMAND AND PEAK MONTH

Passenger Demand was derived from historical data as presented in the forecast. The forecast defines the record annual passengers and the percentage of the traffic that occurs in the Peak Month. ***(See Table VIII-2-A.)***

The Peak Month historically is August, with 9.57% of annual enplaned passengers. The distribution pattern and percentage have been consistent in the past and will be used as a constant for this evaluation and for facilities requirement projections.

- AVERAGE DAY PEAK MONTH (ADPM) SCHEDULE

The Average Day of the Peak Month **(ADPM)** is the most common industry base for the programming of facilities. The ADPM flight schedule is the twentieth busiest day of the year and provides a reasonable basis for design demand. When this demand is coupled with a Level of Service that is supportive, efficient and economical functions of the Airport, appropriate requirements for future facilities can be forecast. The flight schedule is used to estimate the total daily departing and

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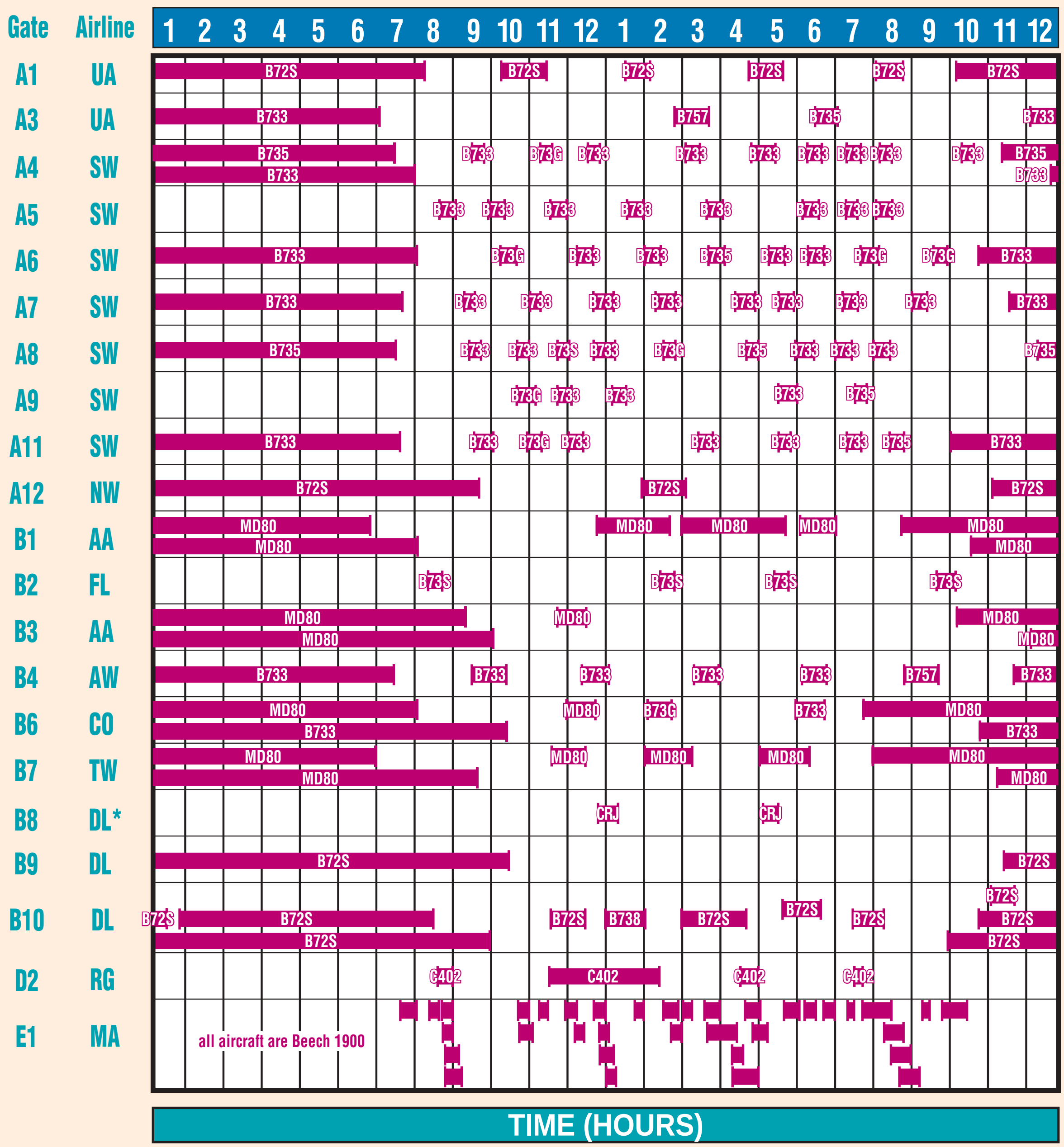

Source: Albuquerque Consolidated Flight Schedule, June 12, 2000.

AIRCRAFT KEY

- CRJ - Canadair Regional Jet
- B72S - B727-200
- B73S - B737-200
- B733 - B737-300
- B735 - B737-500
- B73G - B737-700
- B738 - B737-800
- C402 - Cessna 402
- M80 - MD80 Series

AIRLINE KEY

- AA - American
- AW - America West
- CO - Continental
- DL - Delta
- FL - Frontier
- NW - Northwest
- SW - Southwest
- TW - TWA
- UA - United
- MA - Mesa
- RG - Rio Grand Airways
- DL* - Delta Connection

LEGEND

- Aircraft Departure
- Aircraft Arrival
- Aircraft Occupying Gate Full-Time

Exhibit VIII-2-A
TERMINAL GATE OCCUPANCY

arriving passengers and to determine the daily traffic pattern and peaking conditions that produce the largest demands on the Facilities. Monday, June 12th, 2000 has been determined to be the ADPM. The 298 scheduled operations consist of 29,472 Major Carrier and 1,594 Regional Carrier seats that total 31,066 arriving and departing seats. Enplaned and deplaned passengers recorded on that day total 19,974. The average ADPM Load Factor was 64.3%. ***(See Appendix C for Complete Schedule.)***

TABLE VIII-2-A
Domestic Demand Based Passenger and Aircraft Operations
Albuquerque International Sunport

Year	2000	SHORT TERM	INTER-MEDIATE	LONG RANGE
PASSENGER DEMAND				
Annual Enplaned + Deplaned Passengers	6,267,452	7,800,000	9,400,000	14,200,000
Peak Month Passengers	599,538	746,139	899,194	1,108,400
Average Day Peak Month	19,340	24,069	29,006	35,755
Combined Peak Hour	2,091	2,550	2,970	4,040
PEAK HOUR PASSENGERS				
Departing Peak Hour (%)	56.63%	56.63%	56.63%	56.63%
Major Airlines	1,078	1,314	1,531	2,082
Regional Carriers	107	130	151	206
Subtotal	**1,184**	**1,444**	**1,682**	**2,288**
Arriving Peak Hour (%)	55.95%	55.95%	55.95%	55.95%
Major Airlines	1,065	1,298	1,512	2,057
Regional Carriers	105	128	150	203
Subtotal	**1,170**	**1,427**	**1,662**	**2,260**

- ADPM MAJOR CARRIER DEPARTURES

Major Carrier departing seats average just over 800 per hour and exceed the average for twelve of the eighteen activity hours with five of the hours exceeding 1,000 seats. The five hours from 600 hours through 1000 hours average 950 seats with the peak departure at 1100 hours. With 1,376 departing seats available and 1,178 passengers, the resultant Load Factor was 83.7%. A second afternoon 4-hour bank from 1600 to 1900 hours averages more than 1,000 LF seats per hour. ***(See Exhibit VIII-2-B.)***

- ADPM COMMUTER CARRIERS DEPARTURES

Commuter Carrier departing operations total 41 with a total of 797 seats including two, 50-seat RJ departures from Gate B8. The five hours from 0600 hours through 2000 hours average 56 seats. These are five peak departures totaling 126 seats at 1200 to 1300 hours. This peak includes one 50 seat RJ. ***(See Exhibit VIII-2-B and Table VIII-2-B.)***

- ADPM MAJOR CARRIER ARRIVALS

Major Carrier arriving seats also average over 800 per hour for ten of the eighteen active hours. Six of these hours exceed 1,100 seats. The two largest peaks are at 1600 and 1800 hours with 1,221 and 1,359 seats respectively. ***(See Exhibit VIII-2-C.)***

- ADPM REGIONAL CARRIER ARRIVALS

Regional Carrier arrivals total 41 with 35 (85%) being 19-seat aircraft arriving at Concourse E. Four (9.7%) eight-seat aircraft arrivals use Concourse D. The two RJs with 50 seats arrive at a gate on Concourse B. ***(See Exhibit VIII-2-C and Table VIII-2-B.)***

- ADPM COMBINED SCHEDULE

The activity is described in available aircraft seats and not passengers due to inconsistent Load Factors through out the day, with an average daily load factor of 70% with higher Load Factors reaching 84% during peak hour activity. The daily activity is concentrated between the hours of 0500 hours and 2300 hours, a period of eighteen hours. During that period the average aircraft seats in and out exceed 1,500 seats with ten hours exceeding 1,600 total seats. The Combined Peak Hour seats of 2,485 occur at 1100 hours. The curve is representative of a very mature schedule without extreme peaks and correspondingly low valleys. ***(See Exhibit VIII-2-D and Table VIII-2-B.)***

- PEAK HOUR (PH) DEMAND(S)

Three peaking conditions are important in the evaluation of the Terminal. They have been identified in the sections preceding as Arrivals Peak Hour (APH), Departures Peak Hour (DPH), and Combined Peak Hour (CPH). Each peak places demands on the various functions and different areas within the Terminal. The peaks are also expressed as numbers of passengers and aircraft operations. In some instances, passengers drive critical demand and in other instances it is driven by Aircraft Operations. Because of the distribution of carrier facilities in the terminal, demand during the peak hours places is different depending on location, Therefore, functional elements like Concourse A and B are evaluated separately to determine imbalances.

- DEPARTURES PEAK HOUR (DPH)

The Departures Peak Hour occurs from 1100 to 1200 hours and consists of ten departing flights. Six (59%) of the departures occur on Concourse A, all are Southwest Airlines flights. The other four (41%) of the departures are on Concourse B. All the Concourse B flights are by individual Carriers. The total numbers of seats are 1,376 with estimated passengers of 1,101 LF. ***(See Exhibit VIII-2-B.)***

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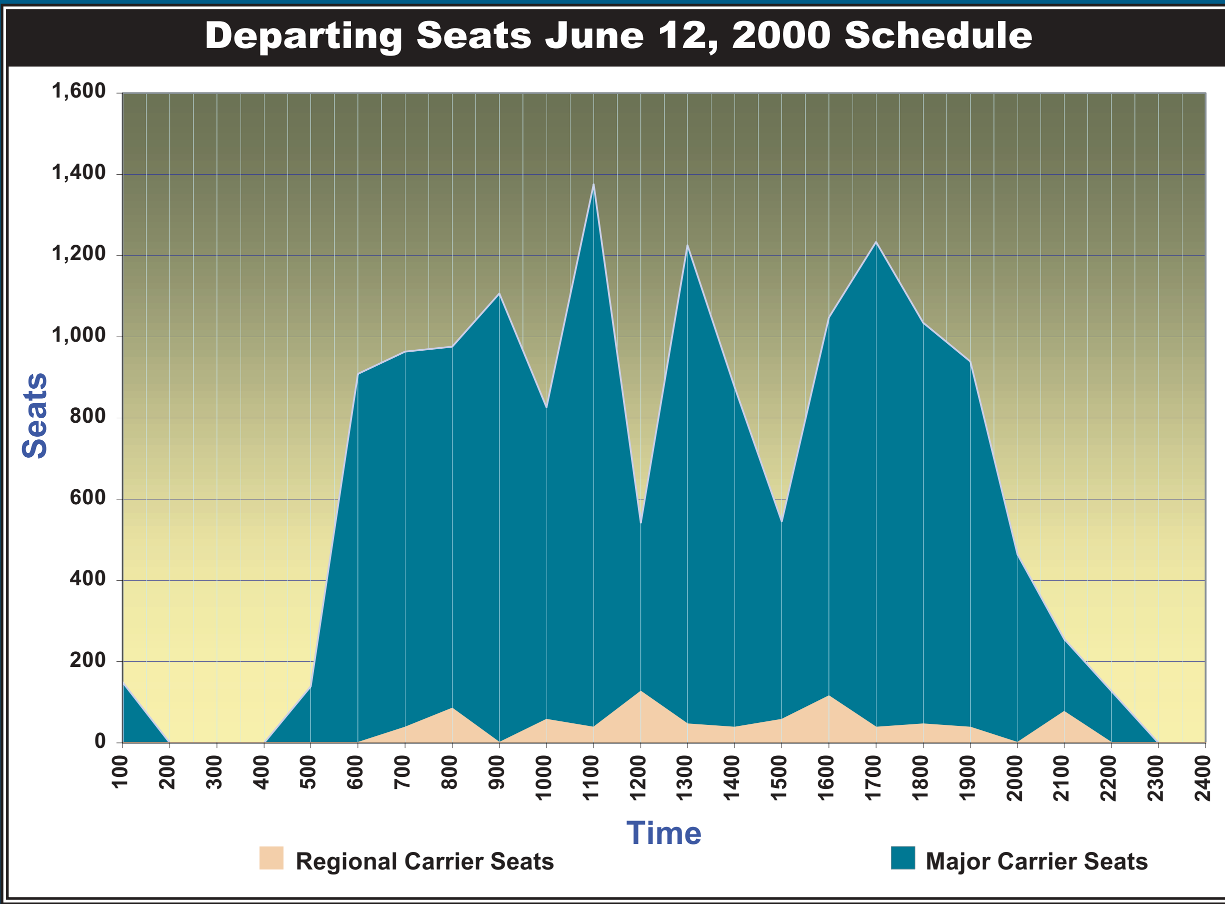

Concourse A

Airline	Flt#	Ops	Gate	Time	Aircraft	Seats	Passengers
SW	535	D	A11	1120	B733	137	110
SW	968	D	A4	1155	B733	137	110
SW	2059	D	A5	1100	B733	137	110
SW	343	D	A6	1140	B733	137	110
SW	803	D	A8	1105	B73S	122	98
SW	577	D	A9	1105	B733	137	110
Subtotal		**6**				**807** **59%**	**646**

Concourse B

Airline	Flt#	Ops	Gate	Time	Aircraft	Seats	Passengers
DL	1896	D	B10	1125	B72S	149	119
AA	1104	D	B3	1131	MD80	139	111
CO	1696	D	B6	1145	MD80	141	113
TW	160	D	B7	1125	MD80	140	112
Subtotal		**4**				**569** **41%**	**455**
Total		**10**				**1,376** **100%**	**1,101**

Exhibit VIII-2-B
PEAK HOUR DEPARTING SEATS

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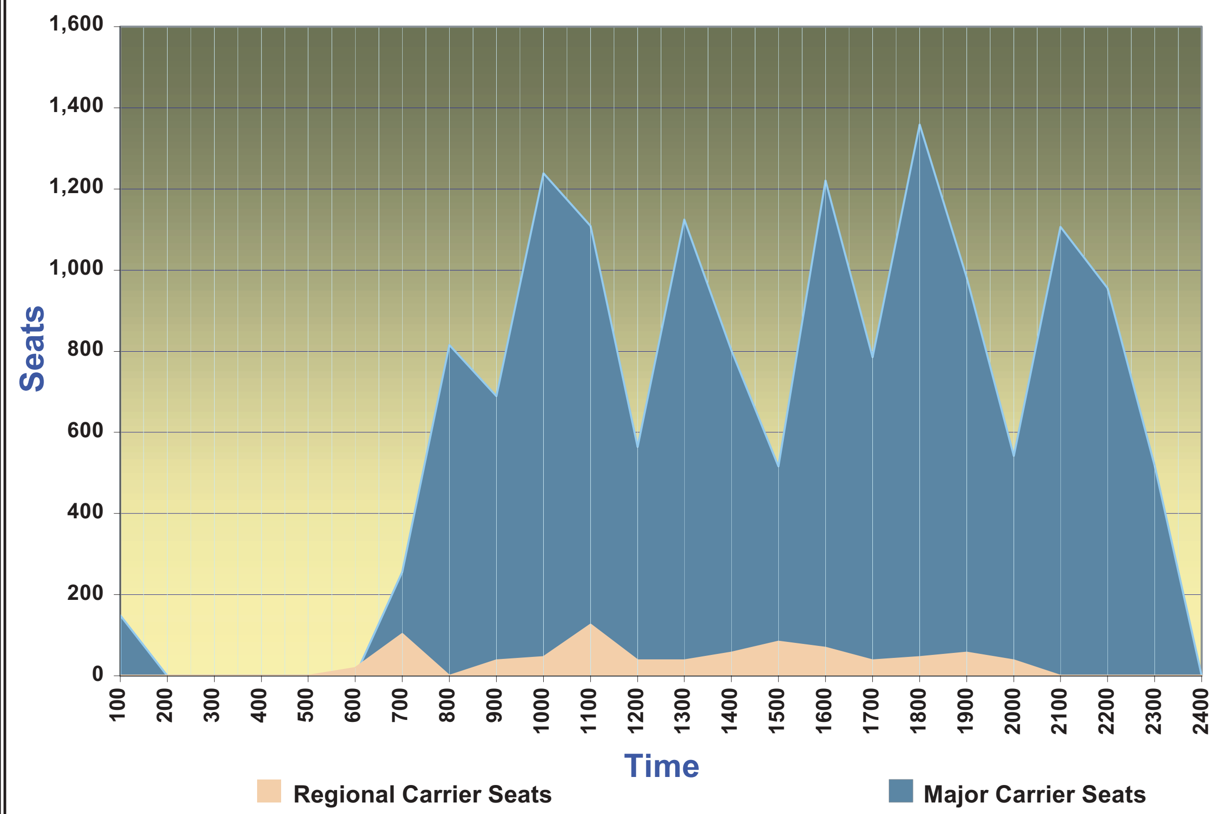
Arriving Seats, June 12, 2000



Concourse A

Airline	Flt#	Ops	Gate	Time	Aircraft	Seats	Passengers
SW	1373	A	A11	1815	B733	137	110
SW	432	A	A4	1820	B733	137	110
SW	837	A	A5	1815	B735	122	98
SW	1311	A	A6	1840	B73G	137	110
SW	226	A	A7	1810	B733	137	110
SW	1595	A	A8	1800	B733	137	110
SW	902	A	A9	1830	B735	122	98
Subtotal		**7**				**929** **68%**	**743**

Concourse B

Airline	Flt#	Ops	Gate	Time	Aircraft	Seats	Passengers
DL	1143	A	B10	1828	B72S	149	119
CO	1697	A	B6	1851	MD80	141	113
TW	287	A	B7	1857	MD80	140	112
Subtotal		**4**				**430** **32%**	**344**
Total		**10**				**1,359** **100%**	**1,087**

Exhibit VIII-2-C
PEAK HOUR ARRIVING SEATS

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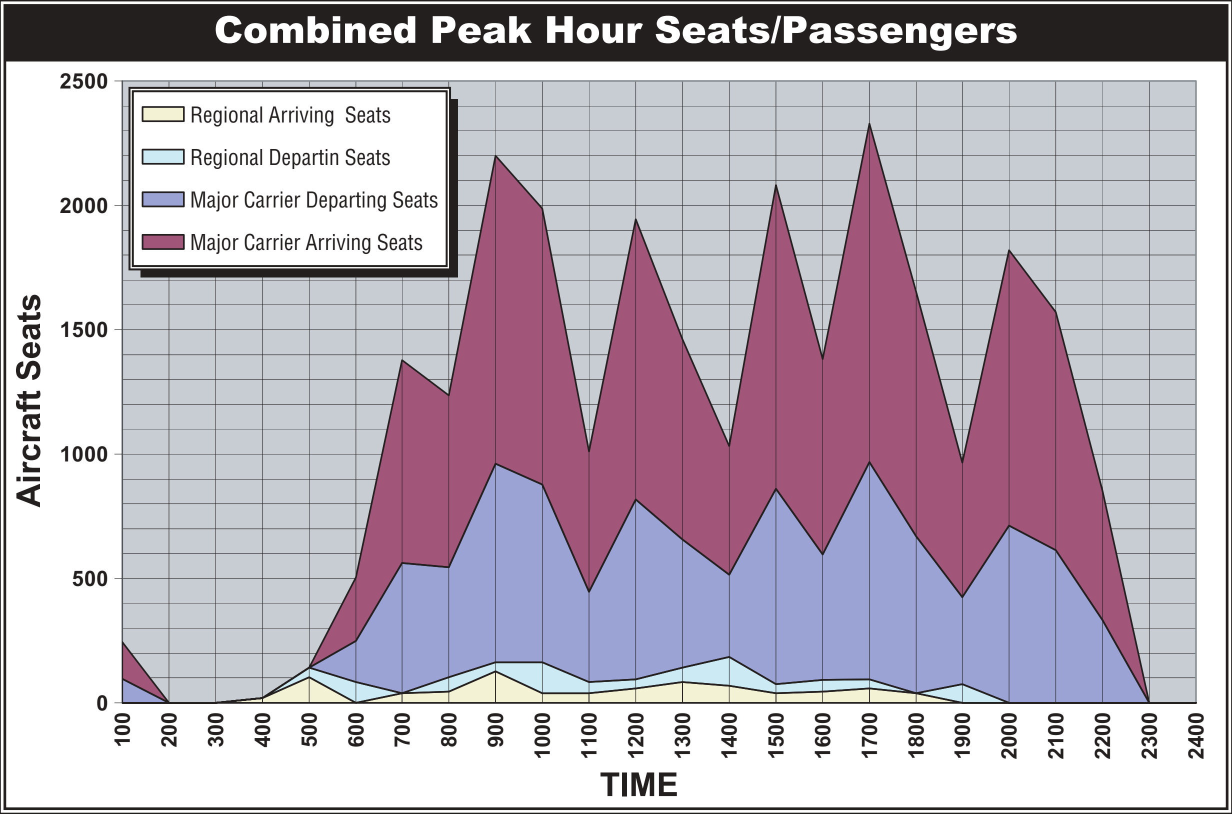


Concourse A

Airline	Flt#	Ops	Gate	Time	Aircraft	Seats	Passengers
SW	535	A	A11	1100	B733	137	115
SW	343	A	A6	1115	B733	137	115
SW	968	A	A4	1135	B733	137	115
SW	137	A	A7	1140	B733	137	115
SW	249	A	A8	1140	B733	137	115
SW	2059	D	A5	1100	B733	137	115
SW	803	D	A8	1105	B73S	122	102
SW	577	D	A9	1105	B733	137	115
SW	535	D	A11	1120	B733	137	115
SW	343	D	A6	1140	B733	137	115
SW	968	D	A4	1155	B733	137	115
Subtotal		**11**				**1,492** **60%**	**1,249**

Concourse B

Airline	Flt#	Ops	Gate	Time	Aircraft	Seats	Passengers
AW	2202	A	B4	1119	B733	131	110
AA	1885	A	B1	1146	MD80	139	116
DL	1125	A	B10	1157	B738	154	129
DL	1896	D	B10	1125	B72S	149	125
TW	160	D	B7	1125	MD80	140	117
AA	1104	D	B3	1131	MD80	139	116
CO	1696	D	B6	1145	MD80	141	118
Subtotal		**7**				**993** **40%**	**831**
Total		**18**				**2,485** **100%**	**2,080**

Exhibit VIII-2-D
ADPM ARRIVING AND
DEPARTING SEATS

TABLE VIII-2-B
Peak Hour Regional Carriers Seats/Passengers
Albuquerque International Sunport

DEPARTURES						**Load Factor**	**85%**
			CONCOURSE D, E				
Airline	**Flt #**	**Ops**	**Gate**	**Time**	**Aircraft**	**Seats**	**Passengers**
MA	51	D	E1	720	B1900	19	16
MA	401	D	E1	740	B1900	19	16
MA	700	D	E1	742	B1900	19	16
MA	551	D	E1	745	B1900	19	16
MA	801	D	E1	745	B1900	19	16
RG	123	D	D2	735	Cessna	8	7
Total		6				103	88
ARRIVALS						**Load Factor**	**85%**
			CONCOURSE D, E				
Airline	**Flt #**	**Ops**	**Gate**	**Time**	**Aircraft**	**Seats**	**Passengers**
MA	54	A	E1	800	B1900	19	16
MA	701	A	E1	800	B1900	19	16
MA	558	A	E1	810	B1900	19	16
MA	406	A	E1	815	B1900	19	16
RG	232	A	D2	800	Cessna	8	7
Total		5				84	63
COMBINED ARRIVALS/DEPARTURES						**Load Factor**	**85%**
			CONCOURSE D, E				
Airline	**Flt #**	**Ops**	**Gate**	**Time**	**Aircraft**	**Seats**	**Passengers**
MA	600	A	E1	642	B1900	19	16
MA	105	D	E2	705	B1900	19	16
MA	51	A	E1	720	B1900	19	16
MA	401	A	E1	740	B1900	19	16
MA	452	D	E1	740	B1900	19	16
MA	700	A	E1	742	B1900	19	16
MA	551	A	E1	745	B1900	19	16
MA	801	A	E1	745	B1900	19	16
RG	123	A	D2	735	Cessna	8	7
Total		9				160	136

- ARRIVALS PEAK HOUR (APH)

The Arrivals Peak Hour occurs from 1800 to 1900 hours and consists of ten arriving flights. Seven or (68%) the arrivals occur on Concourse A and are Southwest Airlines flights. The other three (31%) of the arrivals are on Concourse B. The Concourse B flights are by individual Carriers. The total seats are 1,359 with estimated passengers of 1,101 at an 81% load factor. ***(See Exhibit VIII-2-C.)***

- COMBINED PEAK HOUR (CPH)

The Combined Peak Hour also occurs from 1100 to 1200 hours and consists of six departing flights and five arriving flights on Concourse A that are Southwest Airlines representing 60% of the total. The other four are departures and three arrivals are on Concourse B and are 40% of the total. Of the Concourse B flights, American Airlines and Delta Airlines each have an arrival and a departure. The other Carriers, TransWorld Airlines, America West Airlines and Continental Airlines have either an arrival or a departure within the combined Peak Hour. The total aircraft seats are 2,485 with estimated passengers of 2,080. ***(See Exhibit VIII-2-D.)***

TERMINAL FACILITIES CAPACITY EVALUATION

Program Input

- PASSENGER PROFILES

The demand as determined from the ADPM Schedules is accommodated in various ways. For example, departing passengers may or may not have baggage and may check-in for a flight at several places within the Terminal. As such, the number of options for processing passengers and the percentage of passengers exercising each option are specified by the Passenger Profiles. These Profiles differ with the type of operation of each Airline. The Passenger Profiles are developed with specific input from the Airlines. A basic Profile that considers all possible input is developed to represent departing and arriving Albuquerque passengers. The Profiles also include the number of checked bags per passenger and the ratio of well wishers and greeters who accompany the passenger. ***(See Table VIII-2-C.)***

- PROCESSING PARAMETERS

The Processing Parameters consist mostly of transaction times for the processing of passengers for departing or arriving flights. Some of these functions like baggage claim are dependant on the time it takes to process an entire aircraft load of passengers. The following Table is a list of the parameters that determine the number of processing facilities required for the peak conditions defined for ADPM June 12, 2000. ***(See Table VIII-2-D.)***

- SPACE STANDARDS

The Space Standards are a dimensional requirement the represent the elements of the Terminal, or are determined to be desirable alternatives to existing dimensions. For example, the depth of the baggage claim lobby may be inadequate and a larger depth may be specified as optimal to be added in the future. ***(See Table VIII-2-D.)***

- LEVEL OF SERVICE (LOS)

Level of Service (LOS) designations has to do with the comfort and quality of the experience. Some are related to crowding in queuing areas. Called service goals define the amount of time a passenger must wait for processing. Distance of travel criteria between functions is another LOS standard employed to promote efficiency and comfort in the Terminal. ***(See Table VIII-2-E.)***

TABLE VIII-2-C
ADPM PH Passenger Demand Profiles
Albuquerque International Sunport

	Factor %	**June 21, 2000 ADPM**
PEAK HOUR DOMESTIC PROFILE		
Originating Passengers	56.63%	
Curbside	10.0%	59
Counter Check-In	65.0%	829
Gate Check-In	25.0%	296
E-Tickets (Electronic Check-In)	0.00%	0
Subtotal		**1,184**
Terminating Passengers	55.95%	
Claiming	75.0%	819
Bypass Claim	25.0%	351
Subtotal		**1,170**
Transfer Passengers	10.0%	
Online	80.0%	190
Offline	20.0%	47
Subtotal		**237**
Well Wishers	30.0%	**355**
Greeters	30.0%	**351**

TABLE VIII-2-D
Facilities Input Variables-Service Levels, Space Standards, and Processing Rates
Albuquerque International Sunport

Function/Facility	Std. Units	Space Project Factor	Description/Comments
Terminal Design Activity Level (TDAL)		85.0%	The processing level established for balanced operations for the peak hour average day peak month. (PHADPM) % of total Capacity.
DEPARTURES PROCESSING			
Ticket Counters:			
Agent Positions			
Ticketing Utilization Level (TUF)	%	75.0%	% of seats in airport pk hr/all airline peaks during the ADPM (to be verified)
% of Pk. Hr. Demand at peak period surge	% Pk.Hr.	64.0%	% OF ALL AIRLINE PEAK HR Demand in Airport Pk Hr 11:00 to 11:59 ADPM
Peak Period Minutes	Minutes	20	Pk. Hr. Peak Period minutes
Domestic Ticketing rate	Min./Pax	1.3	Average Transaction Time
International Ticketing rate	Min./Pax	2.5	Average agent ck-in or ticketing rate for international passengers
Well Wisher to Passenger Ratio	#	0.30	Number of Well Wishers per Originating Passenger
Frontage/Agent Position	Ft.	5.3	4' counter plus one half of a 2'-6" bag well
Ticket counter access allowance	%	5%	Counter access: gates, etc.
Depth Ticket Counter	Ft.	10.0	Front of counter to back wall
A.T.O. Depth	Ft.	30	Existing Plan
Minimum Lobby Circulation Width	Ft.	25	Existing Plan
Outbound Baggage Depth	Ft.	60	Average depth of baggage handling space
Ticket Lobby (Queuing)			
Depth Ticket Lobby	Ft.	26	Depth front wall to ticket counter includes queuing and circulation.
Domestic Service Goal Minutes	Minutes	7.5	Maximum average waiting time for Domestic passenger in queue.
International service goal Minutes	Minutes	15	Maximum average waiting time for International passenger in queue.
Queue Length/Pax	Ft.	4.5	Length of queue as generated by service goal times queue length per Pax.
Queuing Area/Person	$Ft.^2$	15.1	IATA service level C.
Ticket Lobby circulation	Ft.	13.33	Width depends on length of ticket counter block. 20 feet min.
Well wishers in Queue	%	20%	Percentage of Well Wishers in Queue with Passenger.
Security			
Inspection rate People/Hour	Pax./hr.	450	Persons checked through security per hour per x-ray unit.
% of Greeters & Well wishers Thru Security	%	30.0%	Visitors passing through security check.
Security Service Goal Minutes	Minutes	3	Maximum wait in Queue.
Security Station Width	Ft.	12	Width of X-ray Plus passing lane with Magnatometer.
Security Station Length	Ft.	25	Length of X-ray Station input to reclaim.
Area/Station	$Ft.^2$	360	120 S.F. for X-ray & Mag. Sta. 300 S.F. for manual search with 2 mags.
Security Office	$Ft.^3$	100	Allowance area per X-ray Unit.
Domestic Baggage Claim			
Device Utilization Factor (DUF)	%	60.0%	Percentage of the peak hour that all devices are in use.
Checked Bags/Passenger	#	1.3	Average number of Checked bags per Passenger.
Avg. Slope Bed Claim Device Frontage	Ft.	116	Average for existing space from drawings.
Avg. Flat Plate Claim Device Frontage	Ft.	162	Average belt frontage including stripping on flat plate conveyors.
Frontage/Bag	Ft.	1.5	Average frontage for bags on claim device.
% total Bags Displayed Domestic	%	30.0%	% of total Hourly bags displayed.
Distance between devices	Ft.	25	Minimum Clearance
End of device to obstruction	Ft.	15	Device to back wall
Device Width	Ft.	23	Minimum width plus feed conveyor
Slope Bed Device Length	Ft.	43	Average for existing space from drawings
Claim Device Area	$Ft.^2$	652	Calculated
Claim Lobby Area incl. Device area	$Ft.^2$	2,920	Average for existing space from drawings.
Lin. ft. per S.B. Device	Ft.	64	
Odd Size Baggage Display Frontage	Ft.	2,268	
Claim Lobby			
Greeters Ratio	#	0.5	Number
Greeters Factor	%	30.0%	of Greeters per Terminating Passengers
Device Utilization Factor	%	60.0%	Percentage of the peak hour that all devices are in use.
Service Goal Minutes	$Ft.^2$	20	Delivery cycle of single flight bags to device.
Area S.F./Occupant	$Ft.^2$	17.2	IATA service level C
Stripping Belt Length	Ft.	30	Minimum strilling belt length
Inbound area/Claim Device	$Ft.^2$	1033	Based on width of belt+work space+cart park+by-pass lane time belt length
Circulation	Ft.	25	Width of passing circulation
Baggage Service/Claim Device	$Ft.^2$	260	Baggage service office allowance per claim device.

TABLE VIII-2-D (Continued)
Facilities Input Variables-Service Levels, Space Standards, and Processing Rates
Albuquerque International Sunport

Function/Facility	Std. Units	Space Project Factor	Description/Comments
Passenger Holdrooms			
Peak Hour Load Factor	%	85%	Percentage of aircraft seats occupied
Peak Occupancy % of capacity	% Pk. Hr.	90%	Percentage of total boarding passengers in holdroom 5 min. prior to boarding
Area S.F./Occupant	$Ft.^2$	12.00	Based on 60% seating @15 S.F. and 40% standing @10 S.F./occupant
Avg. Holdroom Width	Ft.	27.5	Dimension window wall to circulation
Area Allowance for Podiums & AC exit	$Ft.^2$	303	
Group A&B holdroom area	$Ft.^2$	808	Calculated based on 85% L.F. and aircraft Group seals.
Group C1 holdroom area	$Ft.^2$	1,267	Calculated based on 85% L.F. and aircraft Group seals.
Group C2 holdroom area	$Ft.^2$	1,634	Calculated based on 85% L.F. and aircraft Group seals.
Group C3 holdroom area	$Ft.^2$	1,799	Calculated based on 85% L.F. and aircraft Group seals.
Group D holdroom area	$Ft.^2$	2,690	Calculated based on 85% L.F. and aircraft Group seals.
Group E holdroom area	$Ft.^2$	3,700	Calculated based on 85% L.F. and aircraft Group seals.
Group F holdroom area	$Ft.^2$	4,847	Calculated based on 85% L.F. and aircraft Group seals.
Airline Clubrooms			
Clubroom % of total holdroom area	%	15%	Percentage of total passengers using clubs
Holdrooms/clubroom	#	1	Ratio of gate to club rooms
Average clubroom area	$Ft.^2$	2000	Clubroom size
Concourse Circulation			
Minimum Concourse Circulation width	Ft.	25	Width depends on peak Hour volumes and geometry.
Traffic volumes service levels	PFM	15	People per foot per minute. Level of Service C. Fruin
Airlines Operations	%	30%	Percentage of total Holdroom areas.

TABLE VIII-2-E
Level of Service Standards (LOS)
Albuquerque International Sunport

LEVEL OF SERVICE STANDARDS – AREA PER OCCUPANT

	A	B	C	D	E	F
Function/Facility	**ft^2**	**ft^2**	**ft^2**	**ft^2**	**ft^2**	
Check-in Queue Area	19.4	17.2	**15.1**	12.9	10.8	
Wait/Circulate	29.1	24.8	**20.4**	16.1	12.8	
Hold Room	15.1	13.5	**12.0**	10.5	8.0	
Bag Claim Area (excl. Claim device)	21.5	19.4	**17.2**	15.1	12.9	
Federal Inspection Services	15.1	12.9	**10.8**	8.6	6.5	

Legend

A Excellent level of service; conditions of free flow; excellent level of comfort.
B High level of service; condition of stable flow; very few delays; high level of comfort
C Good level of service; condition of stable flow; acceptable delays; good level of comfort
D Adequate level of service; condition of unstable flow; acceptable delays for short periods of time; adequate levels of comfort
E Inadequate level of service; condition of unstable flow; unacceptable delays; inadequate levels of comfort
F Unacceptable levels of service; conditions of cross flows, system breakdown and inadequate delays; unacceptable levels of comfort

Capacity Evaluation

Each of the processing functions was evaluated using the inputs and demand described above.

Related processing functions are evaluated in the sequence experienced by the passenger. Only those functions for which user demand can be determined were evaluated. Secondary functions that support processing is sized either in proportion to the existing ratio, or ratios were changed to correct imbalances. The Demand Evaluation of related sequential functions were averaged to indicate the overall performance of the Facilities. All Facilities were then adjusted to provide a balanced processing capacity for the entire Terminal. A level of 85% of capacity was established as the Design Utilization Factor **(DUF)**. This Design Level of activity is selected as a "trigger" to initiate design and construction of new Facilities. The excess of 15% capacity allows for continuing growth during the design and construction period until new expanded facilities come on line.

Departure Processing Evaluation
(See Table VIII-2-F.)

- TICKET COUNTERS

The ticket counters at Albuquerque International Sunport are leased by individual Airlines. As such, the requirement for ticket counter positions must accommodate the total positions required for all of the individual Airline's peak hours. The total of all of the individual airline passenger peaks is 68% of the departing demand. Ticket counter processing demand assumes a surge equal to 50% of the peak hour passengers arriving in a peak twenty-minute check-in cycle.

The check-in rate at the counter of 1.3 minutes per passenger is based on weighted average times for those carriers processing during the departures peak hour. Floor area calculations for ticket counters and support spaces are based on existing facilities. The ticket counters were found to be operating at 71% of capacity. ***(See Table VIII-2-F.)***

- TICKETING LOBBY

The adequacy of the Ticketing Lobby floor area is also evaluated to determine whether demand levels result in acceptable Levels of Service. The evaluation was based on a service goal of an 8-minute maximum wait in queue, and a Level of Service-C of 17 square feet per person in queue with baggage. The queuing area was determined to be operating at 72% of capacity when concentrated within the frontage required for ticketing. ***(See Table VIII-2-F.)***

- PASSENGER SECURITY SCREENING

In addition to the departing passenger, it is assumed that 30% of well wishers and greeters pass into the secure area. The processing rate at current security levels is 450 passengers per station per hour or 1,800 for all stations. The current Peak Hour Demand of originating passengers including well wishers and greeters is 1,429. At the Design Utilization Factor DUF) of 85% the capacity is 1,530 persons with three stations operating and one as backup. ***(See Table VIII-2-F.)***

TABLE VIII-2-F
Existing Demand Capacity Analysis
Departure Processing Facilities
Albuquerque International Sunport

Facility Title		Units	Base Year 2000	Existing Processing Capacity	Uti. Factor Exist. % of Capacity	Uti. Factor 85% of Capacity	23 Gates
Annual Passengers		Pax.	6,267,452				7,253,169
DEPARTURE PROCESSING							
Ticket Counters:	**(Pk. Hr. Demand)**	Pax.	**829**	**1,152**	**72.0%**	**85%**	**979**
Agent Positions		#	75				75
Frontage		Ft.	374			39	394
Area		Ft.^{2}	3,749			385	4,134
Vacant counter		Ft.^{2}	1,094				1,094
Ticket Lobby	**(Pk. Hr. Demand)**	**Pax.+W.W**	**904**	**1,099**	**82.2%**	**85%**	**768**
Queuing Area		Ft.^{2}	9,724			(3,785)	5,939
Outbound Baggage		Ft.^{2}	21,533			2,092	23,625
Vacant Outbound		Ft.^{3}	5,797				5,797
Airline Ticket Office		Ft.^{2}	10,657			1,156	11,813
Vacant Airline Ticket Office		Ft.^{3}	3,578				3,578
Ticket Lobby Circulation		Ft.^{2}	8,295				8,295
Security Stations	**(Pk. Hr. Demand)**	**Pax.+W.W**	**1,396**	**1,800**	**77.6%**	**85%**	**1,530**
Number of Stations		#	4				4
Area of Stations		Ft.^{2}	2,388			(1,308)	1,440
Area of Queuing		Ft.^{2}	876			(516)	480
Security Offices		Ft.^{2}	722				300
Subtotal		**Ft.^{2}**	**68,413**			**71,697**	**66,495**
Avg. Utilization		%			**77.3%**		

( ) means excess capacity

- PASSENGER SECURITY QUEUING

Required queuing for security was determined using 3 minutes as the desired maximum waiting time in queue at a LOS-C and 10 square feet of floor area per person. The number of people in a double queue would be 48 requiring 480 square feet. The space available is not constrained for queue length, but queues longer than 24 persons would exceed the service goal of three minutes. ***(See Table VIII-2-F.)***

Arrivals Processing Evaluation
(See Table VIII-2-G)

The major activity on the arrival cycle is the claiming of baggage and access to ground transportation. All transactions related to ground transportation occur at the outer curb or at the new rental car facility and are therefore not part of this evaluation.

- BAGGAGE CLAIM

It is estimated that 75% of arriving peak hour passengers claim checked baggage. The remaining 25% of the passengers bypass the baggage claim areas and go directly to the curb or to other ground transportation related facilities. It is also assumed that each passenger checks an average of 1.3 bags. Assuming a 15-minute claiming cycle for Group III Aircraft, the capacity of a sloped plate device is estimated at four times the frontage of the device divided by 1.5 feet per bag. Group IV 757-200 Aircraft would require a claiming cycle of 20 minutes. ***(See Table VIII-2-G.)***

TABLE VIII-2-G
Existing Demand Capacity Analysis
Arrivals Processing Evaluation
Albuquerque International Sunport

Facility Title	Units	Base Year 2000	Existing Processing Capacity	Uti. Factor Exist. % of Capacity	Uti. Factor 85% of Capacity	23 Gates
ARRIVALS PROCESSING (Pk. Hr. Demand)	**Bags**	**1,065**	**1,295**	**82.2%**	**85%**	**1,101**
Baggage Claim: (Dom.) (Pk. Hr. Demand)	#	8				8
Devices	Ft.	971			(283)	688
Dev. Frontage	Ft.^{2}	8,009				5,215
Device area	**Pax+Gr.**	**650**	**851**	**76.4%**	**85%**	**723**
Claim Lobby (Pk. 20 min Demand)						
Area not including Devices	Ft.^{2}	**24,385**			(2,463)	21,922
Public Lobby & Circulation	Ft.^{2}	11,871			(7,359)	4,512
Inbound Baggage	Ft.^{2}	11,480			(3,216)	8,264
Baggage Service Offices	Ft.^{2}	1,754			326	2,080
114 **Subtotal**	Ft.^{2}	**57,499**			**(12,713)**	**41,992**
1368 **Avg.**				**79.3%**		

- NUMBER OF DEVICES

The Standard Claim Device at ABQ is 116 feet in length. The capacity of the device, if full, for the hour would be 77 bags. The working capacity of the devices is 80% of full capacity with each display at 62 bags. The average number of bags per flight in the arrivals peak hour is 86. Each device can handle baggage for 2.1 flights if in continuous use for a total of 17 flights. Concourse A has only three devices and currently has 7 PH arriving aircraft. At 2.1 arriving operations per device 3.3 devices would be required or 110% of the practical capacity. Concourse B has four standard devices plus one large device with 155 feet of frontage for a total of 5.33 standard devices. The practical capacity of these 5.33 devices is 11.2 arrivals. During the ADPM Concourse B has five hours during the day with 4 flights. Utilization of the five devices with 4 arrivals is only 36%. The average utilization during the PH ADPM of all terminal devices to accommodate Arriving Aircraft Operations is 65.2% ***(See Table VIII-2-G)***.

- CLAIM LOBBY EVALUATION

The lobby area surrounding the Standard Claim Device is 2,875 square feet (S.F.). The LOS-C of 18 S.F. per person, the capacity for individual claim device lobby space, would be 166 persons. The average number of claiming passengers plus accompanying greeters is 114 people. All of these people may be in the claim area waiting for a bag to arrive. This represents 70% of the capacity for individual claim device in lobby areas. If any passengers from another flight were claiming baggage on the same device the Level of Service would be unacceptable.

The capacity of all of the claim area at LOS-C is 1,083 passengers and greeters. The PH demand at baggage claim from the 10 arriving aircraft operations is 1,084 people including greeters. The total 60% or 650 people arrive in a 20-minute peak period. The 650 people represent 60 % of the capacity of the overall Terminal Claim Lobby Space. Of the peak 20-minute passengers, 522 are in the smaller north claim area. The lobby area for the three devices is 9,717 square feet. The capacity of this space at LOS-C is 540 people. The utilization factor of the space is 522 people divided by 540 people, which equals 93% of total capacity. Because of the arrangement to devices within the Terminal with three devices on the east and five devices on the west there is an imbalance within the claiming function.

Concourse And Airside Facilities
(See Table VIII-2-H.)

- AIRCRAFT GATE UTILIZATION

There are thirteen Group III Aircraft positions at Concourse A and nine Group III Aircraft, and one Group IV Aircraft position at Concourse B. During the Combined Peak Hour there are six departing operations and six arriving operations on Concourse A and four departing operations and three arriving operations on Concourse B. The average aircraft dwell time on Concourse A was 25 minutes with dwell times at Concourse B somewhat longer at 30 minutes. The 5.5 Gate Occupancies at 30 minutes represents 48.5% of the capacity. The 3.5 Gate Occupancies at 35 minutes represents 29% of the capacity.

If the entire Concourse A and B Gates are considered utilized during this combined occupancy the Gates would be 29% of the total capacity. While this overall capacity may seem low it is the result of exclusive or Preferential User Gate Allocation. Only five of the ten Airlines using Concourses A and B had flights in the PH.

- HOLD ROOM SIZES

The average number of seats in the ADPM Schedule is 136. The Forecast

Average Load Factor is 66%. The average number of seats in the CPH is 138 with a Load Factor of 80% or 110 passengers. With well wishers the average hold room would serve 120 people per flight. The Peak Occupancy of the hold room would be 95% of 120 or 114 passengers. At a LOS-C the area required would be 1,368 square feet with a 10% allowance for circulation. The hold room size would be 1,505 square feet. In addition to the hold room, 550 square feet per Gate are allowed for check-in counters and for exit space from the aircraft.

TABLE VIII-2-H
Existing Demand Capacity Analysis
Airside and Concourse Facilities
Albuquerque International Sunport

Facility Title		Units	Base Year 2000	Existing Processing Capacity	Uti. Factor Exist. % of Capacity	Uti. Factor 85% of Capacity	23 Gates
COMMUTER CARRIER FACILITIES	(Pk. Hr. Demand)	**Pas.+W.W.**	**137,826**	**306**	**75.0%**	**85%**	**260**
Passenger Holdrooms		$Ft.^2$	7,653			(1,910)	5,743
Airline Operations		$Ft.^2$	7,170			(840)	6,330
DOM. GATE FACILITIES	(Pk. Hr. Demand)	**Pas.**	**1,157**	**2,622**	**73%**	**85%**	**2,245**
Passenger Hold Rooms		#	23				23
Passenger Hold Rooms Area	LOS C	$Ft.^2$	51,961			(4,696)	47,265
Clubrooms		$Ft.^2$	1,883			117	2,000
Concourse Circulation		$Ft.^2$	21,253			2,380	23,633
Airline Operations		$Ft.^2$	15,515			(1,402)	14,113
Covered Unenclosed Storage		$Ft.^2$	13,498			(1,220)	12,278
PUBLIC SPACES	(Pk. Hr. Demand)	**Pax.**	**520**	**719**	**72%**		**520**
Rest Rooms		$Ft.^2$	8,630			(1,289)	7,341
Mezzanine		$Ft.^2$	4,569				176,471
Subtotal	48%		**132,132**			-32,038	**100,094**
					73.4%		

The average hold rooms on Concourse A and B including check-in space are 2,055 square feet. Some of the gates on the north side of the concourses are less than adequate.

Other Facilities

- CONCESSIONS

While demand is an important consideration in the adequacy of concessions in a terminal, there are marketing considerations that determine the capacity and economical viability of airport food/beverage services and retail concessions.

Circulation

- WALKING DISTANCES

Enplaning passengers walking distances average 1300 feet from the center of the eastside ticketing to the center of Concourse A and a similar distance from the center of the westside ticketing to the center of Concourse B hold rooms. Of the 1300 feet there is 175 feet of moving walkway (mechanical assisted) travel available to passengers. The deplaning length of travel is similar, except there is an escalator between, increasing the assisted travel distance to 210 feet. Within the Concourse, it is 1075 feet from the end Gates on Concourse A to the end Gates of Concourse B.

- CIRCULATION CAPACITIES

The minimum width of circulation in the Terminal is 13.75 feet at ticketing. The corridors at the north side of the Building are primarily one-way flowing toward the center of the Building. At Level of Service C, these corridors would have an hourly capacity of 162 passengers per minute. In a peak 20 minutes the capacity of the east and west ticketing corridors would be 6,500 people compared to the departing peak 20 minute demands of 550 passengers. The corridors are at 8.5% capacity.

The minimum circulation width in the Concourse is 22.5 feet where hold rooms are on both sides. Assuming 80% of the width is available for circulation, the capacity at LOS is 112 passengers per minute or 6,750 per hour for each Concourse. The peak hour combined passengers on the ADPM are 2,080 passengers. Concourse A has 1,249, which is 60% of the passengers. This represents 18.5% of capacity.

Based on flow the Concourses have sufficient circulation widths to accommodate passengers and well wishers. There are conditions such as greeters accumulating for arrival of passengers and check-in queues that impinge flow. This type of condition is difficult to evaluate and will continue to occur until airline gate operations are affected by improving systems technology.

- VERTICAL CIRCULATION ESCALATORS

Escalators are the primary means of vertical circulation in a three-story structure. On the central axis of the terminal there are two banks of 4 escalators with two in each direction; one bank from level one to level two, and one bank from level two to level three. The capacity of 40 passengers per minute translates to 4800 passengers per hour in each direction. Significantly more capacity than is required. With two Escalators in each direction there is little or no queuing during surges. During down time for servicing a single escalator there is enough capacity, however there may be short term queuing during surge conditions. There is a second up/down pair of escalators at the west end of ticketing which is a remnant of the old terminal and is currently a convenience but not necessary to the function of the Terminal.

- ELEVATORS

Because the first and third floors of the Terminal do not overlap there is not a bank of elevators that touch all levels. The two pairs of elevator are located at the north and south end of the Great Hall. The pair serving from level three to the tunnel to the parking structure is in the center spine. The second pair serving level two and level three is located away from the circulation path and is somewhat obscure and not well signed. All elevators are paired serving no more than three floors. They are of sufficient size and have short cycle times. There is also a large service elevator at the east end.

Restroom Facilities

- LOCATION AND SEPARATION

Arriving passengers have multiple opportunities to access restroom facilities on the way to Level One and Baggage Claim. On Level One there is a large central bank of restrooms located behind the escalators in readily accessible, but somewhat obscure visual position. It is within 200 feet of six of the eight claim devices. The last two devices in the west claim area are within 350 feet of the central restrooms. On Level Two, restrooms are centrally located at the entries to hold rooms D and E. These locations are accessible to the major carriers ticketing areas, but are not on the path to the Gates. There is also a restroom group at the west end of ticketing near the TWA Clubroom, which is within 250 feet of all ticketing positions in the west ticket lobby. While the travel distances are at the limits of acceptable travel they are convenient and recognizable.

Restrooms on Level Three exceed LOS-C requirements for distance of travel and are located in prominent, easily accessible positions. There are convenient restrooms on the path from ticketing to security on Level Three at the head of the escalators. In the non-secure area of Level Three concessions and food service escalators are within 150 feet of restrooms, also similar to the secure levels of Level Three.

- PLAN EVALUATION

The plan evaluation is intended to record physical conditions that are not identified by the model, which are either constraints to the operation of the Terminal, or conditions, which offer opportunities for capacity enhancements. ***Exhibits VIII-2-E*** through ***VIII-2-H*** represent different parts of the Terminal by level layer. The diagrams and comments serve as a record of observation and evaluation. They are considered in the development of the facilities requirements and development of alternative concepts.

- FINDINGS AND CONCLUSIONS

The existing Terminal Facilities have an overall capacity of 73% under the current ADPM demand. These facilities are in a state of balance with each other for all eight major demand functions for which demand is a determinant. They average a 76.7% of capacity with a range of 72% to 82%.

98MP19-VIII2E-4/10/01

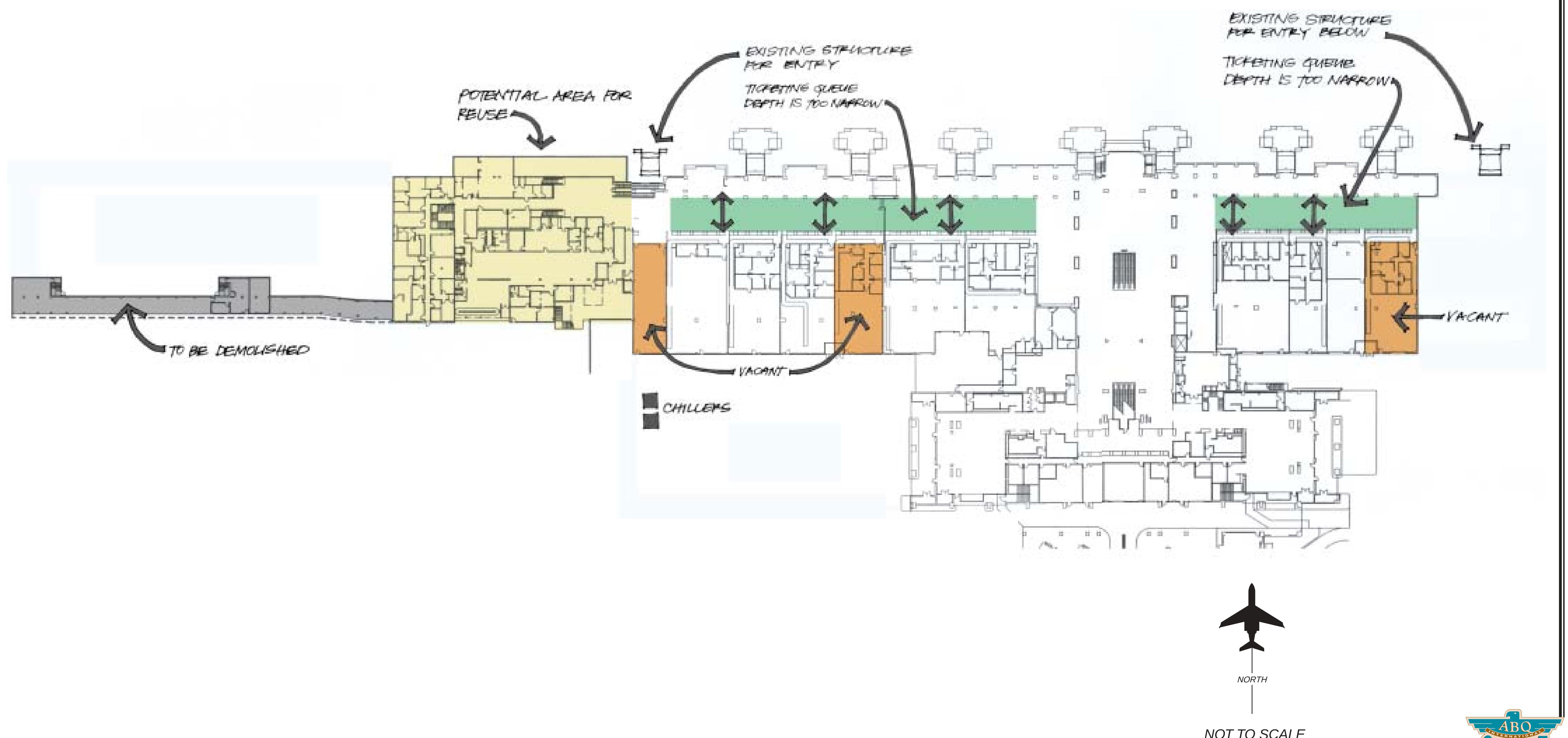


Exhibit VIII-2-E
TICKETING AREA FACILITIES
LEVEL 2

98MP19-VIII2F-12/5/00

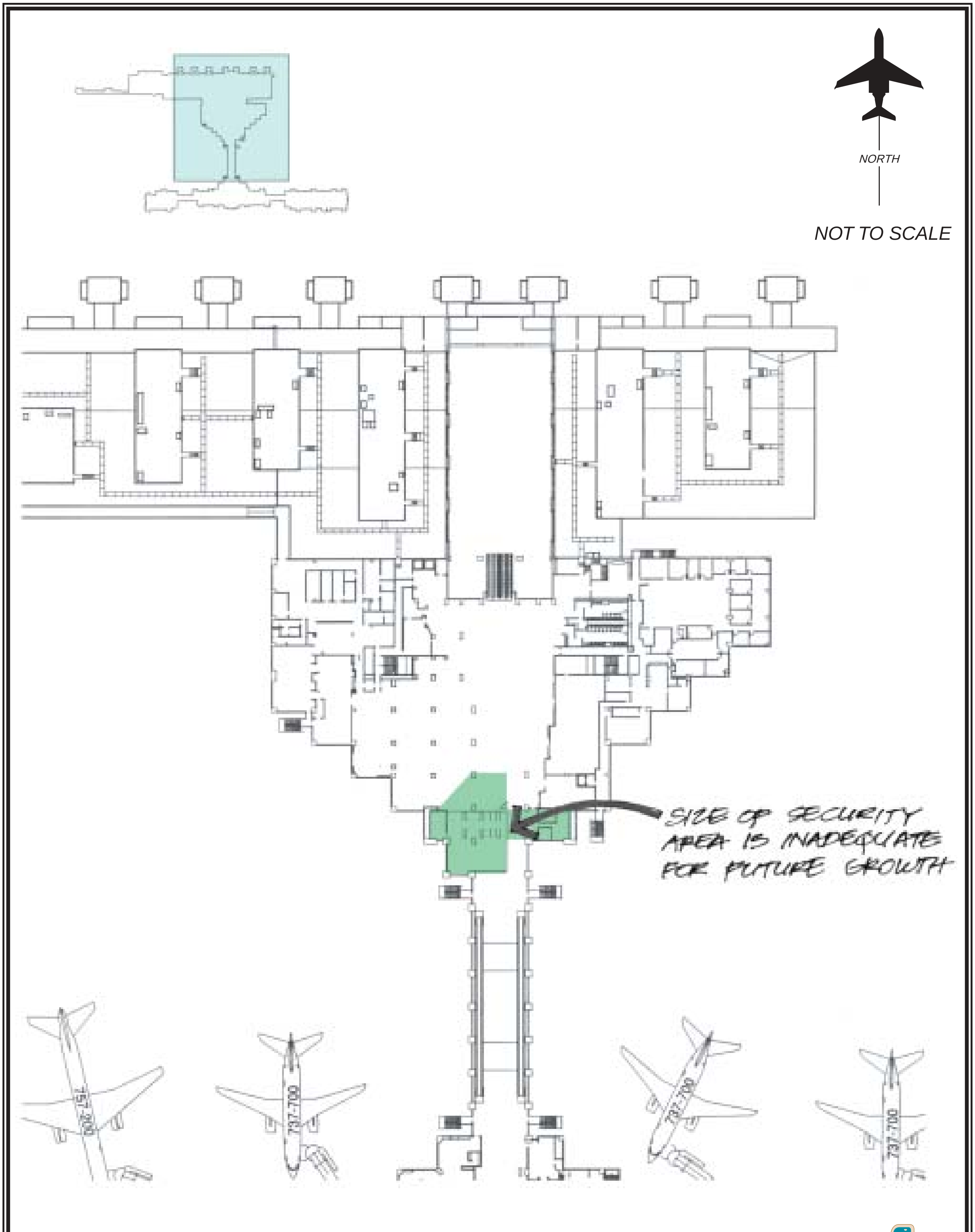


Exhibit VIII-2-F
CONNECTOR
LEVEL 3

98MP19-VIII2G-4/10/01

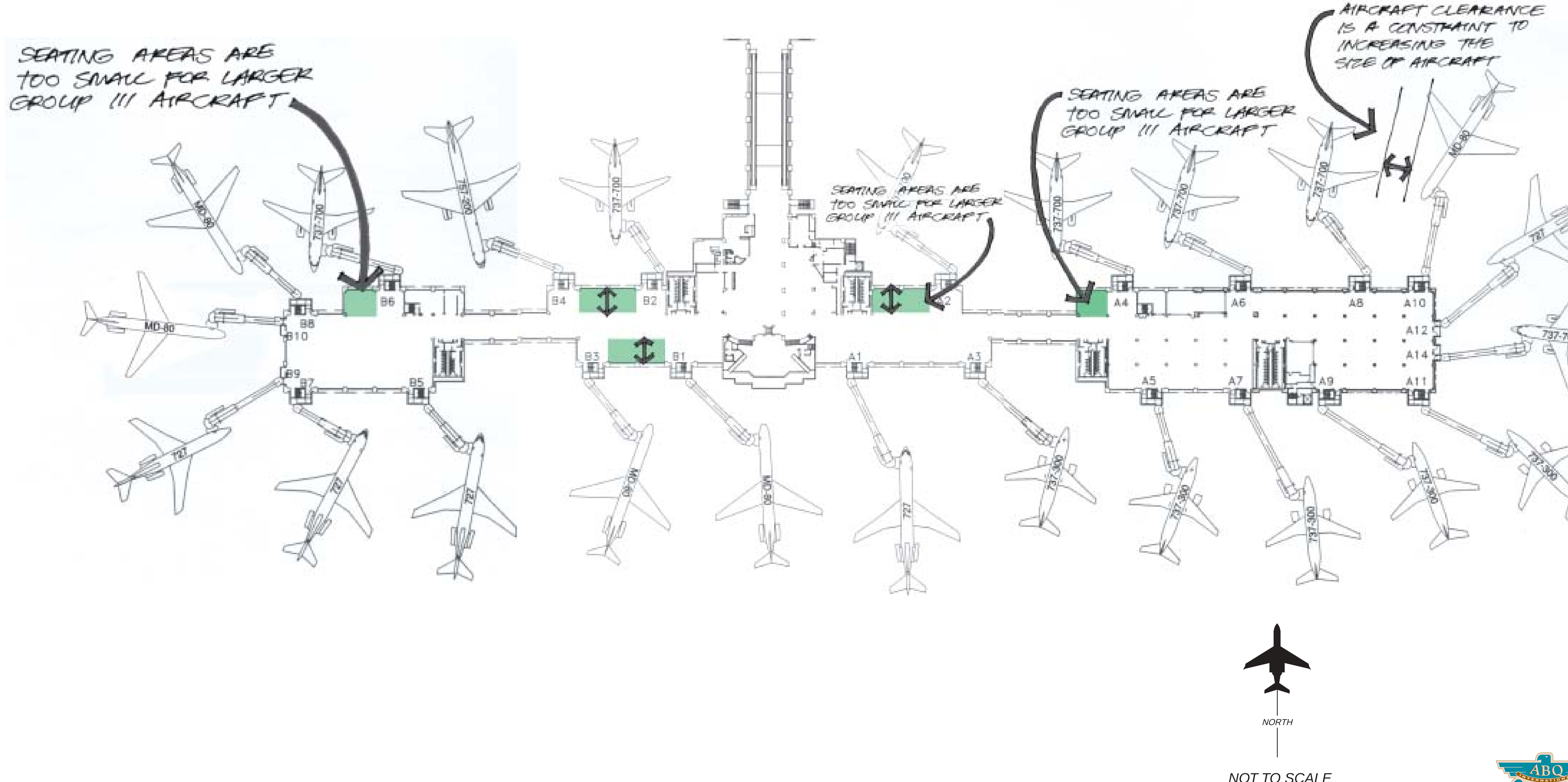


Exhibit VIII-2-G
CONCOURSE

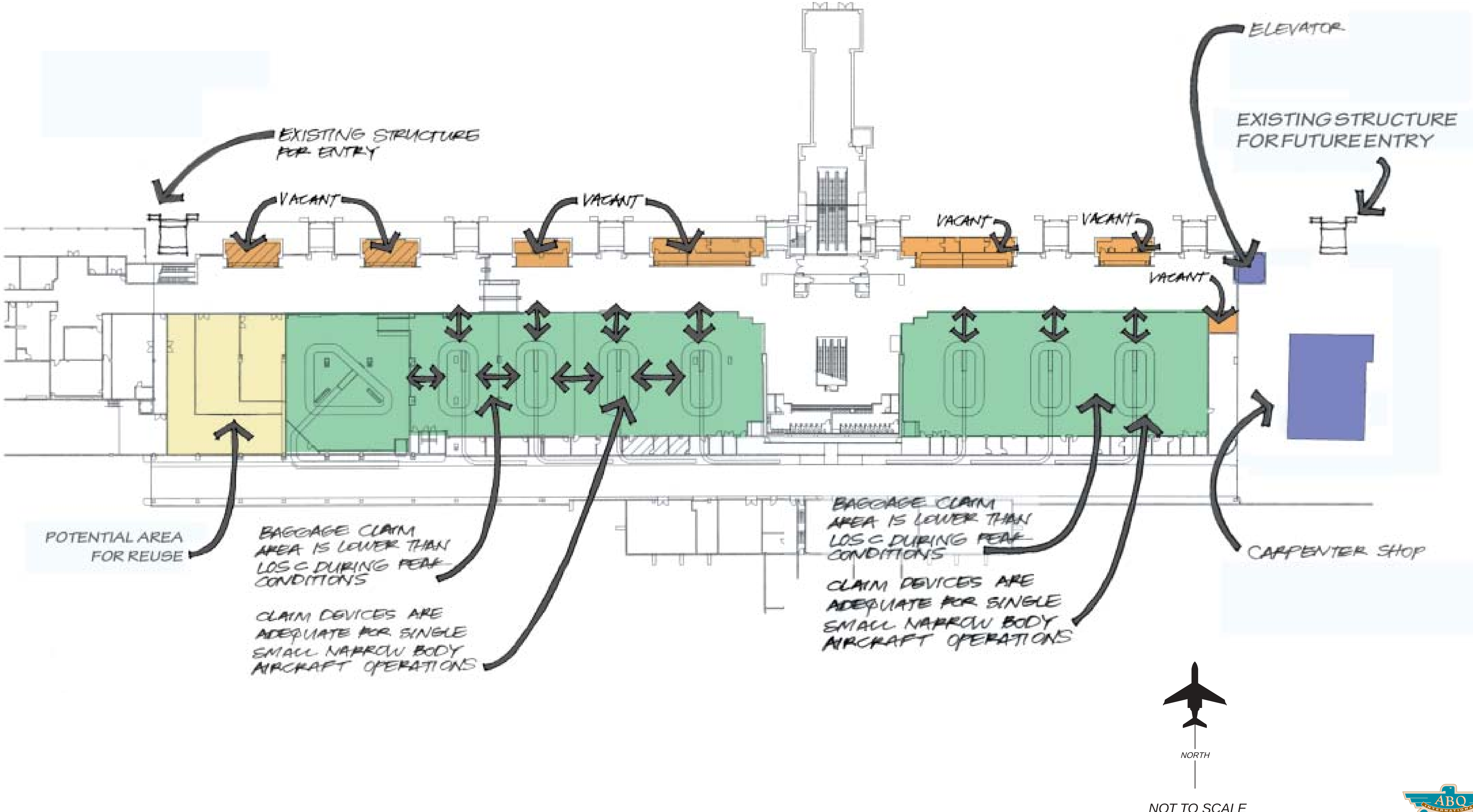


Exhibit VIII-2-H
BAGGAGE CLAIM

However, within individual functions there was a good deal of variance due to the pattern of airline occupancy and individual airline demand. For example, Concourse A handles 64% of the daily operations compared to 35% of the total for Concourse B. The East Claim Area handles 64% of the demand with less capacity than the five claim devices that handles 36% of demand in the West Claim Area. of all of Concourse A demand that is generated during the arrivals peak hour is concentrated in the smaller East Claim Area, it would be required to function at 110% of optimum.

Implementing some capacity enhancements to correct the imbalances within the existing Terminal would attain the 85% design utilization level at 3.6 million annual enplaned passengers for the Terminal.

Chapter Eight

Passenger Terminal Facilities

Section Three
REQUIREMENTS

Chapter Eight
Passenger Terminal Facilities

Section Three
REQUIREMENTS

INTRODUCTION

PURPOSE

The purpose of the passenger terminal facilities requirements is to quantify and qualify, to the fullest extent possible the terminal facilities that would be required to accommodate the forecast passenger, aircraft and public demand. The terminal facilities requirements are also intended as the base for the development of the alternative(s). In addition, the facilities requirements would serve as a base for the development of funding requirement(s) for the Capital Implementation Program.

METHODOLOGY

A spreadsheet model is used to determine the Terminal Facilities Requirements. This model is an extension to the model used in the Terminal Demand Capacity Analysis and employs the same industry standards that include service goals, functional space standards and operational parameters. Please see **Table VIII-2-E** for input used in the evaluation of the existing terminal and its operations. Levels of service space standards were established as "Level of Service-C" during peak conditions of the Design Day. These levels of service space standards with definitions were presented in **Table VIII-2-E**.

PASSENGER AND AIRCRAFT DEMAND

The forecast demand of annual, peak month, demand day passengers and aircraft operations were developed in Chapter Three - Forecasts (See **Table VIII-3-A**) and the planning horizon activity milestones were used as the basis for determining the facilities requirements.

Demand Day Schedule

The schedule for June 12, 2000 (see **Exhibit VIII-3-A**) was used as the base for the Demand Capacity Analysis for the airfield and for the terminal facilities. The schedule was for the months of June, July and August - the peak period of the year.

DEMAND DAY AIRCRAFT OPERATIONS AND PASSENGER PEAK HOURS

Major Carrier Combined Peak Hour Operations

The demand day schedule of operations exhibits a pattern of peaks at three-hour intervals from 09:00 to 15:00. Two hours later, at 17:00, there is another peak and at four hours later at 21:00 there is a final peak. The largest number of operations occurred from 11:00 to 11:55 hours. There were a total of 18 major carrier operations during this period consisting of eight arrivals and ten departures that totaled 2,485 seats. The combined peak hour operations represent 8.43% of the total daily operations by the nine major carriers. At an 84% load factor, the 2,091 combined peak hour passengers was 10.8% of the design day passengers. For the purpose of the facilities requirements, it was assumed that the peaking pattern and the percentage of daily operations and passengers would continue through the forecast period (See **Table VIII-3-A**).

Major Carrier Departing And Arriving Peak Hour Operations

The ten departing major carrier operations totaled 1,376 seats, which are 4.67% of the total daily seats and at an 86% load factor the 1,184 passengers are 6.12% of the total daily passengers. The ten arriving major carrier operations totaled 1,359 seats, which are 4.61% of the total daily seats and at an 78.8% load factor the 1,170 passengers are 6.05% of the total daily passengers. For the purpose of the facilities requirements, it was assumed that the peaking pattern and the percentage of daily operations and passengers would continue through the forecast period (See **Table VIII-3-A**).

Regional Carrier Combined Peak Hour Operations

The pattern of commuter flights has peaking early in the day between 07:00 and 09:00 hours and is generally flat during the rest of the day averaging six operations per hour. The nine combined peak hour operations represent 9.8% of the total daily operations. At a 67% load factor, the 107 combined peak hour passengers was 9.9% of the design day passengers. For the purpose of the

98MP19-VIII3A-2/7/01

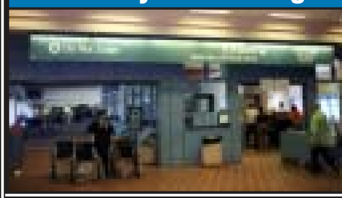
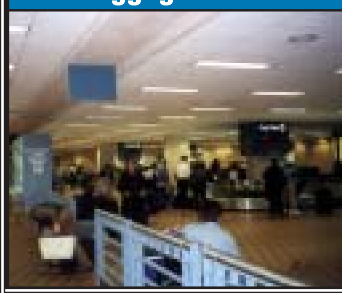
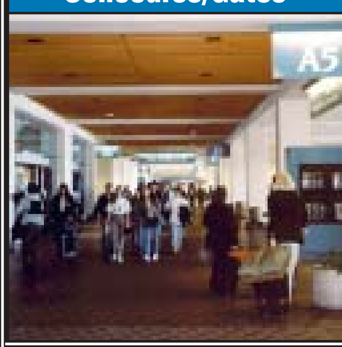
			ENPLANEMENT HORIZONS (millions)		
CATEGORY		**AVAILABLE**	**3.9**	**4.7**	**7.1**
Airline Counter/Office 	Counter Length (l.f.)	298	298	347	430
	Counter Area (s.f.)	3,000	3,000	3,500	4,300
	Ticket Queue (s.f.)	9,724	5,500	6,400	8,000
	Ticket Lobby (s.f.)	7,740	7,500	8,100	10,800
	Office Area (s.f.)	14,235	8,900	10,400	12,900
	Bag Make-up (s.f.)	17,900	17,900	20,900	25,800
Security Processing 	Stations	4	5	6	7
	Security Area (s.f.)	1,920	2,300	2,800	3,400
	Security Offices (s.f.)	300	500	600	700
Baggage Claim 	Devices	8	9	11	13
	Claim Display (l.f.)	934	1,137	1,329	1,576
	Claim Lobby (s.f.)	28,908	24,100	34,200	40,500
	Circulation (s.f.)	10,800	10,800	12,800	15,100
	Bag Input (s.f.)	9,300	9,300	11,000	13,000
	Baggage Service Offices (s.f.)	2,340	2,400	2,800	3,300
Concourse/Gates 	**MAJORS**				
	Gates	23	24	31	44
	Hold Room Area (s.f.)	49,000	45,500	60,600	85,600
	Circulation (s.f.)	23,600	22,900	30,800	43,700
	Airline Operations (s.f.)	15,515	15,100	20,200	28,700
	COMMUTER				
	Hold Room Area (s.f.)	7,653	1,900	2,200	3,000
	Airline Operations (s.f.)	7,170	700	800	1,200
Public Spaces 	Restrooms (s.f.)	14,000	14,000	28,200	31,300
	Concessions (s.f.)	75,441	78,090	91,972	112,920
Gross Terminal Area 	Program Area (s.f.)	579,000	584,000	700,500	867,000
	Gross Building Area (s.f.)	596,000	601,000	722,000	893,000

Exhibit VIII-3-A
TERMINAL FACILITY REQUIREMENTS

facilities requirements, it was assumed that the peaking pattern and the percentage of daily operations and passengers would continue through the forecast period (See **Table VIII-3-A**).

TABLE VIII-3-A
Aircraft Operation
Albuquerque International Sunport

Year	Current	Short Term	Inter-mediate	Long Range
MAJOR AIRLINE OPERATIONS				
Annual Operations (ANN)	77,056	91,000	104,800	143,600
Peak Month Operations (PK MO)	8.69%	8.68%	8.68%	8.70%
Average Day Peak Month (ADPM)	216	255	294	403
Combined Operations (PK HR)	22	25	29	37
PEAK HOUR OPERATIONS PROFILE				
AIR CARRIER				
Group C1 (B737-100,400)	17	15	4	3
Group C2 (B737-600-800)	4	9	23	33
Group C2 (B757-200-400)	0	1	1	2
Group D (B767, B767, MD 11)	0	0	0	0
Group V (B747-100-B747-400)	0	0	0	0
Subtotal	22	25	29	38
REGIONAL AIRLINES OPERATIONS				
Annual Operations (ANN)	22,694	22,800	22,800	23,200
Peak Month Operations (PK MO)	1,980	1,987	1,980	2,015
Average Day Peak Month (ADPM)	84	84	84	84
Combined Operations (PK HR)	12	12	12	12
Group I (Cessna) 9	2	2	2	2
Group II (B1900) 19	9	10	7	6
Group II (CRJ) 50	0	–	3	4
Subtotal	11	12	12	12
INTERNATIONAL AIRCRAFT OPERATIONS				
Annual Operations (ANN)	112	100	200	300
Peak Month Operations (PK MO)	17	15	30	45
Average Day Peak Month (ADPM)	1	1	2	3
Combined Operations (PK HR)	1	1	1	2
PEAK HOUR OPERATIONS PROFILE				
AIR CARRIER				
Group III (B737-100, 400)	1	0	0	0
Group III (B737-600-800)	0	1	0	1
Group IV (B767, B767, MD 11)	0	0	1	1
Group V (B747-100-B747-400)	0	0	0	0
Subtotal	1	1	1	2

Regional Carrier Departing And Arriving Peak Hour Operations

The six departing regional carrier peak hour operations totaled 103 seats which are 6.31% of the total daily seats and at a 75% load factor the 77 passengers are 6.12% of the total daily passengers. The five arriving major carrier peak hour operations totaled 84 seats which are 5.05% of the total daily seats and at an 80% load factor the 67 passengers are 5.32% of total daily passengers.

For the purpose of the facilities requirements, it was assumed that the peaking pattern, the percentage of the daily operations and passengers would continue through the short term planning horizon. Beyond the short term, it is assumed that the regional carriers would be flying a significant number of larger regional jets (RJ's) like the 50 seat CRJ currently used by Delta Express. The forecast indicates a consistent number of 12 Design Day hour operations through the forecast period (See **Table VIII-3-B**).

TABLE VIII-3-B
Aircraft Gate Position Requirements
Albuquerque International Sunport

Demand Level	Dwell (minutes	Current	Short Term	Inter-mediate	Long Range
Annual Aircraft Operations		77,056	91,000	104,800	143,600
Peak Month Operations		6,700	7,900	9,100	12,469
Average Day Peak Month		216	255	294	402
JET GATES					
PEAK HOUR OPERATIONS		22	25	29	39
Peak Hour Gate Utilization		26%	26%	26%	26%
Group III - B737-300	25	14	12	3	2
Group III - B737-600, A320	35	5	10	26	40
Group III+ - B757-200	45	0	2	2	3
Subtotal		19	24	31	44
REGIONAL CARRIER GATES					
PEAK HOUR OPERATIONS		11	12	12	12
Peak Hour Gate Utilization		60%	60%	60%	60%
Group I - Cessna	20	1	1	1	1
Group II - B1900	20	6	7	5	4
Group II - CRJ	25	0	0	2	3
Subtotal		7	8	8	8
Total Gates		26	32	39	52

AIRCRAFT GATE POSITION REQUIREMENTS

Jet Gates

The number of jet gates presumes that the number of carriers remains constant and that the preferential use of gates continues. Currently the average utilization is 26%. If some joint usage of gates was to occur, utilization could be increased requiring the addition of fewer gates (See **Table VIII-3-B**).

Commuter Gates

The regional jets, though small, are more compatible with major carrier aircraft than with the turbo prop regional aircraft. If there is a desire to board via jet bridges there are restrictions due to sill heights and the built-in stairs that may require special bridges and building considerations. Also, if commuter operations are split between bridged and ground-loaded positions, additional gates and operational spaces may be required. If the CRJ gates are to be served from the existing departure levels, special means of getting to the proper boarding level will be required. This may restrict use of these gates by other aircraft (See **Table VIII-3-B**).

TERMINAL FACILITIES REQUIREMENTS

Departures Facilities

Demand determined facilities associated with the processing of passengers and their baggage for departing flights include several means, modes, and locations. The number using each mode is listed in **Table VIII-3-C**. The locations are curbside check-in, ticket counter check-in, gate check-in and electronic or E-check-in. E-check-in at Albuquerque International Sunport is negligible, at present, but will increase over time. The facilities requirements for E-ticketing are an estimate to ensure that locations of E-ticketing areas are of appropriate size and locations are provided in the plan alternatives (See **Table VIII-3-D**).

Passenger Security Screening

The current passenger screening has adequate processing capacity. However, the arrangement of the stations and the queuing compromises the capacity in-peak demand periods. The queuing should be redesigned to allow for more than two queues. One per station is desirable. The addition of stations to meet future demand will be very difficult at this position without an expansion of the building (See **Table VIII-3-D**).

Baggage Security Screening

Checked baggage screening currently is not required but will be required within the time frame of this Master Plan. The current operations with individual baggage make-up space will not accommodate down stream automated scanning of checked bags. A shared baggage room and baggage sorting system would be required. The current CTX 5000 machines are extremely bulky, slow and heavy to operate. To install them up stream of check-in would require a structured expansion of the lobby in probably three spaces: two to the west of the center of the building and one to the east. The space available for the machines would require expansion at the departures level into the open space between the building and the drives structure (See **Table VIII-3-D**).

TABLE VIII-3-C
Domestic Demand Base Passenger and Aircraft Operations
Albuquerque International Sunport

	Current	Short Term	Inter-mediate	Long Range
PASSENGER DEMAND				
Annual Enpl.+Depl. Pass.	6,276,452	7,800,000	9,400,000	14,200,000
Peak Month Passengers	599,538	746,139	899,194	1,108,400
Average Day Peak Month	19,340	24,069	29,006	35,755
Combined Peak Hour	2,091	2,530	2,959	3,509
PEAK HOUR PASSENGERS				
Departing Peak Hour	56.63%	56.63%	56.63%	56.63%
Major Airlines	1,078	1,314	1,531	2,082
Regional Carriers	107	130	151	206
Subtotal	1,184	1,444	1,682	2,288
Arriving Peak Hour	55.95%	55.95%	55.95%	55.95%
Major Airlines	1,065	1,298	1,512	2,057
Regional Carriers	105	128	150	203
Subtotal	1,170	1,416	1,655	1,963
PEAK HOUR DOMESTIC PROFILE				
Originating				
Curbside	178	217	252	343
Counter Check-In	711	722	841	1,030
Gate Check-In	296	289	252	572
E-Tickets Check-In	0	217	336	343
Subtotal	1,184	1,444	1,682	2,288
Terminating				
Claiming	819	991	1,159	1,374
Bypass Claim	351	425	497	589
Subtotal	1,170	1,416	1,655	1,963
Transfer				
Online	190	231	269	366
Offline	47	58	67	92
Subtotal	237	289	336	458
Wellwishers	355	347	404	549
Greeters	351	649	756	1,028

TABLE VIII-3-D Departure Processing Facilities Requirements (Ticketing and Security) Albuquerque International Sunport						
	Demand Level	TDUF 85%	Current	Short Term	Inter-mediate	Long Range
Facility Title	**Units**	**Required Facilities**	**Required Facilities**	**Required Facilities**	**Required Facilities**	**Required Facilities**
DEPARTURE PROCESSING						
Ticket Coun. (Pk.Hr. Demand)	Passenger	721	711	722	841	1,030
Agent Positions	#	41	54	54	63	78
Agent Positions (Vacant)	#	13	13	0	-9	-2
Frontage	Ft.	286	298	298	347	430
Area	$Ft.^2$	2,856	2,977	2,977	3,473	4,300
Vacant	$Ft.^2$	683	0	562	-431	-1,257
E-Check-In (Pk.Hr. Demand)	Passenger	0		217	336	343
Number of terminals	#	0	0	32	49	50
Station area including work space	$Ft.^2$	0	0	478	742	757
Baggage Ck-In positions	#	0	0	4	6	6
Ticket Lobby (Pk.Hr. Demand)	Pax.+WW	765	0	791	922	1,139
Queuing Area (incl. circul.)	$Ft.^2$	5,327	7,740	5,513	6,422	7,938
Outbound Baggage	$Ft.^2$	17,136	17,861	17,861	20,837	25,799
Airline Ticket Office	$Ft.^2$	8,568	8,930	8,930	10,419	12,899
Vacant Airline Ticket Ofc.	$Ft.^2$	3,578	3,578			
Ticket Lobby Circulation	$Ft.^2$	8,295	7,442	7,442	8,682	10,749
Security Station (Pk.Hr. Demand)	Pax.+Vis.	1,530	1,422	1,743	2,030	2,761
Number of Stations	#	4	4	5	6	7
Area of Stations	$Ft.^2$	1,440	1,440	1,694	2,118	2,541
Security Queuing	$Ft.^2$	480	480	565	706	847
Security Offices	$Ft.^2$	300	300	471	588	706
Subtotal		48,662	46,869	46,492	53,556	65,279
TDUF: Terminal Design Utility Factor.						

Arrivals Facilities

The passenger arrivals process consists primarily of those facilities and functions that provide means to reunite the arriving passenger with items that were checked at the origin of the flight. The existing claim devices are large enough to service the existing size of aircrafts. However, not the frequency of use required by the high volume carriers. The Aviation Department has initiated a program to expand the claim areas by relocating or removing claim railings to maximize the area for people. The requirements for devices estimated in the facilities requirements assume an increase in frontage of twenty feet from 116 lineal feet to 136 lineal feet. In addition to the claim devices and the claiming space around them there are provisions for items that are too large to fit onto the conveyors serving the devices (See **Table VIII-3-E**).

TABLE VIII-3-E
Arrivals Processing Facility (Baggage Claim)
Albuquerque International Sunport

	Demand Level	TDUF 85%	Current	Short Term	Inter-mediate	Long Range
Facility Title	**Units**	**Required Facilities**	**Required Facilities**	**Required Facilities**	**Required Facilities**	**Required Facilities**
ARRIVALS PROCESSING						
Baggage Claim:	Bags	1,101	1,059	1,288	1,506	1,787
Devices	#	8	9	9.0	11	13
Dev. Front'g	Ft.	826	934	1,137	1,329	1,576
Device area	Ft.^{2}	5,215	5,215	5,866	6,931	8,220
Claim Lobby	Pax.+Gr.	964	921	1,121	1,310	1,580
Area Incl. Devices	Ft.^{2}	21,922	28,908	24,096	34,154	40,506
Public Lobby Circulation	Ft.^{2}	4,512	10,800	10,800	12,760	15,133
Inbound Baggage	Ft.^{2}	8,264	9,297	9,297	10,984	13,027
Baggage Service Offices	Ft.^{2}	2,080	2,340	2,340	2,765	3,279
Total	Ft.^{2}	41,992	56,560	52,400	67,594	80,164

Ground Transportation

All interfaces of ground transportation occur at the arrivals curb or at the island to the north of the primary curb. These interfaces are not addressed in the terminal facilities requirements.

Holdroom And Concourse Facilities

The number of gates required servicing the combined peak hour operations and the mix of aircraft sizes during the peak hour determines holdroom capacity requirements. The holdrooms are sized to provide adequate space and area for the largest group of aircraft that can use each gate. The requirement for gate podiums and check-in space are based on providing one full bay for each function at each individual gate (See **Table VIII-3-F**).

The width of the concourse circulation depends upon the volume of traffic and the arrangement of the activities adjacent to it. The existing concourses were sized to accommodate the traffic anticipated for the planned build-out. Gates have been added at Concourse A and a planned expansion of Concourse B is possible. While the width of the concourses, as planned, are adequate to serve the anticipated volume of traffic, some control of greeters is necessary to maintain a high level of gate check-in (See **Table VIII-3-F**).

Concessions

The size and number of concessions within the main terminal is adequate. At the outboard ends of the concourses, especially Concourse B, there is a short fall in both food service and retail. The Aviation Department has engaged a consultant to provide a detailed planning study for the location, size and type of needed concessions. Approximately 5,000 square feet of retail concessions will be added and some existing spaces will be redesign and reconfigured (See **Table VIII-3-G**).

TABLE VIII-3-F
Holdroom and Concourse Facility Requirements
Albuquerque International Sunport

	Demand Level	TDUF 85%	Current	Short Term	Inter-mediate	Long Range
Facility Title	**Units**	**Required Facilities**	**Required Facilities**	**Required Facilities**	**Required Facilities**	**Required Facilities**
REGIONAL CARRIER FACILITIES	Pax.+WW	260	169	169	197	268
Passenger Holdrooms	Ft.^{2}	2,810	2810	1,901	2,214	3,012
Security	Ft.^{2}	720	720	720	720	720
Airline Operations	Ft.^{2}	1,059	1059	716	834	1,135
MAJOR CARRIER FACILITIES						
(Pk.Hr. Demand)	Pax.	1,211	2,708	1,418	1,652	2,247
(Pk.Hr. Demand)	A.C. Ops	22	22	25	29	39
Number of Gates	#	19	32	24	31	44
Passenger Hold Rooms	Ft.^{2}	44,298	44,298	42,968	57,685	81,837
Subtotal	Ft.^{2}	48,887	48,887	45,589	60,619	85,569
Clubrooms	Ft.^{2}	2,000	2,444	2,279	3,031	4,278
Concourse Circulation	Ft.^{2}	23,633	23,633	22,924	30,775	43,660
Airline Operations	Ft.^{2}	15,504	15,504	15,039	20,190	28,643
Subtotal		41,137	41,582	40,242	53,996	76,581
PUBLIC SPACES						
(Pk.Hr. Demand)	Pax.	2,892	2,642	3,526	4,118	5,086
Rest Rooms	Ft.^{2}	7,341	14,000	28,156	28,156	31,333
Public Convenience Concessions	Ft.^{2}	4,569	4,569	4,569	7,500	15,000
Subtotal	Ft.^{2}	11,910	11,910	32,725	35,656	46,333
Total	Ft.^{2}	101,935	109,038	119,272	151,105	209,618

SUPPORT FACILITIES

Mechanical, Electrical, And Telephone

The requirement for these types of spaces is estimated based on the current percentage of 10% of the total terminal space. The assumption is that any expansion to the existing terminal will require added systems (See **Table VIII-3-G**).

Building Support

These include maintenance, service and storage spaces that are estimated at the current percentage of 1% of the total terminal space (See **Table VIII-3-G**).

TABLE VIII-3-G Terminal Support Facility Albuquerque International Sunport						
	Demand Level	TDUF 85%	Current	Short Term	Inter-mediate	Long Range
Facility Title	Units	Required Facilities	Required Facilities	Required Facilities	Required Facilities	Required Facilities
CONCESSIONS (A.D.P.M. Demand)	Pax.+Vis.	25,128	19,340	31,290	37,708	46,481
Food and Beverage						
Coffeeshop/Dining Room/Kitchen	Ft.^{2}	15,705	18,425	19,556	23,568	29,051
Food Court	Ft.^{2}	10,667	10,667	10,667	16,001	24,001
Snack Shop(s)	Ft.^{2}	4,811	4,811	2,933	3,535	4,358
Cocktail Lounge(s)	Ft.^{2}	5,000	5,000	4,889	5,892	7,263
Misc. Food Shop(s)	Ft.^{2}	13,951	13,951	4,889	5,892	7,263
Gift and News and Retail		7,125	8,625	1,500	1,500	1,500
Specialty Retail Entertainment	Ft.^{2}	7,148	2,148	8,000	8,500	9,000
Public Convenience						
Concessions	Ft.^{2}	2,925	2,925	2,925	2,925	2,925
Barber Shop	Ft.^{2}	395	395	395	395	395
Bank	Ft.^{2}	1,300	1,300	1,300	1,300	1,300
ATM Machine	Ft.^{2}	336	336	336	504	600
Business Center	Ft.^{2}			13,600	13,600	15,000
Subtotal	Ft.^{2}	69,363	68,583	70,991	83,611	102,655
Concession Support Space	Ft.^{2}	4,300	6,858	7,099	8,361	10,265
Subtotal	Ft.^{2}	73,663	75,441	78,090	91,972	112,920
Mechanical/Electrical/ Telephone	Ft.^{2}	71,126	71,126	63,253	73,966	87,721
Building Support	Ft.^{2}	5,952	11,140	12,651	14,793	17,544
Airport Admin/Ops Offices	Ft.^{2}	47,720	90,050	50,603	59,173	70,177
Teg Drive and Tunnel	Ft.^{2}	9,151	9,151	9,704	11,347	13,457
Misc. Space	Ft.^{2}	11,930	10,120	12,651	14,793	17,544
Vertical Circulation	Ft.^{2}	10,120	10,120	12,243	14,316	16,979
General Circulation	Ft.^{2}	90,068	90,068	126,507	147,932	175,443
Subtotal	Ft.^{2}	246,067	291,775	287,611	336,320	398,866
___ AREAS	Ft.^{2}	512,319	579,683	583,864	700,547	866,847
___ AREAS		527,688	596,000	601,380	721,563	892,852

Miscellaneous Space

These spaces include structure walls, chases and shaft, etc. These spaces are estimated based on the current percentage of 2% of the total terminal gross area. This percentage was determined by dividing the gross area minus the programmed area by the gross area of the terminal (See **Table VIII-3-G**).

Airport Administrative And Operations Offices

The existing office space is about 8% of the total. Portions of this space at the north end are vacant and existing space is quite generous. The future space for the airport administrative and operations offices has been estimated at 5% of the total terminal area (See **Table VIII-3-G**).

General Circulation

General circulation is circulation that is not programmed as support to a particular processing function, such as, ticket lobby or baggage claim circulation. It is circulation that is generally required by the plan layout, such as, the main central circulation of the existing terminal. This space has been estimated at 20% of the total terminal. This is the same percentage as in the existing terminal.

Summary Of Terminal Facilities Requirements

The existing terminal area is 596,500 square feet of gross area. The Demand Capacity Evaluation indicated that at 85% utilization the current building could accommodate 7,284,000 total annual enplaned and deplaned passengers. Utilization of 85% is a trigger that is intended to indicate when the Level of Service is beginning to drop below the desired Level of Service-C during peak periods of the Average Day Peak Month (ADPM). It is also an indicator to initiate a design and construction of new facilities. At 7.8 million total annual passengers, short term, a single terminal of 601,380 square feet will be required. An increase of 71,545 square feet to the existing terminal. At 9.4 million total annual passengers, intermediate term, a single terminal of 721,563 square feet will be required. An increase of 116,948 square feet to the existing terminal. At 14.2 million total annual passengers, long range, a single terminal of 892,852 square feet will be required. An increase of 283,248 square feet to the existing terminal (See **Table VIII-3-H**).

The summary reflects the continued expansion of a single consolidated terminal facility. If a second separate terminal is constructed, then the Facilities Requirements could be 20% to 40% larger due to plan layout and duplication of required facilities (i.e. general circulation, concessions, etc). If alternatives are developed that include two or more terminal facilities, then it would be appropriate to revise the Facilities Requirements to reflect this condition.

FEDERAL INSPECTION FACILITIES

F.I.S Processing Facilities

Although there are occasional international charters flights at ABQ the development of that market would require new facilities as those now existing ate inadequate in size and the arrangement does not reflect current passenger processing procedures. The facilities requirements presented in **Table VIII–3–J** represent the requirement. To accommodate A group III size aircraft at the short term, a group V size aircraft at the intermediate term and A group II and IV or a single group V aircraft at long range. This program may be optimistic, but it is prudent to identify and plan for alternatives to satisfy this potential market.

TABLE VIII-3-H
Terminal Facilities Requirement Summary
Albuquerque International Sunport

Functional Areas Categories	2000 Existing	Facilities at 85% TDUF Required	Short Term	Inter-mediate	Long Range
Annual Passengers	6,276,452	7,384,000	7,800,000	9,400,000	1,420,000
Mech/Services/ Circulation ($Ft.^2$)	281,655	246,067	287,611	336,320	398,866
Gate Facilities ($Ft.^2$)	122,926	101,935	119,272	151,105	209,618
Departure Processing ($Ft.^2$)	68,002	48,662	46,492	53,556	65,279
Arrivals Processing ($Ft.^2$)	57,499	41,992	52,400	67,594	80,164
Concessions ($Ft.^2$)	53,517	73,663	78,090	91,972	112,920
Terminal Program ($Ft.^2$)	583,599	512,319	583,864	700,547	866,847
Increase ($Ft.^2$)		-71,280	71,545	116,948	283,248
Increase (%)		-12%	12%	20%	49%
Terminal Gross ($Ft.^2$)	596,000	527,688	601,380	721,563	892,852

International Gates

No international gates have been programmed. If international traffic is developed it will require one or two gate positions at a stand-alone facility, or swing gates at the terminal that can be isolated from domestic users to serve inbound international passengers. International outbound traffic could use domestic gates.

TABLE VIII-3-J
Federal Inspection Services Facilities Requirements
Albuquerque International Sunport

	Demand Level	Short Term	Inter-mediate	Long Range
Facility Title	**Units**	**Required Facilities**	**Required Facilities**	**Required Facilities**
INTERNATIONAL ARRIVALS PROCESSING (FIS) Operations-Aircraft Group Designation		1-Group III	1-Group IV	2-Group III+IV
Immigrations (INS) (Pk.Hr. Demand)	Pax	150	275	525
Agent Positions	#	4	6	10
INS Inspection Area	$Ft.^2$	224	357	624
INS Offices & Support	$Ft.^2$	750	900	1,500
PHS Office & Support	$Ft.^2$	510	510	510
Immigrations Queuing	$Ft.^2$	1,040	1,540	2,540
Subtotal		2,524	3,307	5,174
Baggage Claim: (Int'l)	Bags	263	481	919
Devices (Int'l)	#	1	1	2
Dev. Front'g	$Ft.^2$	140	240	380
Claim Lobby (Pk.Hr. Demand)	Pax.	275	400	400
Area Including Devices	$Ft.^2$	9,000	9,000	18,000
Inbound Baggage Area	$Ft.^2$	1,500	1,500	3,000
Subtotal		10,500	10,500	21,000
Customs/Agriculture (Pk.Hr. Demand)	Pax.	45	83	158
Agent Positions	#	3	5	9
USCS/APHIS Processing	$Ft.^2$	273	430.5	745.5
USCS Office & Support	$Ft.^2$	350	400	950
APHIS Office & Support	$Ft.^2$	750	900	1,500
Queuing	$Ft.^2$	910	1,435	2,485
Green Lane	$Ft.^2$	800	800	800
Subtotal		3,083	3,966	6,481
Circulation & Misc. Space				
Toilets	$Ft.^2$	96	150	250
General Circulation	$Ft.^2$	5,000	6,500	8,000
Subtotal		5,096	6,650	8,250
Total		21,203	24,423	40,905

Note: Total does not include holdrooms or secure corridor.

Chapter Eight

Passenger Terminal Facilities

Section Four

ALTERNATIVES

Chapter Eight
Passenger Terminal Facilities

Section Four
ALTERNATIVES

The purpose of this work phase is to identify and evaluate alternative terminal area development strategies for Albuquerque International Sunport and select a preferred strategy to pursue. The analysis is conducted for the airside and landside of the airport. The terminal area airside analysis is limited to the restrictive constraints imposed by the runway and taxiway systems and the utilization of the aircraft apron. The landside analysis includes the passenger terminal facilities, terminal curbs, public parking, public ground transportation staging, and terminal roadways. Both initial and long-term strategies will be developed, including those for the optimization of existing terminal facilities to identify potential modest incremental expansion to meet near term demand. In addition to identifying long-term development strategies for the existing terminal area, alternative sites for a replacement terminal area will be considered and measured against development criteria.

For the airside analysis, the focus is on the efficiency of utilization of the aircraft apron as it relates to the terminal, size and type of aircraft it serves, and the needs of the airlines operating the aircraft. In addition, aircraft movement in and out of gates, servicing of the aircraft, and passenger boarding methods are considered.

The focus of the landside analysis is the level of service afforded passengers, efficiency of airport operations, efficient use of capital resources, and operational flexibility. Together these optimize the utilization of terminal area facilities. The landside analysis also considers how development strategies relate to operations sectors (domestic origin and destination, connecting, international flights) of the airport, and the terminal facilities needs of the airlines. The landside analysis will be segregated into terminal, landside, and site/support as the study proceeds.

This work phase draws on information developed in the previous work phases of the Master Plan. The Inventory, Demand/Capacity, and Facilities Requirements phases set the physical context and criteria for identification of alternatives. The Goals and Objectives serve to assist in the identification of alternatives and their evaluation to determine the preferred strategy.

ALTERNATIVES APPROACH AND SUMMARY

The study approach taken to determine the preferred terminal area development plan for Albuquerque International Sunport utilizes the same planning methodologies of previous work phases. The approach relies on regularly scheduled interactive exchange of information and ideas and clear communication between the consultant study team, airport staff, master plan advisory committees, and the community. The approach incorporates findings from previous phases, analyzes them to identify opportunities and constraints, identifies, depicts, and evaluates conceptual alternatives, refines promising alternatives, and determines the preferred development direction or strategy. The framework of the approach follows.

DEVELOPMENT ISSUES, GOALS, AND STRATEGIES

Key airport development issues were derived from the initial input by participating airport staff, master plan advisory committees, and the community. The consultant study team reviewed the issues, noted those relevant to this phase of work, and identified goals and strategies that will be considered during the identification of development alternatives.

SITE ALTERNATIVES AND SITE ANALYSIS

Constraints and opportunities of the existing terminal area site were identified prior to identification of airport-wide site alternatives. Terminal area site alternatives included sites to the north, south, east, and west of the runway system. Through evaluative discussions, the existing terminal area site (Site E1), including land adjacent to the east and north (Site A1), and a new site for a replacement terminal area in the vicinity of the existing General Aviation (GA) area (Site A2), were recommended for further study.

INITIAL TERMINAL AREA ALTERNATIVES

Terminal area (aircraft apron, terminal facilities, and roadways, curbs, and parking) development alternatives were identified for evaluation. One group of alternatives is conceptually organized to provide a centralized replacement terminal with airside concourses north of the existing terminal, growing into this configuration incrementally over time. The second group is conceptually organized to provide centralized replacement terminal area facilities and regional access in the GA area. The conceptual alternatives are indicated by block diagramming format representative of facility requirements in the plan as well as a vertical relationship to the site. This was necessary due to topographical conditions at the airport. The method also enables the evaluation to focus on which alternatives strategically address the objectives of the airport. In addition to this approach, development scenarios addressing other than the three Planning Activity Levels (PALs) were discussed. The scenarios discussed included impacts on the airport from consolidation of major air carriers through corporate merger, re-definition of the regional air carrier market, development of an international air carrier market, and changes in the origin and destination character of the airport due to an increase of air carrier "hub activity".

EVALUATION TO REDUCE ALTERNATIVES

Evaluation criteria were developed by the study team to assess the alternatives. The criteria were based on airport goals and strategies for development. They were used during discussions describing the characteristics of individual alternatives to assess merits and deficiencies. There were also several key issues and determinations that were identified at the outset that guided discussions. They were the recommendation to close Runway 17-35 to increase overall airfield capacity and safety, the issue of terminal area roadway complexity or the need for additional regional access to the airport, and the issue related to implementation phasing, costs, incremental facility growth, and re-use of vacated existing facilities. The five initial terminal alternatives and two airside concourse alternatives were reduced to two alternatives, each with two variations related to the location of the terminal building for further development and evaluation. The alternatives selected focus development in the existing terminal area of the airport.

TERMINAL AREA ISSUES, GOALS, AND DEVELOPMENT STRATEGIES

The following development strategies are relevant to the identification of alternatives for the terminal area of Albuquerque International Sunport. They support the goals for terminal area development that were derived from issues identified during the initial consultant team working sessions for the Alternatives Phase.

ISSUES

- Size of existing aircraft parking positions is too small – increase design aircraft to new generation B737-700 and A320 size aircraft.
- Airfield/Apron – locate at existing grade a priority (airport is built on a mesa; topography falls off rapidly).
- Curb capacity, especially at the arrivals curb, is inadequate – control dwell times, opportunities to increase capacity.
- Prolong the effective use of existing terminal facilities – optimize functions and take advantage of modest incremental facility expansion in order to provide short-term capacity.
- Plan for reuse of the existing terminal – convert use or tear down and rebuild.
- Reuse of existing terminal space – space utilization in existing terminal if a new second terminal is built.
- Impacts of terminal area development on the airfield – aircraft circulation/proximity to runway system, etc.
- Airline consolidation – impact on terminal space demand.
- Centralized baggage security screening – plan provisions for facilities in the future.
- Support facilities proximity to terminal area – employee parking, airfreight, flight kitchen.
- Preservation of the Old Terminal Building – reuse opportunities, accessibility.
- Employee working environment – transportation, parking, workspace.
- Noise – terminal area generated.
- Airport access – terminal roads are a priority as are connections to the regional highway system.
- Potential Regional Light Rail Transit – north alignment, possible corridor on Yale and University.
- Air quality vs. traffic densities – physical configuration of terminal facilities to enable air flow in and around terminal curbs and utilization of shuttles or HOVs.

GOALS

- Plan concepts at appropriate Level of Service (LOS) goals – define LOS criteria.
- Provide for efficient airline turn time – aircraft parking layout, taxi distances.
- Provide for operational flexibility – consolidated vs. disbursed functions.

- Provide for efficiency of terminal area operations – distances between functions, configuration of passenger processing functions, tenant goals, airport goals.

- Improve aircraft movements - dual taxiway/taxilane access to gates.

- Moderate general costs – order of magnitude assessment including constructability issues for terminal area concepts.

- Include consideration of operational costs – order of magnitude assessment based on efficiency and flexibility of the plan.

- Provide opportunities to maximize revenue - non-airline revenue opportunities, configuration and relationship of revenue facilities to passenger processing facilities.

- Assess implementation feasibility of alternatives – phasing, staging, sequencing.

- Provide expansion capability – beyond plan considerations.

- Provide for incremental development – optimize the function and final development of existing terminal facilities to prolong its life as the terminal area grows into new facilities.

- Optimize the passenger experience and enjoyment of Albuquerque International Sunport - throughout all phases of expansion as well as for completed development.

STRATEGIES

General

Look comprehensively at the relationships of all terminal area elements such as aircraft aprons, terminal facilities, and curbs, roads, and parking in order to realize efficient operation of all elements of the airport and utilization of land resources.

- Review alternatives that principally alter the terminal area layout for their ability to allow logical expansion of facilities to meet future demand.

- Develop alternatives that allow airport operations to continue while improvements are implemented without drastically compromising capacity, public safety, airline operations, or the level of service to the public.

- Consider order of magnitude costs for improvements relative to their short, mid-, or long-term level of service and life expectancy; incremental capital improvements should be consistent with the long-range plan.

- Identify alternatives that enable growth consistent with the facilities program and base the optimal relationships between program elements on future flexibility of their use.

- Respect the need for improvements within the terminal area that benefit or respond to the needs of the employee work environment.

- Identify an initial phase of modest development strategies for the optimization of the functional capacity of the existing airport terminal area.

Airside

- Develop alternatives that enable flexibility of aircraft parking at gates and movement to and from the parking apron.

- Develop alternatives that increase the size of aircraft gates and allow for flexibility of use by all airlines.

- Develop alternatives that prioritize use of level topography for aircraft movement and parking.

Terminal

- Develop alternatives that can include swing (flexible/shared use) gates between domestic and international service sectors.

- Develop alternatives that can grow from existing conditions into a consolidated terminal facilities configuration.

- Develop alternatives that provide for the security and safety of passengers and their baggage at all times.

- Develop alternatives that include consideration of circulation and access to facilities within the terminal area for baggage tugs, and service vehicle access to the terminal.

- Develop alternatives that have a logical and understandable relationship to existing terminal facilities to enable clarity of the airport layout for users.

- Develop alternatives that maximize logical opportunities for concessions consistent with passenger wayfinding, airline operations, and overall terminal efficiency.

Landside

Identify alternatives that maximize the amount of arrivals and departures terminal curb frontage.

- Incorporate facilities planning principles that enable air movement in and around vehicles in order to improve air quality.

- Identify alternatives for the interface of terminal facilities with the potential Regional Light Rail Transit.

- Develop alternatives for access roads that provide direct paths within the terminal area and minimize unnecessary circulation, such as driving past terminal frontage that is not the desired destination.

- Develop alternatives that offer easy access to short and long-term public parking, rental cars, and ground transportation.

DESCRIPTION AND ASSESSMENT OF TERMINAL AREA SITE ALTERNATIVES

As part of the Alternatives Phase of study, in addition to studying the potential for growth within the existing terminal area, sites for a replacement terminal area were identified in order to expand the range of consideration for facilities development. The sites identified were also viewed as potential locations for additional airside, or aircraft gate development, in support of terminal expansion possibilities within the existing terminal area. The study team also discussed the issues, or criteria for evaluation, to initially assess the alternative sites to determine which held the best potential for further study. The sites are located in different relationships to the airfield and are diverse in topographical nature. They are depicted on **Exhibit VIII-4-A**.

The finding of the order of magnitude initial evaluation is that Sites A3, A4, and A5 would not be considered further for reasons noted in the following evaluation. Site A2 would be tested as appropriate for a replacement terminal area for the airport and as a site for a satellite concourse connected to the existing terminal area via a peoplemover system. The group agreed that the displaced GA activity and facilities would be relocated to the existing terminal area aircraft apron if Site A2 were developed as a replacement terminal area, and to Site A1 if A2 were developed as a satellite airside. Site E1 would absorb Site A1 and be tested for its potential to provide adequate facilities in the future. Site A6 would be tested as a potential site for locating an airside that would provide additional long-range gate capacity to the combined E1/A1 site.

SITE ALTERNATIVES ISSUES

- Runway 17-35 – Alternative requires closure of runway.
- Airfield Circulation – Proximity to runway system and efficiency of aircraft circulation.
- Airside/Landside Envelope Restrictions – Feasibility of development of building structures.
- Regional Access – Proximity and access to existing interchanges.
- Landside Circulation – Efficiency of on-airport vehicle circulation system.
- Regional Mass Transit – Relationship to potential light rail alignment.
- Site Expansion – Future capacity and contiguous expansion of the site.
- Availability/Acquisition of Property – Process to acquire more property.
- Relocations – Definitive strategy identified.
- Topography – Viability based on impacts of existing grades.

- Infrastructure – Available infrastructure improvements to meet demand of terminal area.

- Implementation – Schedule and constructability.

- Cost – Initial, by phase, long-term, and operating.

SITE E1

Description – This site is the existing terminal area including land to the north. The site's boundary to the north is the property line of the airport; the terminal exit drives to the east; Taxiway B to the south; and Yale Boulevard (not including the hotel site) to the west. The site is generally large enough to accept some growth of the airport but it is not sufficient in area to provide for more than modest expansion of aircraft gates, terminal facilities, parking, and terminal roads. The site becomes topographically difficult as the land falls away to the northwest.

Assessment –

- Runway 17-35 – This site does not require closure of the runway.

- Airfield Circulation – The site has very good proximity to runway system and efficient aircraft circulation.

- Airside/Landside Envelope Restrictions – The site does not have building structures envelope issues.

- Regional Access – Proximity and access to interchanges on I-25 exists with the current roadways.

- Landside Circulation – The system of roadways is stressed on approach to the terminal drives but capacity and level of service can be improved with further development.

- Regional Mass-Transit – The site would be accessible to the potential light rail alignment.

- Site Expansion – The site has limited future capacity and opportunity for contiguous expansion of site area without absorbing adjacent airport land to the east or acquiring additional land to the north.

- Availability/Acquisition of Property – The site is within the airport boundary.

- Relocations – Additions and reconstructions of existing building facilities and roadway systems will be required in order to expand capacity on this site.

- Topography – Topography conditions to the north of the existing exit roadway loop will become a development issue for terminal area concepts requiring use of that land.

- Infrastructure – Infrastructure is available but would need to be upgraded and expanded as the terminal area grows.

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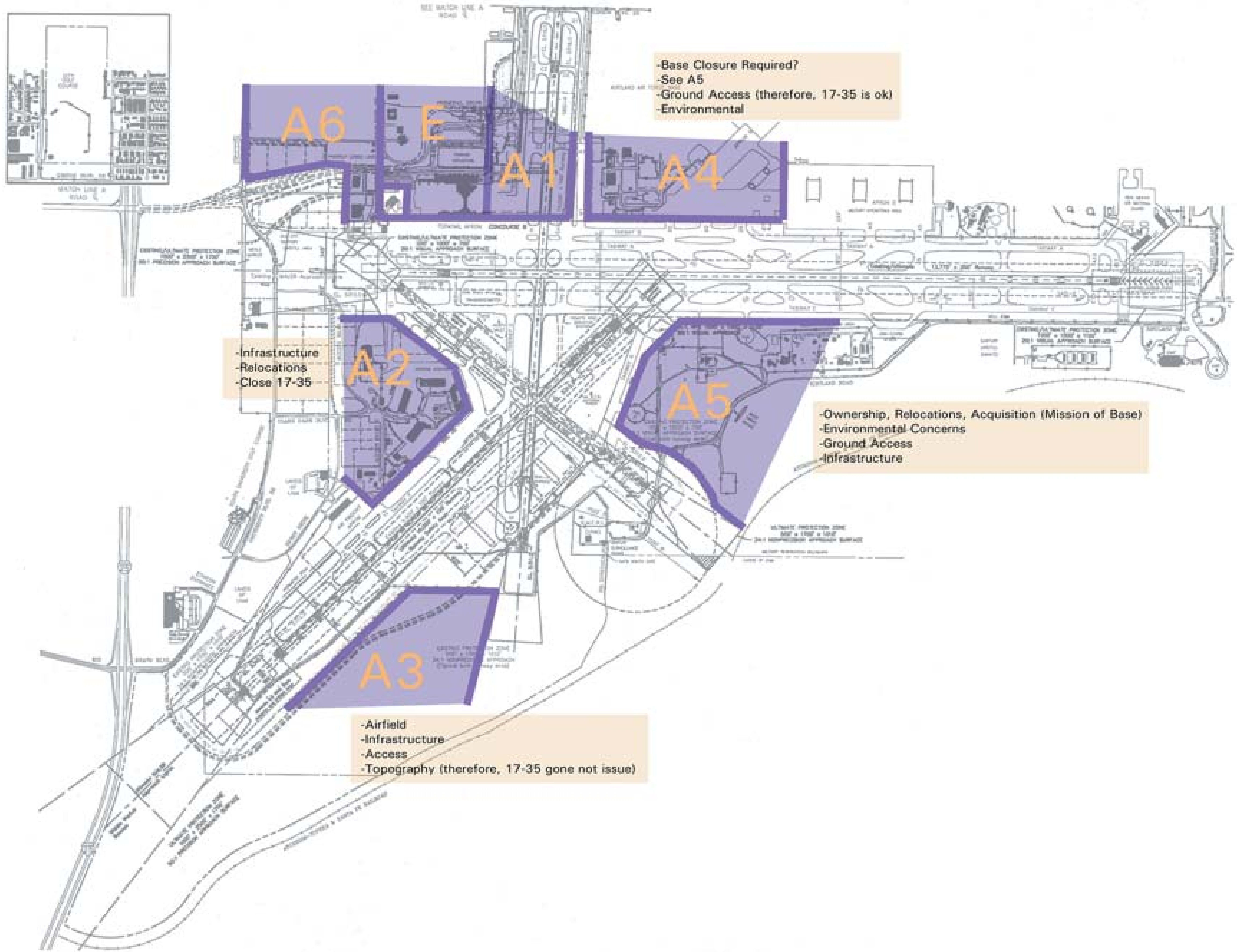


Exhibit VIII-4-A
TERMINAL SITE ALTERNATIVES

- Implementation – The constrained nature of the site, in and about existing facilities that would need to be kept operational, would increase the duration of the schedule. The site would have adequate accessibility from the north but staging areas for construction may be an issue.

SITE A1

Description – This site is the land due east of the existing terminal area that is currently accessed by Runway 17-35 and its associated taxiways with an easterly boundary of Kirtland Air Force Base; northerly boundary of Gibson Boulevard S.E.; and southerly boundary of Taxiway B. The site is generally large enough to provide for a second unit terminal development including parking and roads if Runway 17-35 were closed. The site is topographically similar to the existing terminal area; flat airside with a terminal area that falls away from the airside.

Assessment –

- Runway 17-35 – This site requires closure of the runway to develop a new terminal and airside facility. An “airside only” facility to provide additional gate capacity could be developed for small narrow-body aircraft but it would require substantial topographical adjustments along the west side of the site.

- Airfield Circulation – Proximity to the runway system is very good from the south end of the site and less so from the north. The efficiency of aircraft movements will depend on the layout providing dual taxiway/ taxilane circulation.

- Airside/Landside Envelope Restrictions – Airfield sloped surface envelope restrictions will constrain aircraft layout at gates and building structures unless Runway 17-35 is closed.

- Regional Access – Proximity and access to interchanges on I-25 exists with the current roadway system that could be extended to serve this site.

- Landside Circulation – The system of existing terminal area roadways could be incorporated into a new roadway system to serve both the existing terminal area and new development on this site. The system would likely be complex in number of grade changes, have less clarity of use than simple terminal area roadway systems, and be challenging to implement.

- Regional Mass Transit – The site would be accessible at the north to the possible light rail alignment.

- Site Expansion – Expansion of the site would require acquisition of land from Kirtland Air Force Base and/or acquisition of land to the north of the existing terminal area.

- Availability/Acquisition of Property – The site is within the existing airport boundaries.

- Relocations – Minimal developed facilities currently occupy the site and their uses have previously been relocated.

- Topography – The site is generally level in the vicinity of the airfield and topography drops away rapidly to the west of Taxiway C.

- Infrastructure – The site would require new infrastructure. Extensions of services may be possible if they are available at the adjacent existing terminal area.

- Implementation – Site development would increase the duration of the schedule; the site would have adequate accessibility and staging areas for construction.

SITE A2

Description – This site is the land that is the current general aviation area. The site's boundary on the northeast is Taxiway G, on the southeast is Taxiway F, and on the westerly side is Access Road B and Spirit Drive. The site is generally large enough to provide for a replacement terminal area of modest scale and with modest growth potential. The site is topographically similar to the existing terminal area; flat airside with a terminal area that falls away from the airside toward the west, falling rapidly beyond Spirit Drive.

Assessment –

- Runway 17-35 – Development of this site would not require closure of the runway.

- Airfield Circulation – This site has good proximity to the runway system and efficient aircraft circulation can be provided to and from aircraft gates.

- Airside/Landside Envelope Restrictions – Airfield sloped surface envelope restrictions do impact flexibility in layout of airside structures and aircraft parking though good layouts can be achieved between the runways and major topographical changes at the western side of the site.

- Regional Access – The site is proximate to an existing interchange of I-25; direct connection to the interstate could be implemented.

- Landside Circulation – The opportunities presented by planning a new development would control the efficiency of on-airport terminal area circulation. The topography of this site should be used as an advantage in the development of multiple level terminal and roadway facilities. There may be conflicts with existing road and utilities infrastructure that would need to be resolved such as re-routing, abandonment, or re-use of existing utilities corridors.

- Regional Mass Transit – This site is not proximate to the potential light rail alignment.

- Site Expansion – The site has limited future capacity and opportunity for contiguous expansion of site area except to the west where topography changes radically.

- Availability/Acquisition of Property – The site is within the airport boundary.

- Relocations – This site is the existing general aviation (GA) development at the airport. The GA activity would have to be relocated elsewhere to make this site available for terminal area development.

- Topography – The site is generally level in the vicinity of the airfield and GA facilities but topography drops away rapidly to the west beyond Access Road C.

- Infrastructure – The site would require new infrastructure; extensions of services from the GA area may be possible if they are available and have adequate capacity. Pavement at the GA apron would require redevelopment to accommodate larger aircraft.

- Implementation – Site development would increase the duration of the schedule; the site would have adequate accessibility and staging areas for construction.

SITE A3

Description – This site is the land that is in the southwest corner of the airport. The site's boundary on the north/ northeast is the Runway Protection Zone (RPZ) off the 35 end of Runway 17-35, airport property line on the south, and restriction lines off Runway 3-21 on the northwest. The site would provide a long narrow shape for a replacement terminal area if Runway 17-35 were closed. It would be questionable if the site would be adequate for a replacement terminal area if Runway 17-35 were to remain open. The site is topographically challenging, with land falling rapidly to the south and east beyond a very narrow flat area adjacent to Runway 3-21.

Assessment –

- Runway 17-35 – Requires closure of runway in order to gain useable site area.

- Airfield Circulation – Distance and proximity to main runway result in less than efficient aircraft circulation.

- Airside/Landside Envelope Restrictions – Airfield sloped surface envelope restrictions constrain building structures to a small area between the north end of the site and where the topography drops at the eastern edge.

- Regional Access – Proximity and access to existing interchanges on I-25 is less direct than other sites along the westerly side of the airport.

- Landside Circulation – The efficiency of on-airport terminal area circulation would be defined by new development and unencumbered by constraining existing road systems, but it would have to respond to the limited opportunities of a narrow site.

- Regional Mass Transit – This site would not be proximate to the potential light rail alignment.

- Site Expansion – The site has limited future capacity and opportunity for contiguous expansion of site area.

- Availability/Acquisition of Property – The site is within the airport boundary.

- Relocations – Minimal developed facilities currently occupy the site.

- Topography – The site is topographically constrained; opportunities to increase level grade site area would be costly.

- Infrastructure – New infrastructure is required to meet needs of a new terminal area.

- Implementation – Site development would increase the duration of the schedule; the site would have adequate accessibility and staging areas for construction.

SITE A4

Description – This site is the land on Kirtland Air Force Base that is northeast of the intersection of Runways 17-35 and 8-26. The site's boundary to the north is Gibson Boulevard, Apron E to the east, to the west the property line between the Airbase and the airport, and to the south Taxiway B. The site is generally large enough to provide for a replacement terminal area with good growth potential. The site is topographically generally flat, optimal for development. Environmental issues related to topics of the assessment will make it difficult to further consider the opportunities of this site.

Assessment –

- Runway 17-35 – This site does not require closure of the runway.

- Airfield Circulation – The site has excellent proximity to runway system and efficient aircraft circulation.

- Airside/Landside Envelope Restrictions – The site does not have building structures envelope issues.

- Regional Access – Proximity and access to existing interchanges on I-25 is less direct than other sites along the westerly side of the airport.

- Landside Circulation – The opportunities presented by planning a new development would control the efficiency of on-airport terminal area circulation. There may be conflicts with existing road and utilities infrastructure that would need to be resolved such as re-routing, abandonment, or re-use of existing utilities corridors.

- Regional Mass Transit – The site would be accessible to the potential light rail alignment.

- Site Expansion – Future site capacity and contiguous expansion would be dependent on securing additional property from Kirtland Air Force Base.

- Availability/Acquisition of Property – The site is currently a part of Kirtland Air Force Base and would need to be acquired by the airport. Acquisition may be dependent on closure of the Base.

- Relocations – Extensive relocations of existing development would be necessary to clear the site for airport terminal area development.

- Topography – The existing topography is not an issue for the development of the site.

- Infrastructure – It is assumed that infrastructure is available but capacity improvements and re-alignments would probably be necessary.

- Implementation – Site preparation related to relocations and infrastructure would increase the duration of the schedule. The size and shape of the site would provide adequate accessibility and staging areas for construction.

SITE A5

Description – This site is the land that is generally bounded by the intersections of Runways 8-26, 3-21, and 12-30 on Kirtland Air Force Base. The site's boundary to the north is Taxiway E, Taxiway H to the west, restriction lines off Runway 12-30 on the southwest, and reasonable dimension to the southeast. The site is large enough to support development of a replacement terminal area for the airport. The site is generally flat with topography falling rapidly to the southeast beyond existing site development and facilities.

Assessment –

- Runway 17-35 – This site does not require closure of the runway.

- Airfield Circulation – The site has good proximity to the runway system and reasonably efficient aircraft circulation.

- Airside/Landside Envelope Restrictions – The site is large enough to not have building structures envelope issues.

- Regional Access – Proximity and access to existing interchanges on I-25 is not direct; regional access is an issue for this site.

- Landside Circulation – The on-airport terminal area circulation would be new and there is adequate site to make it efficient. There may be conflicts with existing utilities infrastructure that would need to be resolved. Also, there may be additional site preparation required due to the current aviation uses at the east end of the site.

- Regional Mass Transit – This site is not proximate to the potential light rail alignment.

- Site Expansion – The site has limited future capacity and opportunity for contiguous expansion of site area due to topographical conditions to the south and east.

- Availability/Acquisition of Property – The site is currently part of Kirtland Air Force Base, related to the Mission of the Base, and would need to be acquired by the airport. Acquisition may be dependent on closure of the Base.

- Relocations – Relocations of existing development would be necessary to clear the site for airport terminal area development.

- Topography – The site is somewhat topographically constrained to the south and east; opportunities to increase level grade site area beyond what is available would be costly.

- Infrastructure – It is assumed that infrastructure is available but capacity improvements and re-alignments would probably be necessary.

- Implementation – Site preparation related to relocations and infrastructure would increase the duration of the schedule. The size and shape of the site would provide adequate staging areas for construction, but accessibility would be more of an issue than with sites to the west and north sectors of the airport.

SITE A6

Description – This site is the land that is to the west of the existing terminal area, currently used for commercial long-term parking. The site's boundary to the north is Randolph Road, to the east is Yale Boulevard, to the south is Sunport Boulevard, and to the west is University Boulevard S.E. The site is not large enough to develop a replacement terminal area and is separated from the airfield by Sunport Boulevard, but could have potential as an airside development adjunct to the existing airside. The site has modest slope down toward the west and southwest.

Assessment –

- Runway 17-35 – Utilization of this site as an airside for terminal development elsewhere does not require closure of the runway.

- Airfield Circulation – Sunport Boulevard segregates the site from the existing airfield. Taxiing aircraft to and from the site would require means to bridge the roadway or abandon it for other means of access.

- Airside/Landside Envelope Restrictions – The site would not be impacted with building envelope restrictions imposed from the airfield. Access to/from the site for taxiing aircraft may be restricted due to the proximity to the end of Runway 8-26.

- Regional Access – Development of the site would impact regional access for the existing terminal area.

- Landside Circulation – The aviation use considered for this site would not include landside circulation.

- Regional Mass Transit – The aviation use considered for this site would probably not benefit from adjacency to the potential rail transit alignment unless a direct transit connection to aircraft gates was desired.

- Site Expansion – The future capacity of the site through contiguous expansion could be accomplished through additional acquisition of land.

- Availability/Acquisition of Property – The site is currently not a part of the airport and would have to be acquired.

- Relocations – Improvements on the site are minimal.

- Topography – The topographical conditions are difficult for site access; it may not be not possible to circulate aircraft to the site.

- Infrastructure – New infrastructure would be required to utilize the site for aviation.

- Implementation – Other than time needed for acquisition, there would not be schedule issues or constructability issues related to construction phase access and staging.

DESCRIPTION OF TERMINAL AREA ALTERNATIVES

EXISTING TERMINAL AREA OPTIMIZATION AND INCREMENTAL EXPANSION PHASE

General Description – An optimization and incremental expansion plan is recommended for the terminal area in order to improve efficiency and level of service at the airport. Modest improvements are identified to accomplish optimization and incremental gains in processing capacity. (See **Exhibit VIII-4-B**.) Implementation of the improvements will be the most cost-efficient way to increase capacity and balance capability of the terminal area prior to future major airport development. The following improvements are proposed for the optimization and incremental expansion strategy:

Terminal Optimization

0T-1 Move or remove the positive claim railings at the baggage claim areas to improve circulation and claiming function.

0T-2 During peak hour arrival conditions, stage operation of claim devices so the middle devices are used prior to devices closest to the center of the terminal in order to spread out the load on the arrivals curb.

0T-3 Revise security screening entry layout to provide entry queues for each set of screening equipment.

0T-4 Maximize width of concourse circulation by removing/relocating vendor carts; widen connector ramps and incorporate vendor carts in widening.

Landside/Site Optimization

OL-1 Reduce arrivals curb dwell time via policing and potential incentive parking plan for the garage (reduced rate for first half-hour).

OL-2 Reconfigure auto circulation within area of parking structure directly adjacent to the skylit pedestrian walkway to function as an arrivals loading curb for passengers with baggage.

OL-3 Develop dynamic roadway and terminal signage to offer opposite curb frontage (departures and arrivals) during peaking conditions (efficiency dependent on duration of separate departures and arrivals peaks).

Terminal Incremental Expansion
(See Exhibit VIII-4-C.)

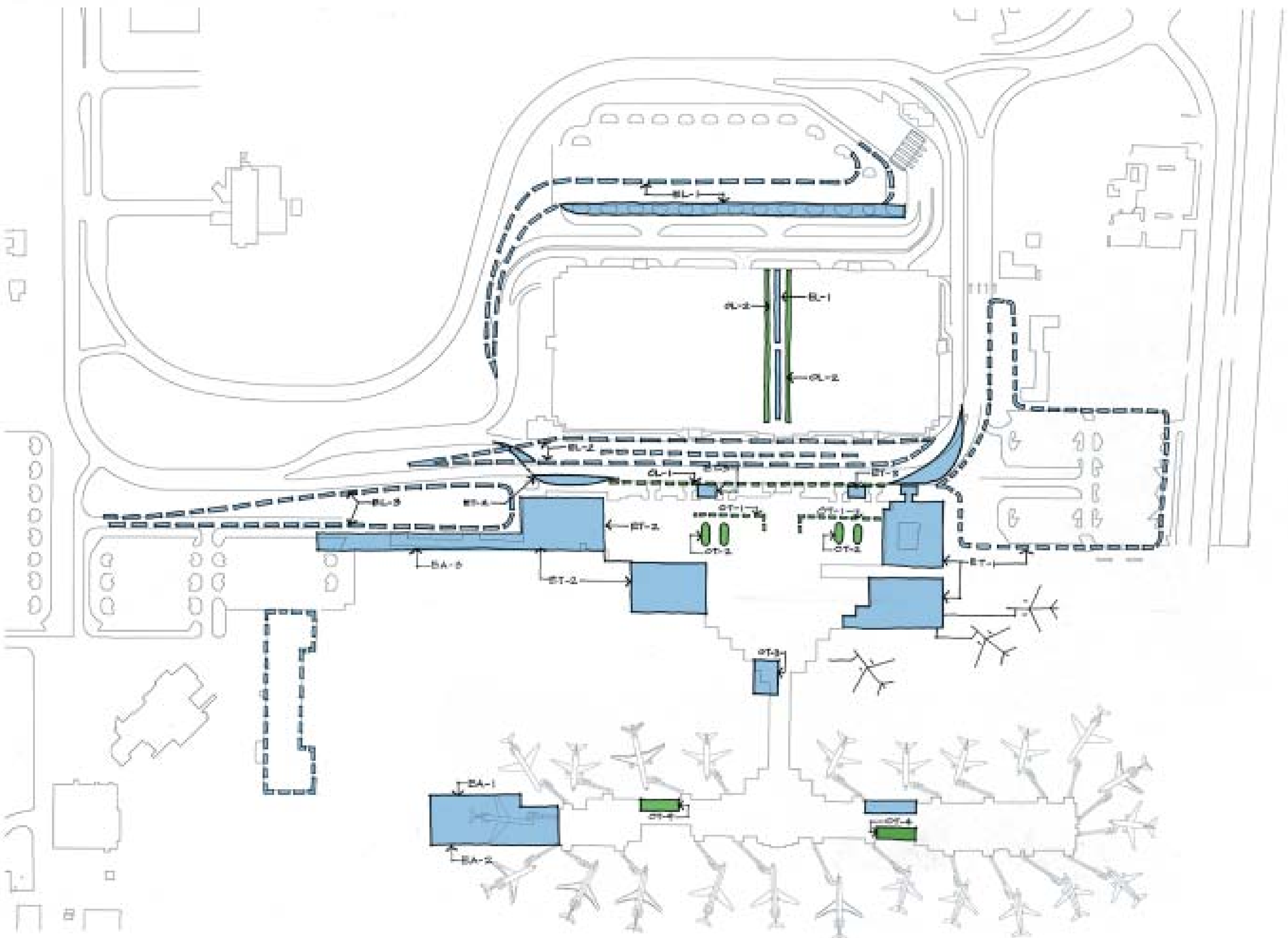
ET-1 Expand terminal to the east:

- Utilize existing in-place structure for future entry vestibule as part of two-level terminal expansion to add ticketing and baggage claim.
- Utilize additional departures curb gained (to approximately 50 feet past new entry) to supplement curb capacity.
- Relocate building services equipment at the east side of the retaining wall to open area for landside road/curb development noted above.
- Relocate carpenter shop to enable terminal expansion.
- Relocate oversize elevator to open terminal for expansion.
- Construct a new consolidated OBB facility at the east commuter apron.
- Provide new arrivals level curbs by routing drives past terminal; potential to provide additional arrivals curbs at the end of the expanded terminal (could be dedicated as WN curbside).

ET-2 Expand terminal to the west:

- Utilize existing in-place structure for future entry vestibule as part of two-level terminal remodel and add ticket counters and baggage claim device; relocate regional carriers to the west end.
- Extend the existing curb to the west by tying into existing structure and infilling the landscaped area between the drive and walkway to gain approximately 100 feet of departures curb.
- Reconfigure roadway at arrivals level to add approximately 100 feet of curb.

98MP19-VIII4B-6/11/01



Terminal Optimization

0T-1 Move or remove the positive claim railings at the baggage claim areas to improve circulation and claiming function.

0T-2 During peak hour arrivals conditions stage operation of claim devices so the middle devices are used prior to devices closest to the center of the terminal in order to spread out the load on the arrivals curb.

0T-3 Revise layout of security screening entry to provide separate entry queue for each set of screening equipment.

0T-4 Maximize width of concourse circulation by removing/relocating vendor carts; widen connector ramps and incorporate vendor carts in widening.

Landside/Site Optimization

OL-1 Reduce arrivals curb dwell time via policing and potential incentive parking plan for the garage (reduced rate for first half-hour).

OL-2 Re-configure auto circulation within area of parking structure directly adjacent to the skylit pedestrian walkway to function as an arrivals loading curb for passengers with baggage.

Terminal Incremental Expansion

ET-1 Expand terminal to the East:

- Utilize existing in-place structure for future entry vestibule as part of two-level terminal expansion to add ticketing and baggage claim.
- Utilize additional departures curb gained (to approx. 50' past new entry) to supplement curb capacity.
- Re-locate building services equipment at the east side of the retaining wall to open area for landside road/curb development noted above.
- Re-locate carpenter shop to enable terminal expansion.
- Re-locate oversize elevator to open terminal for expansion.
- Construct a new consolidated OBB facility at the east commuter apron.
- Provide new arrivals level curbs by routing drives past terminal; potential to provide additional arrivals curbs at the end of the expanded terminal (could be dedicated as WN curbside).

ET-2 Expand terminal to the West:

- Utilize existing in-place structure for future entry vestibule as part of two-level terminal remodel and add ticket counters and baggage claim device; re-locate Regional carriers to the West end.
- Extend the existing curb to the west by tying into existing structure and infilling the landscaped area between the drive and walkway to gain approximately 100' of departures curb.
- Re-configure roadway at arrivals level to add approximately 100' of curb.
- Remove/re-locate escalators and re-structure building for expansion.
- Construct a new consolidated OBB facility at the west commuter apron incorporating existing OBB rooms for capacity (staged construction).

ET-3 Baggage Security Sequence

- Construct additions to the terminal front between vestibules to support CTX-5000 technology for screening baggage.

Airside Incremental Expansion

EA-1 Expand Concourse B to the west with wide-body aircraft gates at the end (FIS gates?).

EA-2 Potential to locate FIS at the apron level of an expanded Concourse B; potential to locate the Greeter's Hall in a new two story space between the end of existing Concourse B and the new gates in an extended concourse.

EA-3 Construct a new regional ground level concourse in the location of the existing Concourse C.

Landside/Site Incremental Expansion

EL-1 Construct a new commercial vehicle curb at the north side of the parking structure and install moving walkways through the center atrium of the garage for passenger access; utilize arrivals inner curb for private vehicle active load and unload only, outer curb for private vehicle 10 minute load zone.

EL-2 Construct an outer structured departures drive for public vehicles.

EL-3 Construct new curb for Regional carriers at the West end of the Terminal.

ABQ INTERNATIONAL SUNPORT

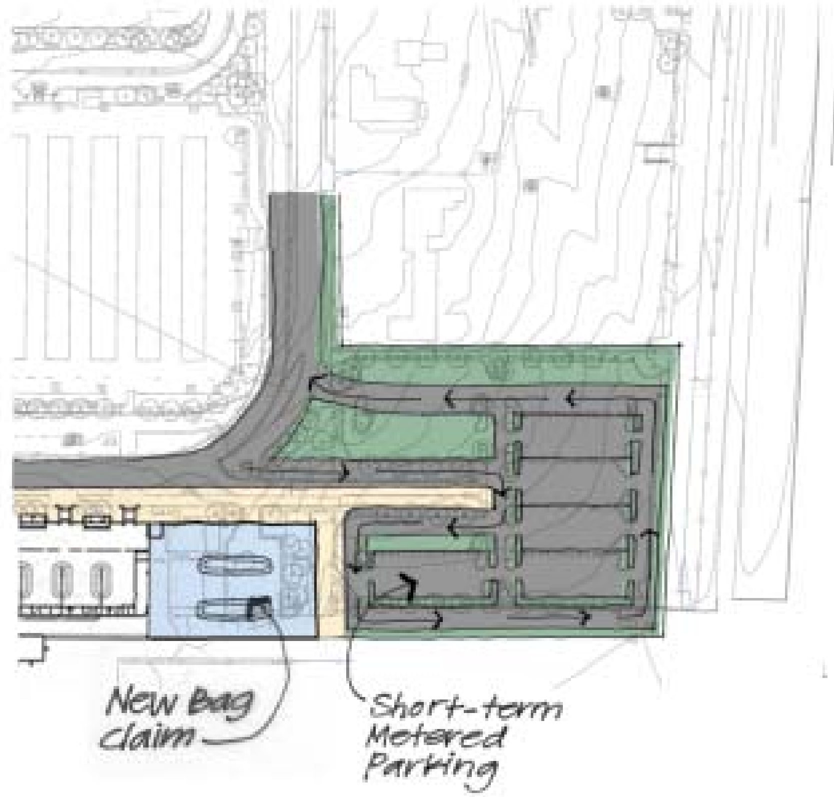
Exhibit VIII-4-B
TERMINAL OPTIMIZATION ALTERNATIVES

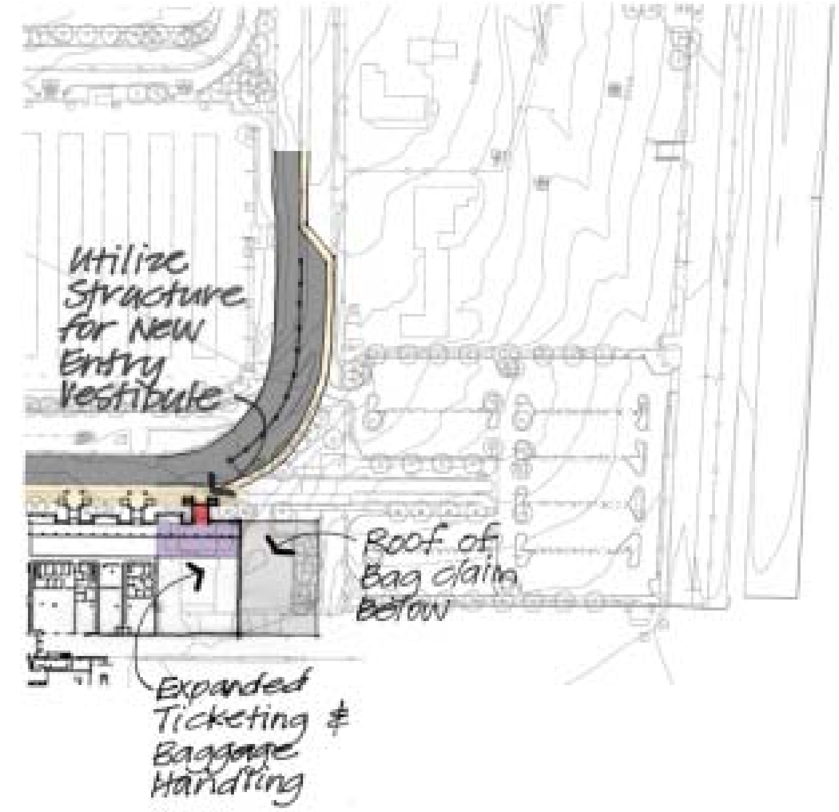
98MP19-VIII4C-7/10/01

ET-1

ET-1 Expand terminal to the East:

- Utilize existing in-place structure for future entry vestibule as part of two-level terminal expansion to add ticketing and baggage claim.
- Utilize additional departures curb gained (to approx. 50' past new entry) to supplement curb capacity.
- Relocate building services equipment at the east side of the retaining wall to open area for landside road/curb development noted above.
- Relocate carpenter shop to enable terminal expansion.
- Relocate oversize elevator to open terminal for expansion.
- Construct a new consolidated OBB facility at the east commuter apron.
- Provide new arrivals level curbs by routing drives past terminal; potential to provide additional arrivals curbs at the end of the expanded terminal (could be dedicated as WN curbside).

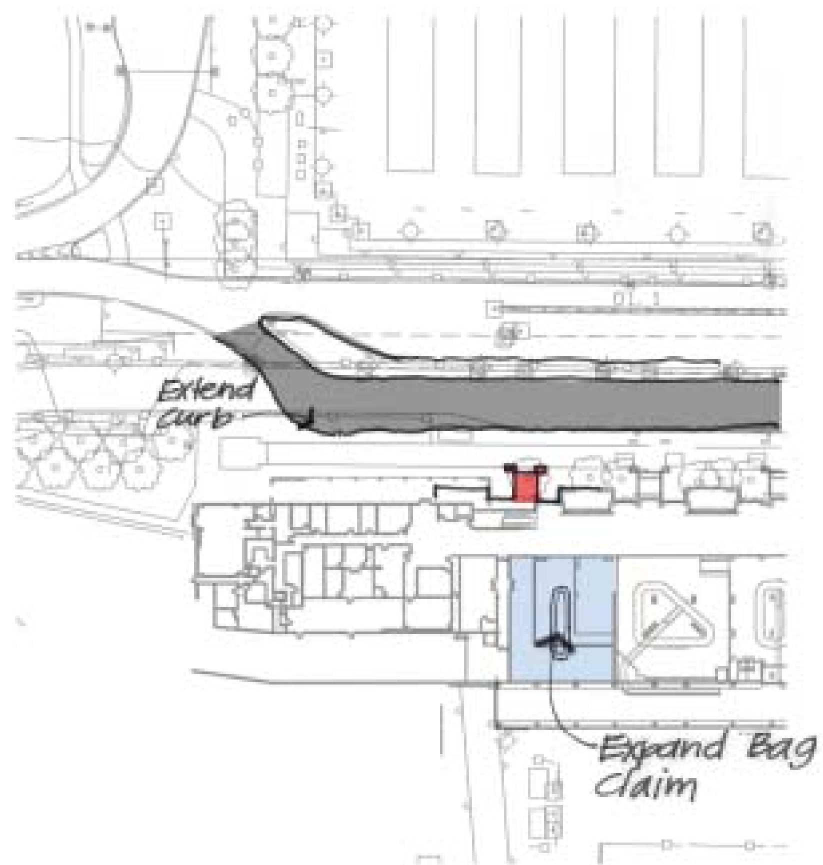


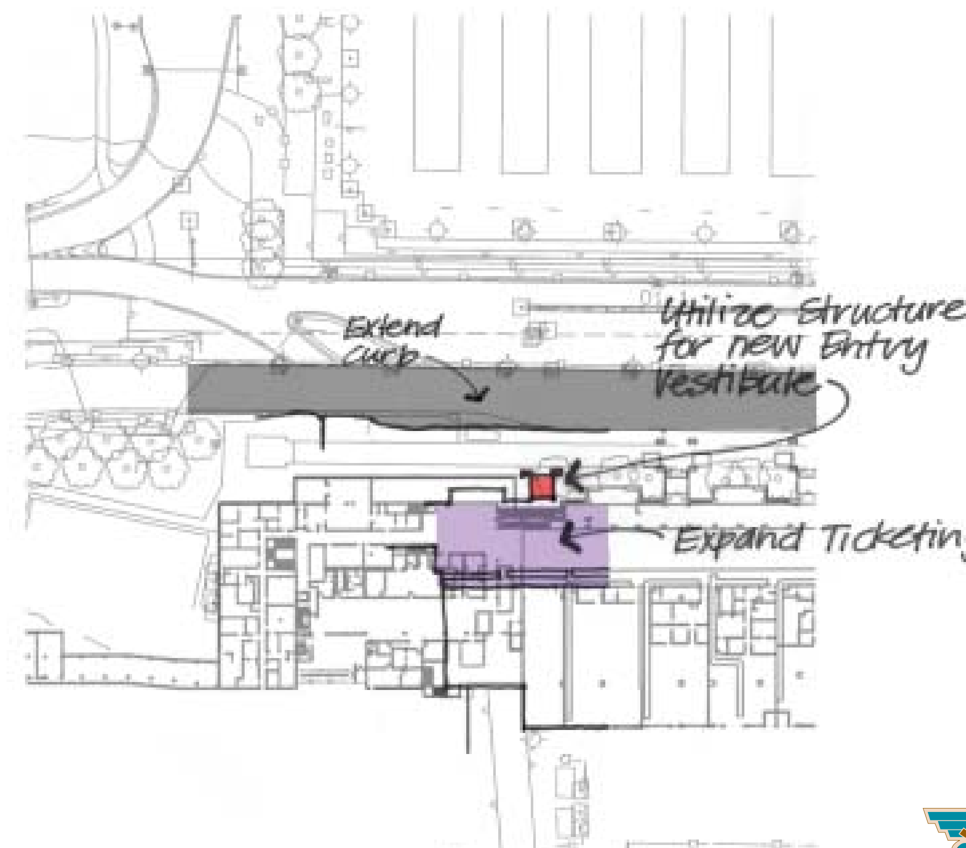


ET-2

ET-2 Expand terminal to the West:

- Utilize existing in-place structure for future entry vestibule as part of two-level terminal remodel and add ticket counters and baggage claim device; re-locate Regional carriers to the West end.
- Extend the existing curb to the west by tying into existing structure and infilling the landscaped area between the drive and walkway to gain approximately 100' of departures curb.
- Reconfigure roadway at arrivals level to add approximately 100' of curb.
- Remove/relocate escalators and restructure building for expansion.
- Construct a new consolidated OBB facility at the west commuter apron incorporating existing OBB rooms for capacity (staged construction).





ABO INTERNATIONAL SUNPORT

Exhibit VIII-4-C
TERMINAL INCREMENTAL EXPANSION
ALTERNATIVES ET-1 & ET-2

- Remove/relocate escalators and re-structure building for expansion.

- Construct a new consolidated OBB facility at the west commuter apron incorporating existing OBB rooms for capacity (staged construction).

ET-3 Baggage Security Sequence

- Construct additions to the terminal front between vestibules to support CTX-5000 technology for screening baggage.

Airside Incremental Expansion

EA-1 Expand Concourse B to the west with wide-body aircraft gates at the end (FIS gates?).

EA-2 Potential to locate FIS at the apron level of an expanded Concourse B; potential to locate the Greeter's Hall in a new two-story space between the end of existing Concourse B and the new gates in an extended concourse.

EA-3 Construct a new regional ground level concourse in the location of the existing Concourse C.

Landside/Site Incremental Expansion

EL-1 Construct a new commercial vehicle curb at the north side of the parking structure and install moving walkways through the center atrium of the garage for passenger access; utilize arrivals inner curb for private vehicle active load and unload only, outer curb for private vehicle 10 minute load zone.

EL-2 Construct an outer structured departures drive for public vehicles.

EL-3 Construct new curb for regional carriers at the west end of the terminal.

SITE E1 ALTERNATIVES

Alternative 1

This alternative, as depicted on **Exhibit VIII-4-D**, locates a new terminal facility on the site of the existing parking structure. The new facilities that include aircraft gates, terminal building, terminal drives and roadways, and parking result initially in two unit terminals at the airport. The new terminal facility could grow into a centralized terminal for the airport in the future. The concept is based on a two-sided multi-level terminal facility with associated curbs, roads, and parking. The airside is a multi-pier concourse configuration linked by a pedestrian connector to the terminal. A consolidated baggage handling facility is proposed at the south end of the concourse. In the future, if the need arises, an international arrivals facility could be constructed above the baggage facility with aircraft gates designed for operation in a "swing mode" for utilization flexibility. A multi-level short-term parking structure is located north of the existing parking structure at the long-term parking lot and is linked across the curbs to the terminal. An additional multi-level parking structure is located north of the existing terminal exit roadway for long-term parking. Regional access would be provided from existing Sunport Boulevard and could also be provided from Gibson Boulevard. This alternative requires the closure of Runway 17-35. In the future, upon expansion of the new terminal into a centralized facility, the existing terminal and concourses could be converted to an airside facility. An automated peoplemover system could be implemented in the future to connect the centralized terminal to remote airsides and the consolidated rental car facility. The potential regional transit station for the airport could be integrated into the north end of the short-term parking facility.

Alternative 2

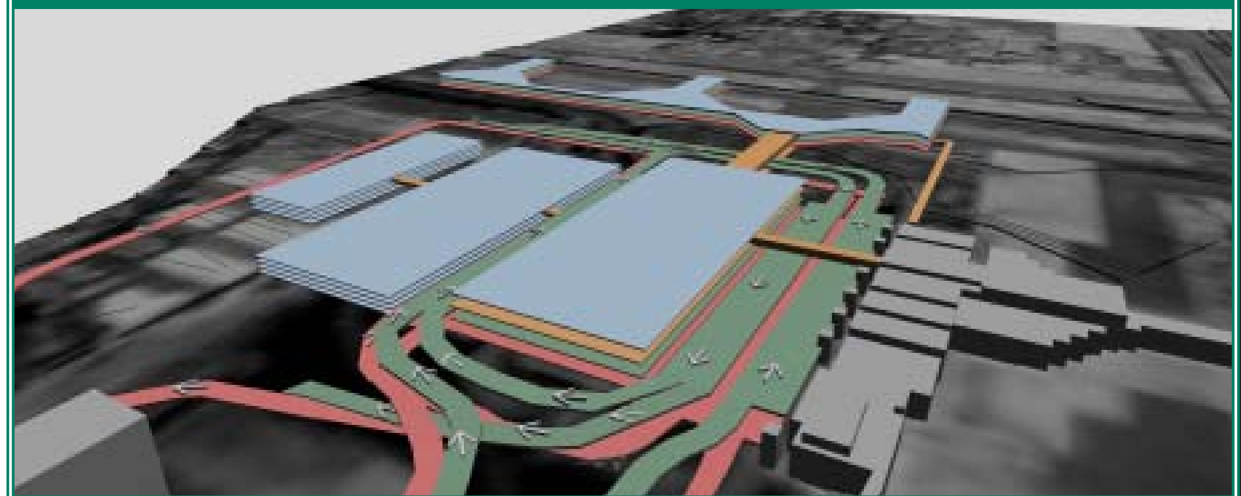
This alternative, as depicted on **Exhibit VIII-4-E**, locates a second terminal facility between the northwestern corner of the site and the east side of the existing terminal area. The new facilities that include aircraft gates, terminal building, terminal drives and roadways, and parking result in two unit terminals at the airport. The terminal area concept is based on a single-sided multi-level terminal facility with associated curbs and roads. The airside is a multi-pier concourse configuration linked by a pedestrian connector to the terminal. Consolidated baggage handling facilities would be located in the terminal. In the future, if the need arises, an international arrivals facility could be constructed between the new and existing terminals with aircraft gates designed for operation in a "swing mode" for utilization flexibility. A multi-level parking structure is located north of the existing parking structure and is linked across the curbs to the terminal. Regional access would be provided from existing Sunport Boulevard and could also be provided from Gibson Boulevard. This alternative requires the closure of Runway 17-35. The potential regional transit station for the airport could be located adjacent to the north end of the terminal facility.

Alternative 3

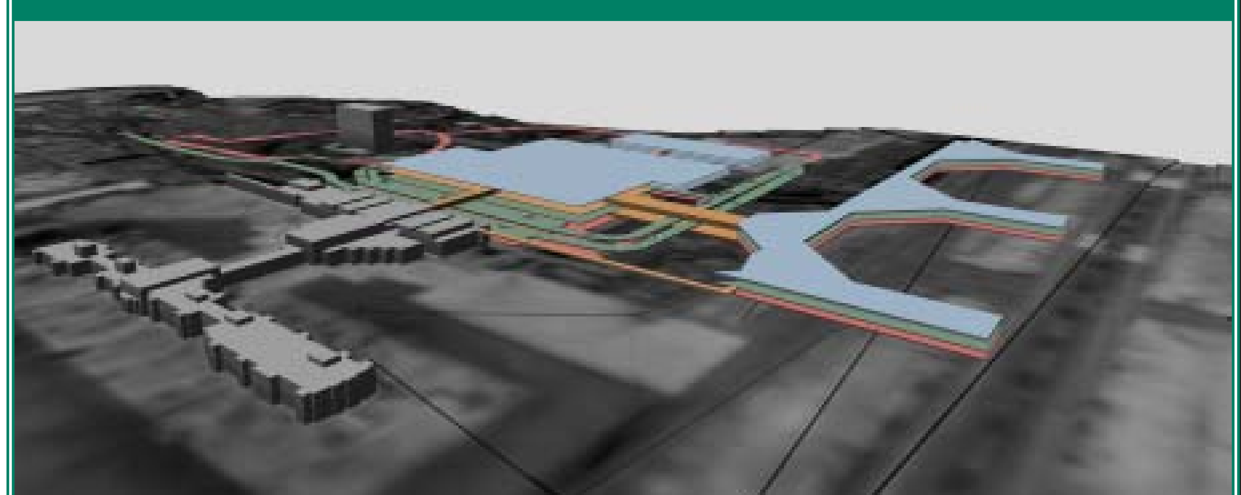
This alternative, as depicted on **Exhibit VIII-4-F**, locates a new terminal facility on the site of the existing long-term parking lot. The new facilities that include aircraft gates, terminal building, terminal curbs and roads, and parking result initially in two unit terminals at the airport and could grow into a centralized terminal in the future. The concept is based on a two-sided multi-level terminal facility with associated curbs and roads. The airside is a multi-pier concourse configuration linked by a pedestrian connector to the terminal. A consolidated baggage handling facility is proposed at the south end of the concourse. In the future, if the need arises, an international arrivals facility could be constructed above the baggage facility with aircraft gates designed for operation in a "swing mode" for utilization flexibility. A new multi-level

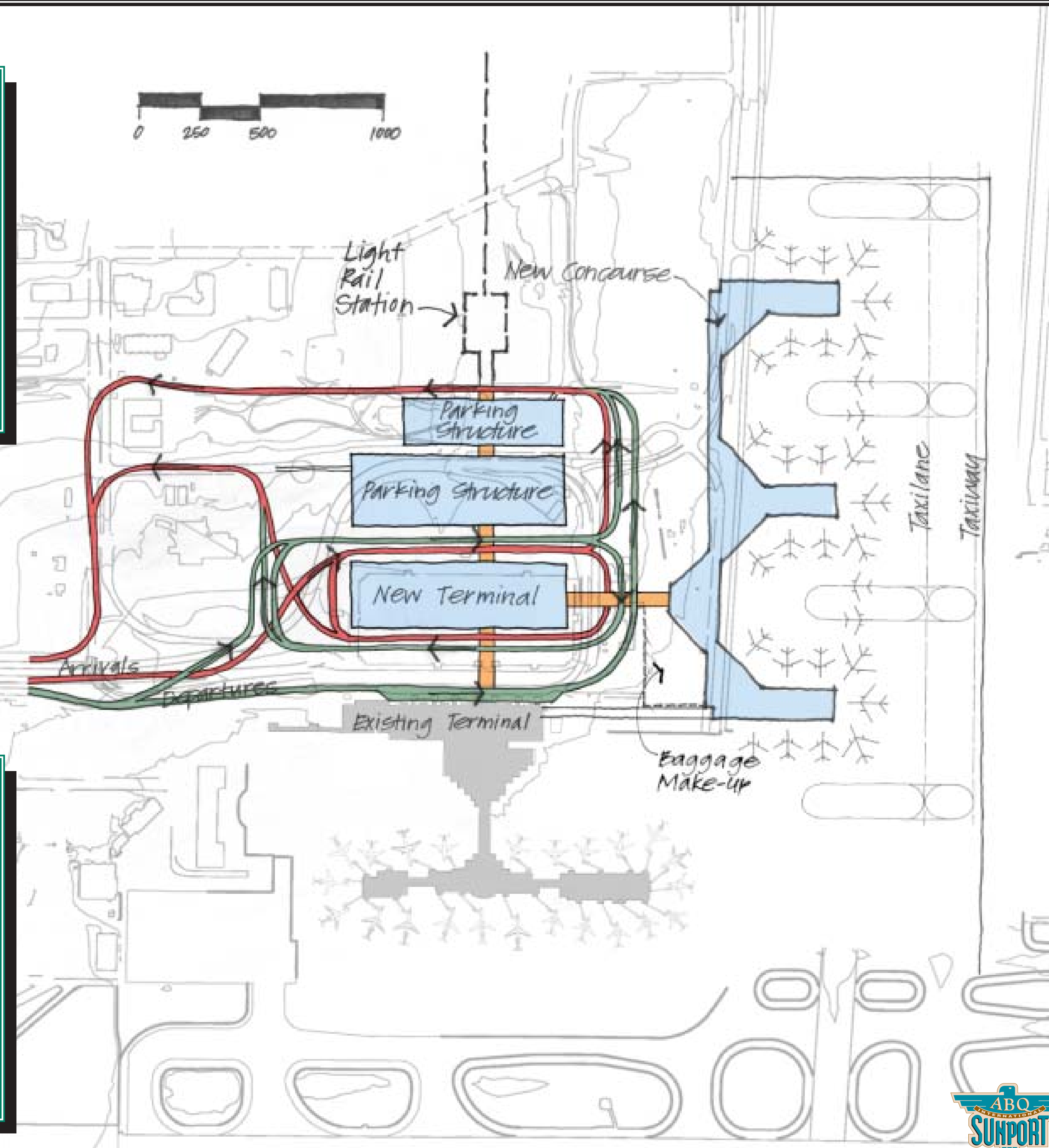
98MP19-VIII4D-7/10/01

PLAN VIEW - NORTHWEST



PLAN VIEW - SOUTHEAST



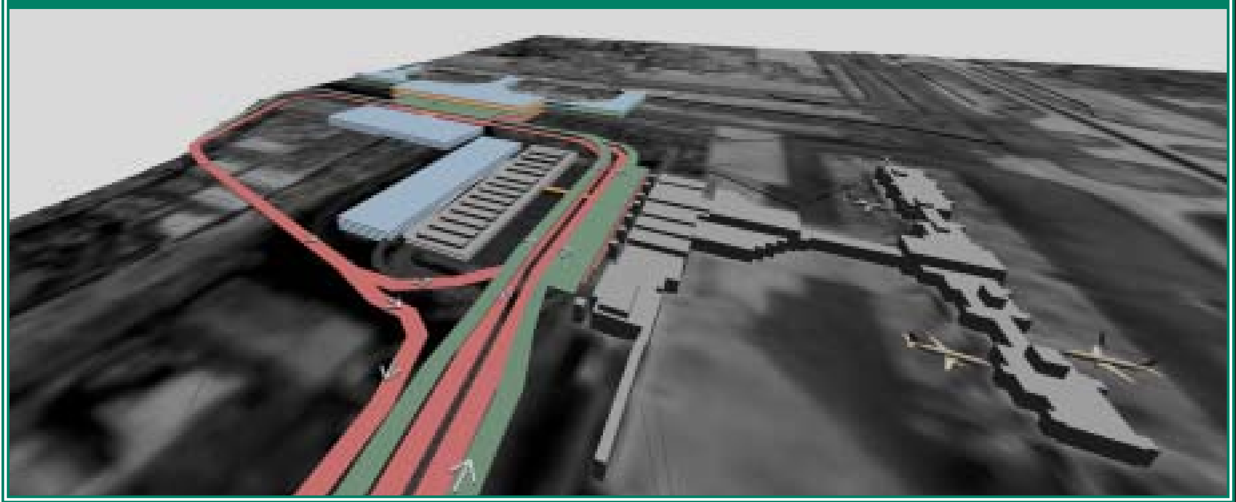


ABQ INTERNATIONAL SUNPORT

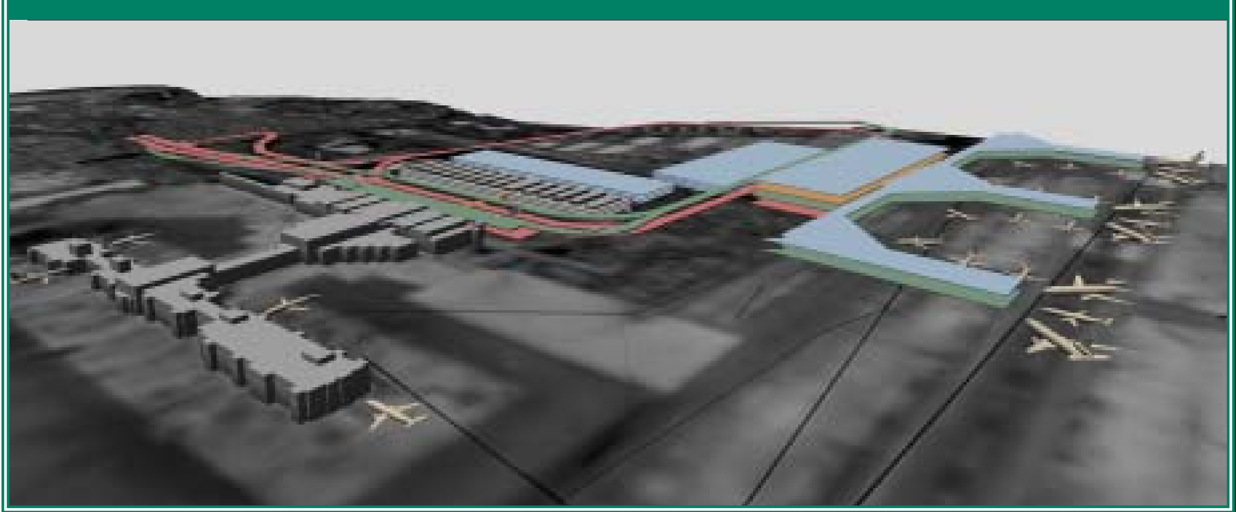
Exhibit VIII-4-D
SITE E1, ALTERNATIVE 1

98MP19-VIII4E-7/10/01

PLAN VIEW - NORTHWEST



PLAN VIEW - SOUTHEAST



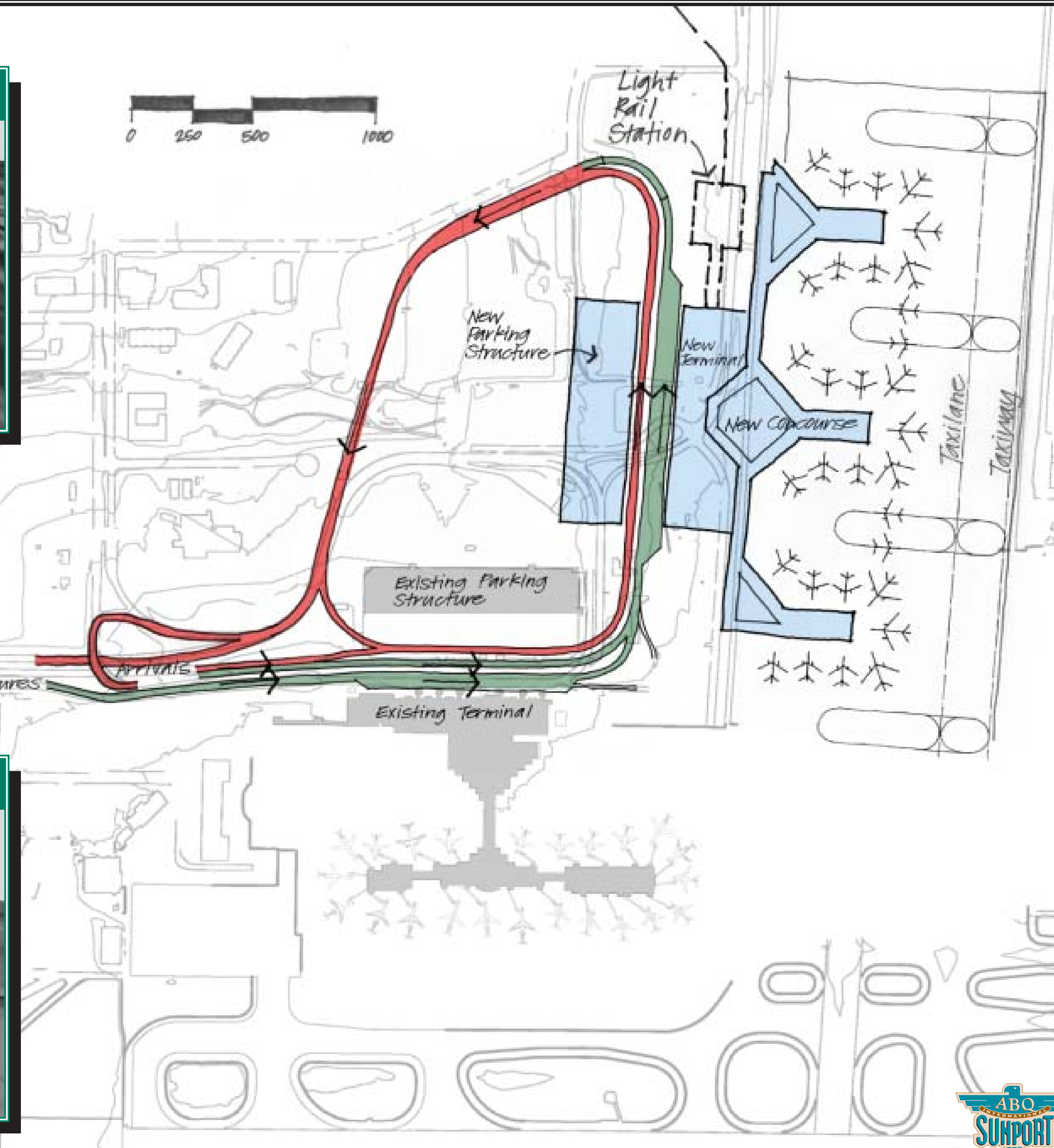
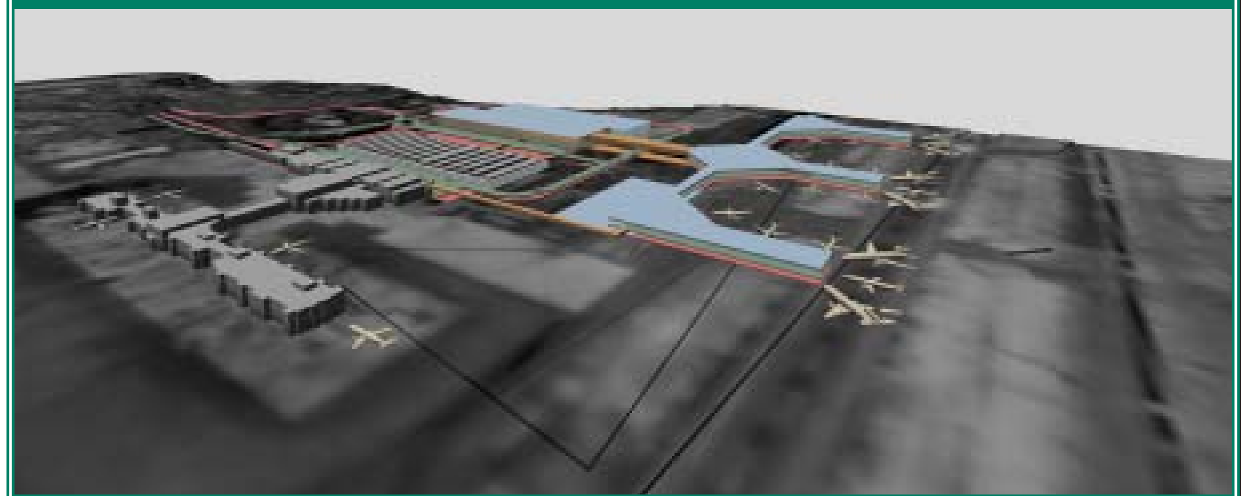


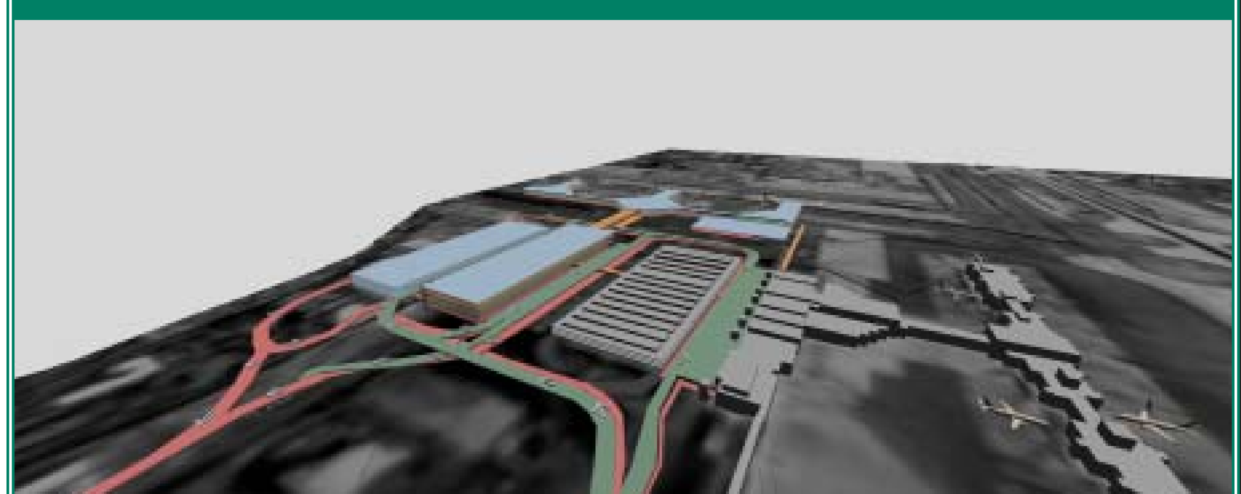
Exhibit VIII-4-E
SITE E1, ALTERNATIVE 2

98MP19-VIII4F-7/10/01

PLAN VIEW - NORTHWEST



PLAN VIEW - SOUTHEAST



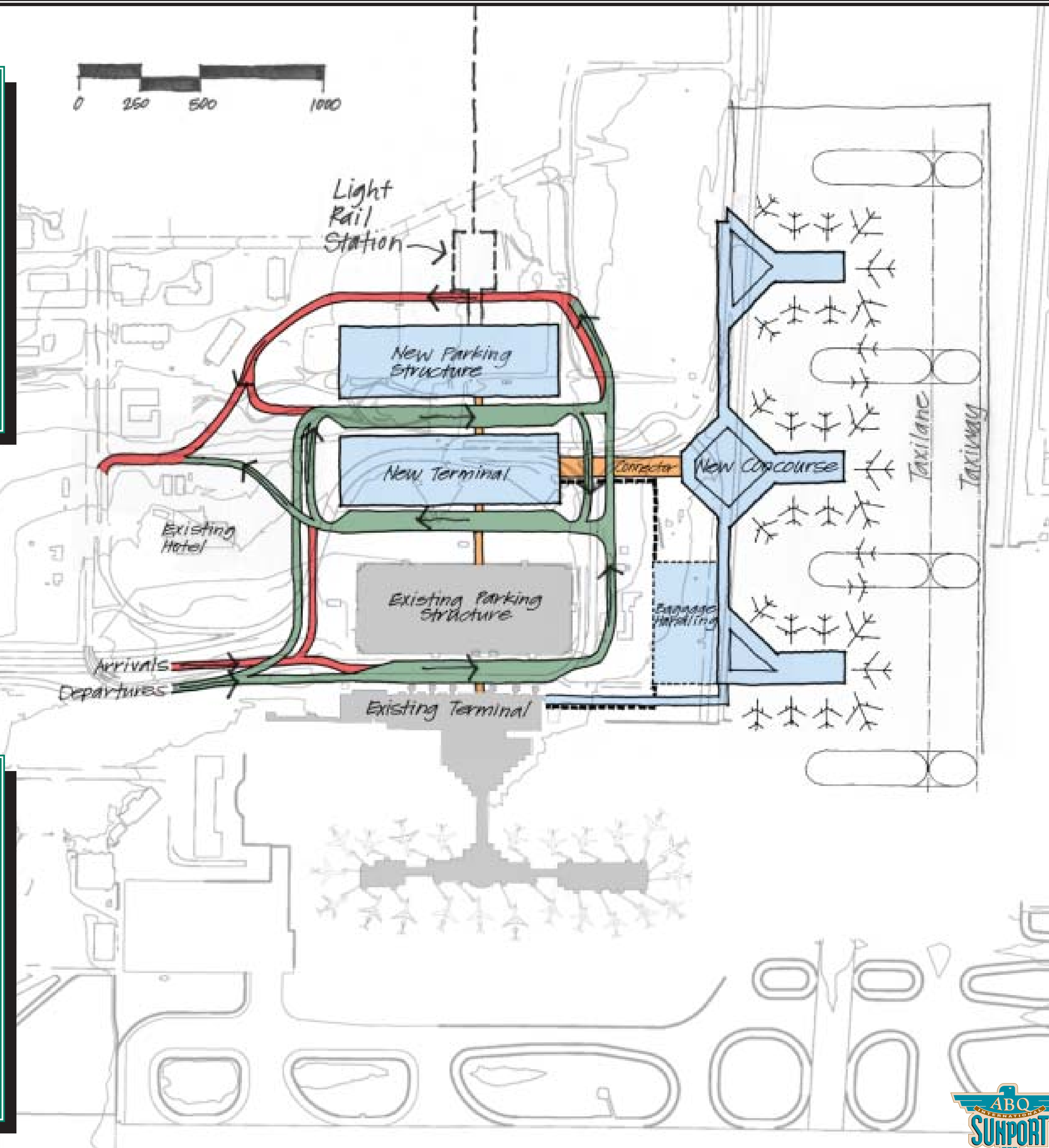


Exhibit VIII-4-F
SITE E1, ALTERNATIVE 3

parking structure is located north of the existing terminal exit roadway for short-term parking and is linked across the curbs to the terminal. Regional access would be provided from existing Sunport Boulevard and could also be provided from Gibson Boulevard. This alternative requires the closure of Runway 17-35. In the future, upon expansion of the new terminal into a centralized facility, the existing terminal and concourses could be converted to an airside facility. An automated peoplemover system could be implemented in the future to connect the centralized terminal to remote airsides and the consolidated rental car facility. The potential regional transit station for the airport could be integrated into the north end of the new short-term parking facility.

Alternative 4

This alternative, as depicted on **Exhibit VIII-4-G**, locates a second terminal facility north and east of the existing terminal. The new facilities that include aircraft gates, terminal building, terminal drives and roadways, and parking result initially in two unit terminals at the airport and could grow into a centralized terminal in the future. The concept is based on a two-sided multi-level terminal facility with associated curbs and roads located at the existing long-term parking lot. The airside is a frontal gate linear concourse linked to the terminal. The concourse would be structured above the terminal drives in order to raise it to the airfield elevation. Building above the drives is also necessary to provide enough space for the roadway system. Consolidated baggage handling facilities would be located in the terminal. In the future, if the need arises, international arrivals facilities could be added to the terminal with a sterile linkage to close-in aircraft gates on the concourse. A new multi-level parking structure is located north of the existing terminal exit roadway for short-term parking. Regional access would be provided from existing Sunport Boulevard and could also be provided from Gibson Boulevard. This alternative does not require the closure of Runway 17-35. The potential regional transit station for the airport could be integrated into the north end of the new short-term parking facility.

Airside Alternative A

This alternative (shown on **Exhibit VIII-4-H**) locates a satellite airside concourse west of Yale Boulevard and the existing terminal area, and north of Sunport Boulevard. The alternative would require closing Yale Boulevard, and also includes the sites of the hotel and commercial development east of Yale Boulevard for aircraft apron and circulation. The new facilities would include basic passenger concourse functions such as holdrooms, services, concessions, and support functions for airline operations. The facilities may also include outbound baggage handling facilities. Apron development for parking aircraft, in-ramp services, and associated taxiways and taxilanes would also be a part of development. In addition, due to its remote location from the airfield, dual taxilanes that cross Sunport Boulevard would be required. The concourse would be connected back to the terminal area via a sub-grade automated peoplemover system that could also be extended to the existing consolidated rental car facility.

SITE A2 ALTERNATIVES

Alternative 5

This alternative, as depicted on **Exhibit VIII-4-J**, locates a replacement terminal area west of the intersection of Runways 12-30 and 3-21. The new facilities that include aircraft gates, terminal building, terminal curbs and roads, parking, and regional access result in a single new terminal area for the airport with the existing terminal area converted to an alternative use such as general aviation. The terminal area concept is based on a single-sided multi-level terminal facility with associated curbs and roads. The airside is a hybrid-type concourse with both linear frontal gates and multiple pier type gates connected to the terminal. Consolidated baggage handling facilities would be located in the terminal. If the need arises, international arrivals facilities could be added to the terminal with a sterile linkage to close-in aircraft gates on the concourse. A multi-level parking structure is located west of the terminal structure and is linked across the curbs via pedestrian bridges. Regional access would be provided from existing Sunport Boulevard or alternatively from a new interchange at I-25. This alternative does not require the closure of Runway 17-35. The potential regional transit access to the airport would have to be extended to this site.

Airside Alternative B

This alternative (shown on **Exhibit VIII-4-K**) locates a satellite airside concourse west of the intersection of Runways 12-30 and 3-21. The new facilities would include basic passenger concourse functions such as holdrooms, services, concessions, and support functions for airline operations. The facilities may also include outbound baggage handling facilities. Apron development for parking aircraft, in-ramp services, and associated taxiways and taxilanes would also be a part of the development. The concourse would be connected back to the terminal area via an automated peoplemover system that could have a stop at the existing consolidated rental car facility.

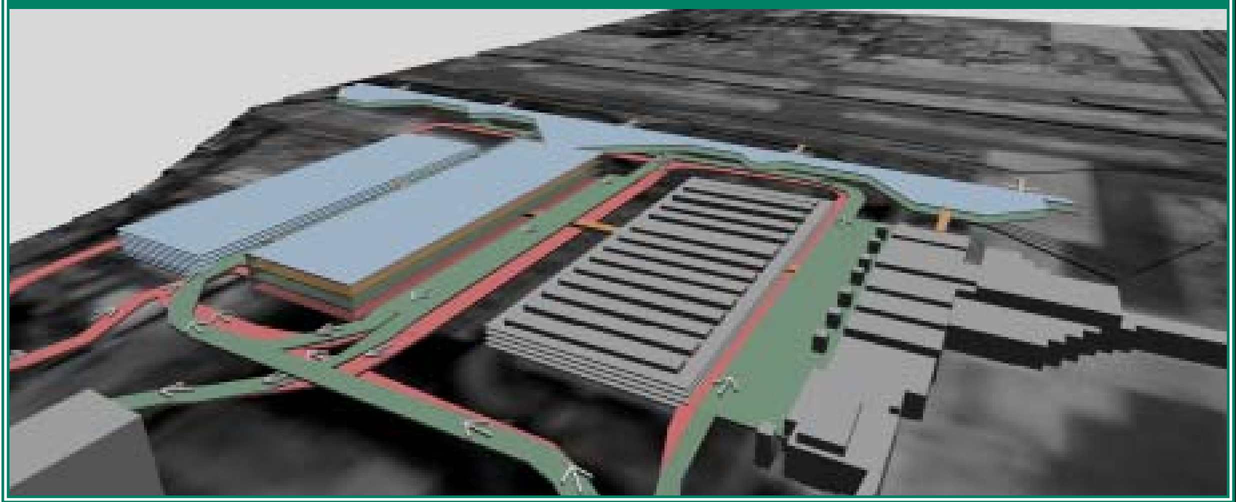
EVALUATION OF ALTERNATIVES

EVALUATION CRITERIA FOR TERMINAL AREA ALTERNATIVES

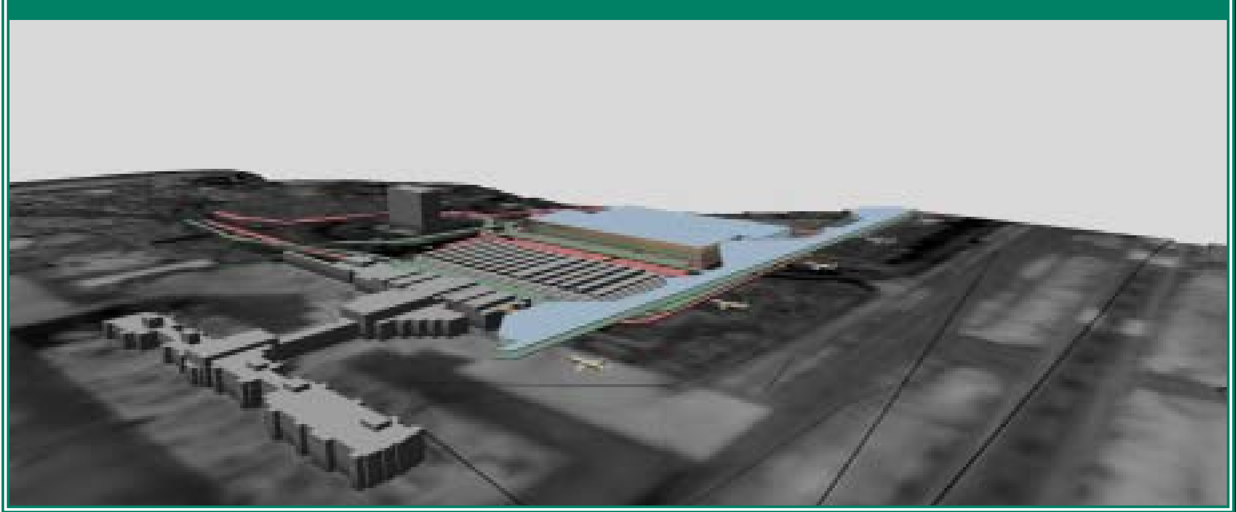
Alternative concepts for the development of the terminal area should be planned to accommodate the needs of the overall airport long-term development plan as well as responding to near-term needs. Alternative concepts should facilitate the airport's function as an important community asset that links Albuquerque to other communities within the state, to the region, and beyond. The concepts should anticipate long-term needs, have the flexibility to respond to the changing operational requirements of

98MP19-VIII4G-7/10/01

PLAN VIEW - NORTHWEST



PLAN VIEW - SOUTHEAST



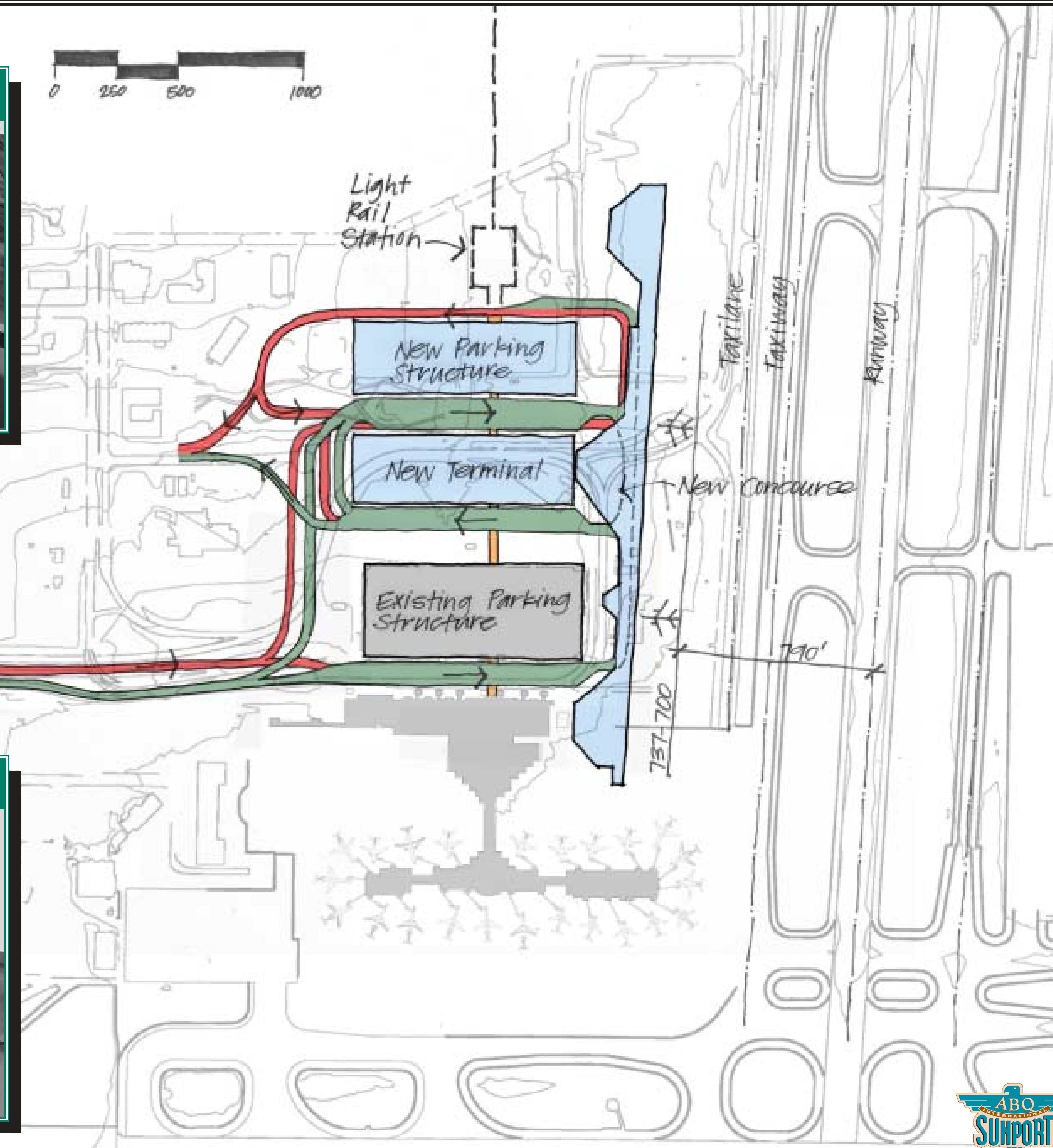


Exhibit VIII-4-G
SITE E1, ALTERNATIVE 4

98MP19-VIII4H-7/10/01

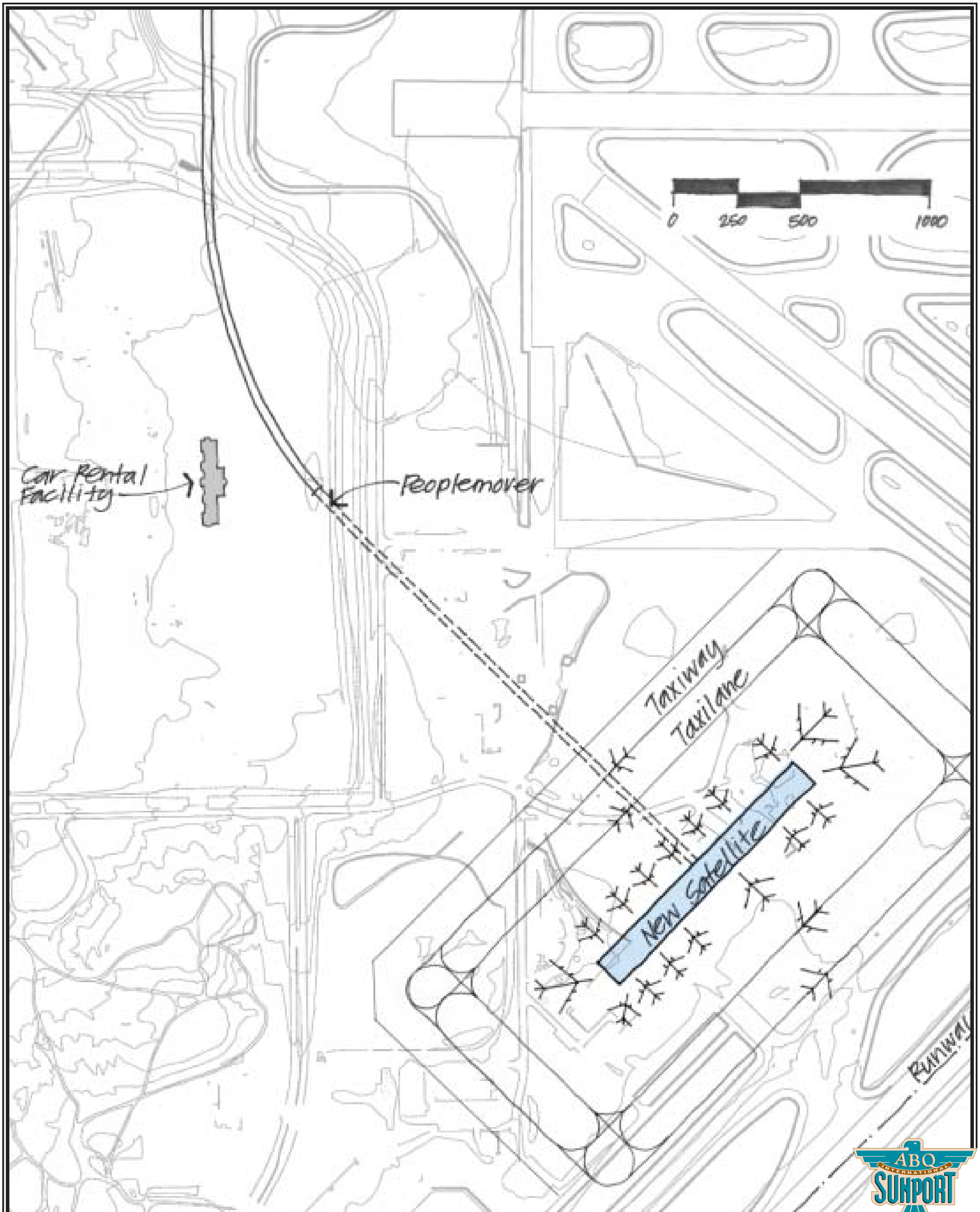
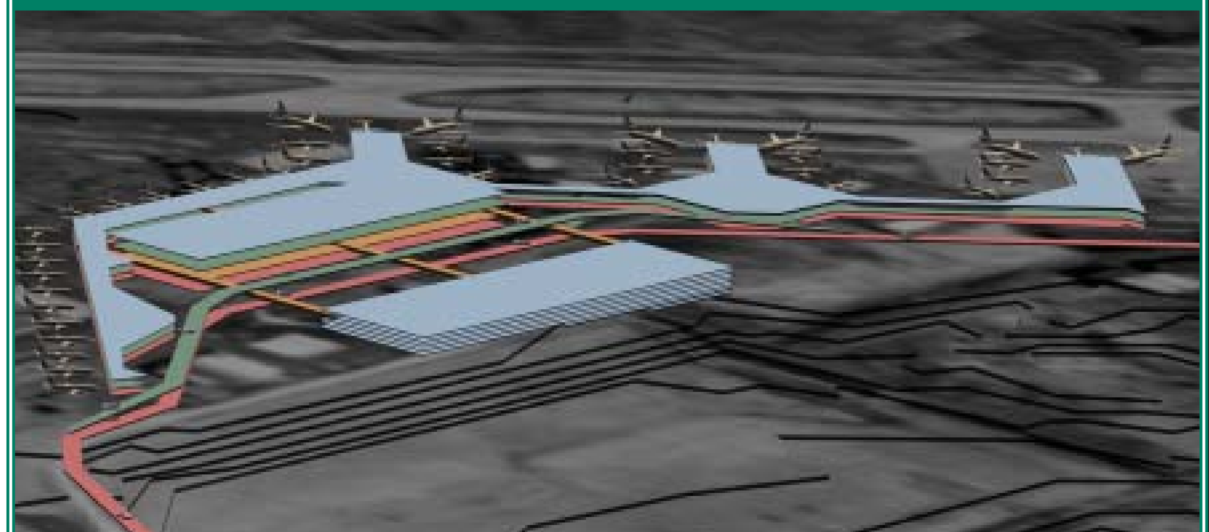


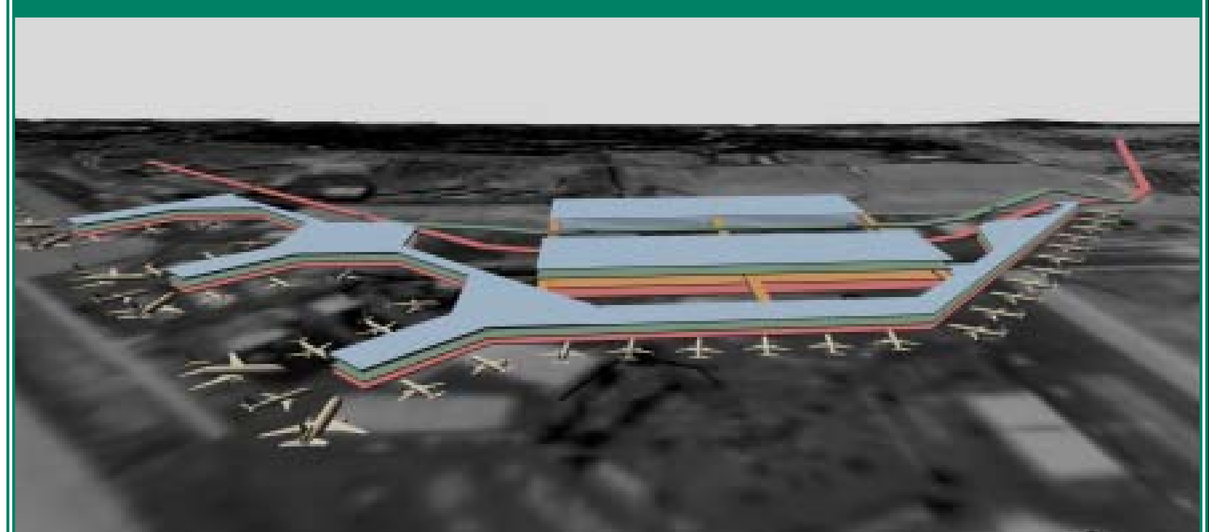
Exhibit VIII-4-H
AIRSIDE ALTERNATIVE A

98MP19-VIII4J-7/10/01

PLAN VIEW - NORTHWEST



PLAN VIEW - SOUTHEAST



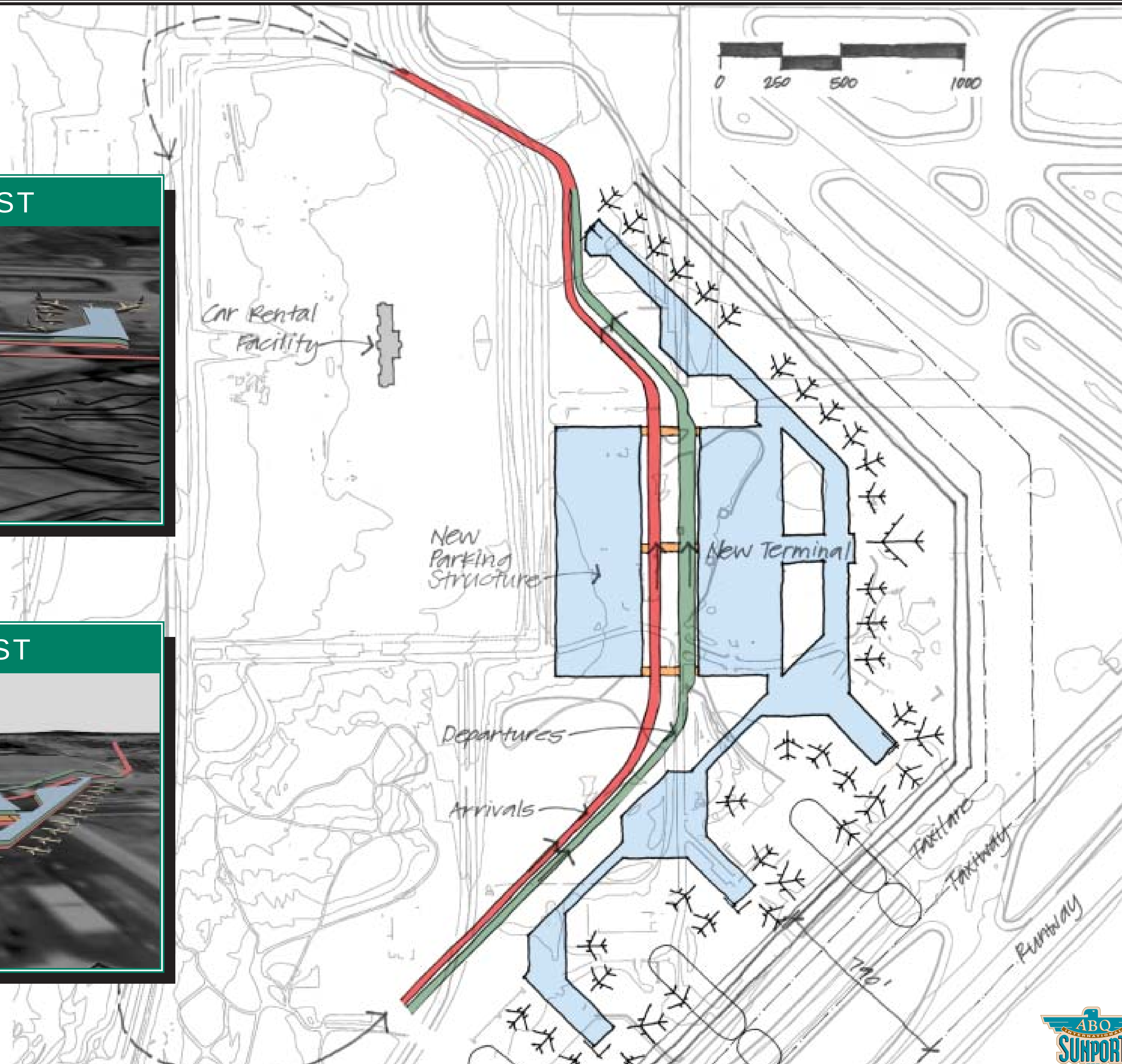


Exhibit VIII-4-J
SITE A2, ALTERNATIVE 5

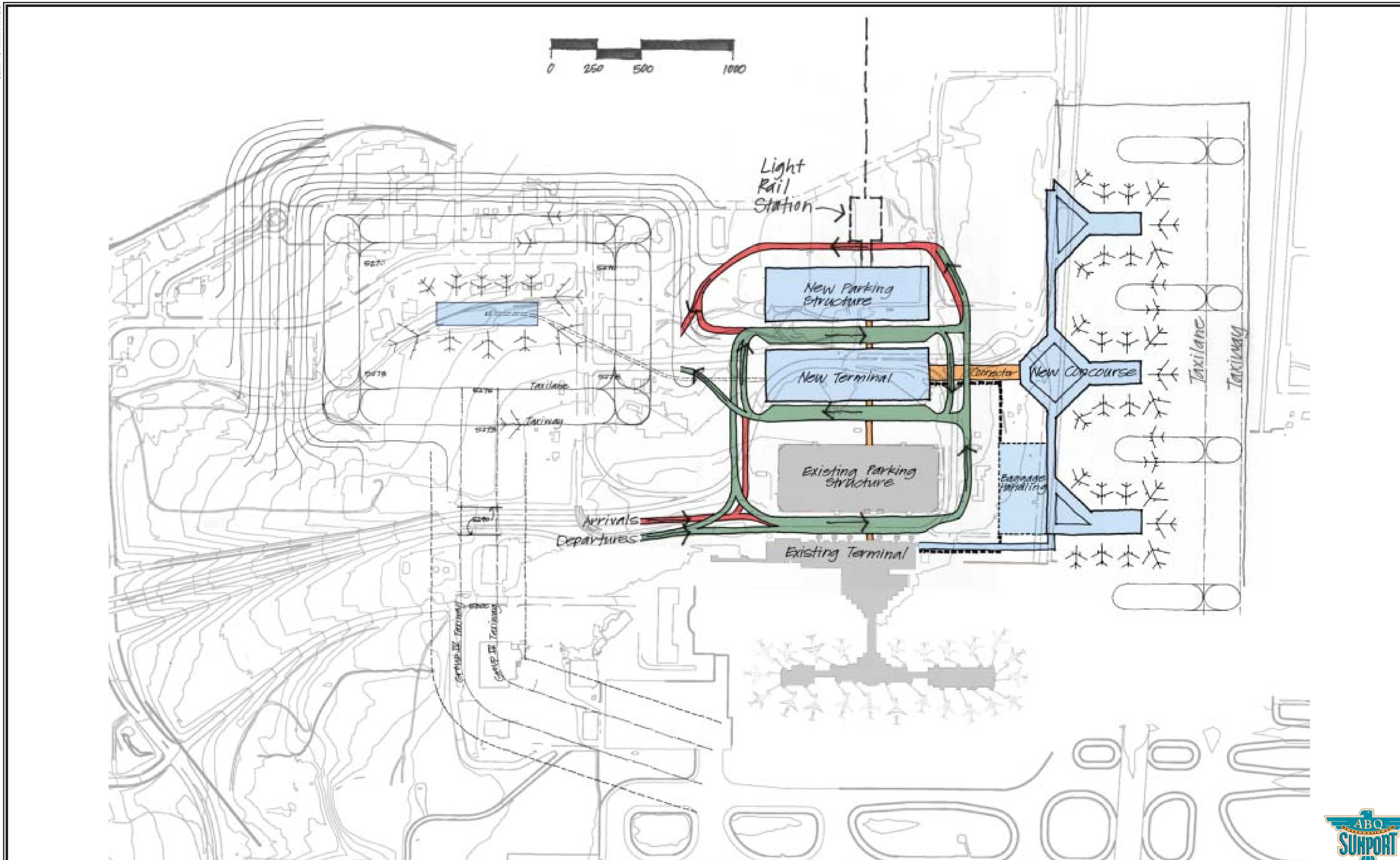


Exhibit VIII-4-K
AIRSIDE ALTERNATIVE B

the airport over time, and should be efficient in operation and use of resources. For these reasons, establishing evaluation criteria that will identify the optimal alternative for development from among other viable alternatives is important.

Criteria for the evaluation of alternative development plans are derived from noted goals and strategies of this Master Plan. The terminal area of the Airport should exhibit efficient land utilization, be capable of meeting program requirements, enable efficient operation, be operationally flexible, and have expansion capability. Planning these characteristics must also be balanced with cost and implementation of the plan at an operating airport. Concepts should also provide opportunities for architectural development that is consistent with the expression and sense of place of the existing airport design that is representative of the spirit of the region.

The following are criteria for evaluating terminal area alternatives. They were identified in working sessions with agreement that they would not be prioritized.

Facilities Program

- The ability of the terminal area alternatives to meet the projected requirements for terminal facilities, site vehicular circulation, terminal curbs, parking, and accommodate future mass-transit commensurate with level of service goals for passengers and employees.
- The ability to increase aircraft gate capacity and enhance aircraft circulation to meet specified demand levels within the terminal area apron. The alternatives should preserve the integrity and usefulness of the old terminal.

Efficiency

- The organizational relationships between components in the terminal area will determine the efficiency of the airport. This is a key issue at Albuquerque International Sunport due to limited availability and topographical conditions of land. Both airport and airline operations require the most direct, functionally efficient arrangements of elements within the terminal area in order to optimize operation of the airport. Airline turn time of aircraft is a key issue at this airport and is one of the key tenant goals.
- The ability of the terminal area to adapt to operational changes due to changing tenant requirements including airline consolidation, technological, regulatory or policy changes is important. Operational flexibility must be considered; future modifications may create conditions at the airport that render it difficult to use and understand, thus lowering its level of service.
- Efficiency of site utilization is related to overall physical size and configuration of the alternatives.

Some alternatives may create a different organizational character from what exists; this magnitude of change should be evaluated based on value. Alternatives should be judged based on optimization of land resources in support of efficient airport operations.

- Efficient re-use of existing terminal facilities due to occupancy of new terminal space should be considered in the evaluation.

Financial

- Order of magnitude costs will vary between the terminal area development alternatives. Each alternative will have a physical configuration focused on its development priority. Costs should be reviewed for magnitude, but be balanced with benefits that achieve stated goals.

- The operational costs considered at the planning level are the order of magnitude differences between managing and maintaining an efficient, consolidated terminal area versus a terminal area with separated facilities.

- Revenue potential may differ between alternative terminal building layouts and should be considered in the evaluation.

Development Strategy

- Implementation feasibility should be considered as it is related to viability of the construction phasing, staging, and sequencing of work required to implement a plan. It is necessary during expansion to maintain operation of the airport without compromising public safety or drastically compromising capacity, airline operations, or the level of service to the public.

- The terminal area must be capable of accepting growth over the long term. The projected need for facilities is generated from criteria that are estimates. Space should be reserved beyond what the alternatives anticipate to acknowledge this.

- Facilities should be conceptually organized so their expansion does not impact the original clarity of their layout and be able to expand incrementally as needs become apparent.

Architectural Opportunities

- The terminal area development alternatives are diagrammatic in nature but organizational concepts provide varying opportunities for architectural and site development. It is important to note that the generation of concepts, even at this level of planning, can provide for enhanced opportunities to create an appropriate statement for the image of this airport and an environmentally responsive design. At ABQ, the sense of place evoked by the existing architecture is a recognized asset to the community.

Airfield Impacts

- The development alternatives may be impacted by the final configuration of the airfield. The closure of Runway 17-35 will be required in order to provide adequate space to substantially improve the existing terminal area. Also, the layout of an alternative's airside facilities may impact the optimal layout of the airfield's aircraft circulation pattern.

Community Impacts

- The conceptual layout or organization of the terminal area alternatives may have differing order of magnitude impacts on adjacent communities. Layout of terminal area roads, location of terminal curbs, parking, and airport regional access all contribute to noise generated by the airport; differing densities between alternatives should be acknowledged.

- Air quality in the terminal area is impacted by configuration and layout of facilities. Facility planning for the alternatives will consider air movement opportunities.

EVALUATION TO REDUCE NUMBER OF TERMINAL AREA CONCEPT ALTERNATIVES

Consultant study team working sessions were held over a two-day period to initially discuss and evaluate merits of airfield and landside development alternatives. The second day was focused on landside terminal area issues. Review and discussion of the five alternative concepts was guided by the findings and recommendations of the first day discussions related to airfield development and the evaluation criteria. In addition, two airside concourse alternatives, existing terminal area facilities optimization, and existing terminal area land expansion opportunities were discussed.

There were several key issues and determinations that were identified at the outset of the evaluation and guided discussion of the alternatives. First, the proposal from the study team's discussion on the first day of working sessions was to recommend a three-runway airfield system for the airport that closes Runway 17-35 in order to increase overall airfield capacity and safety. The second is the issue of roadway complexity; a requirement for new or additional regional access to the airport and/or the level of development required of the terminal area road system to serve the alternative terminal concepts. The third is the issue related to implementation phasing, costs, and reuse of vacated existing facilities; the ability to achieve the desired terminal area concept layout through incremental facility growth versus a requirement to initially implement extensive facilities to achieve necessary growth.

The proposal from the evaluation was to forward two of the terminal area concept alternatives for further consideration. Both alternatives are for expansion of facilities in the existing terminal area. One alternative is to add a second terminal resulting in two unit terminals at the airport and the other is to add a terminal that will centralize all processing of passengers. Each has options related to location of the terminal building and roadway systems. Alternative 1 will be combined with Alternative 3 to become Alternatives 1A and 1B, respectively, with the terminal located either on the site of, or to the north of, the existing parking structure. These alternatives could be developed to initially be a central terminal for all processing of passengers or a second unit terminal growing into the central terminal concept. Alternative 2 will become 2A and 2B, with the terminal located on the site of the former rental car ready/return. The entrance roadway system for Alternative 2A takes a path through the south half of the existing parking structure as depicted. The entrance roadway for Alternative 2B takes a path north of the existing parking structure through the site of the existing long-term parking lot.

The consultant study team's recommendation, from discussions related to the airfield alternatives, is that the general aviation (GA) activity at the airport should remain at the current site. This influenced the team to recommend that Alternative 5 (located on Site A2) should not be forwarded for further consideration. This also meant the alternative that located an airside concourse at the GA site (See **Exhibit VIII-4-J**) should not be forwarded for further consideration as opportunity within the time frame of this Plan. In addition, the alternative that located an airside concourse at Site A6 (See **Exhibit VIII-4-K**) was determined to be too difficult to develop due to its vertical elevation change from the existing airfield and was not considered for further study.

Refinements will be incorporated into the concept layouts based on discussions and preliminary implementation strategies. Costs by Planning Activity Level (PAL) will also be identified prior to further evaluation to determine the preferred concept.

The following identifies issues, in addition to the evaluation criteria, that guided discussion and determination of recommended alternatives for further consideration. The issues are included in the assessment as they are related to the evaluation criteria.

TERMINAL AREA ALTERNATIVES ISSUES

- Airfield - The recommendation, for both airport safety and capacity reasons, is that Runway 17-35 be closed. This will allow for the provision of a dual taxiway/taxi-lane layout of the airfield east of the terminal area. This layout is necessary to avoid significant congestion and delay for the number of potential aircraft parking positions; dual taxiway/taxilane capability is a requirement.

- Aircraft Apron – Aircraft apron depth must consider the provision of a dedicated inner/or outer vehicle service road with the appropriate clearances, both horizontal and vertical. Separation between piers should be such that design aircraft can easily maneuver. Large aircraft can park at the ends of piers where the geometry of the radial layout readily accommodates them.

- Regional Access – Any alternative for the airport access road system should consider improving the connection to the regional freeway system. This connection should be as direct as possible.

- Landside Circulation – Each of the alternative terminal area configurations requires extensive roadway realignments and expansion. Access and egress from either a single combined or dual terminals, recirculation between terminal curbs, and to and from parking, direct access and egress and revenue control for short and long-term parking, and service vehicle circulation all require clarity and simplicity. There should be a minimum of decision points, weaves and changes in elevation, and as direct a route to the desired function as possible.

- Terminal Concept – The two selected alternatives and their variations offer three terminal concepts: unit terminals; a central terminal, and unit terminals that grow into a central terminal over time. Each must be considered both as to its landside and airside accessibility, the level of service it offers the public, tenants and staff through each PAL, and over its full life. In addition, cost at each phase, constructability, and the opportunity each offers to maintain and enhance the regional character of the existing terminals must be considered.

- Reuse – Care must be taken to establish new uses for existing facilities that are vacated by the respective alternatives to maintain revenue generation or minimize duplication of functions.

- Level of Service (LOS) – LOS is a critical measure in judging the acceptability of each alternative. Such factors as passenger experience, walking distances, services offered to passengers by various travel sectors (business, leisure, concessions, art work) ease of way-finding, assistance provided to ease long walking distances to/or changes of level, and proximity of related functions are all are factors to be considered in the development of each alternative and used to compare their acceptability one to another.

- Implementation – As growth seldom comes in huge increases, the phasing of improvements is an important factor. Incremental growth that responds to anticipated demand, constructability that minimizes impacts on continuing airport operations, and control of the level of investment to balance with return and financial capability of the airport over time are all key considerations. Each of these needs to be analyzed to assure the viability of the alternative.

- Cost – Cost is a key factor in judging the acceptability of each alternative. From the outset, the program, schedule and budget must be developed together. The initial investment, cost by phase, long-term cost, operating and maintenance costs, balance of revenue and non-revenue facilities costs all need to be assessed.

ALTERNATIVE 1

General – This alternative will be refined for further consideration and will have two options. The alternatives, 1A and 1B, differ in the location of the terminal building. Alternative 1A locates the terminal as depicted on the site of the existing parking structure. Alternative 1B locates the terminal as depicted in Alternative 3 on the site of the existing long-term parking lot. The assessment of Alternative 1 is as follows:

Alternative 1 provides close proximity between the existing and new terminals allowing the new aircraft gates to be added, on an as-needed basis. As access to the new north/south concourse would be asymmetrical, there would be a shorter connection to initial new gates but a longer connection in the future. If and when a decision is made to centralize all processing functions for passengers (ticketing and bag claim) in the new terminal, travel distances to existing gates would be shorter than in Alternative 3.

Alternative 1 requires the removal of the existing parking structure and the development of a new parking structure capable of serving both the existing and new terminals, at a considerable distance from the existing terminal. If baggage claim and ticketing are centralized in the new terminal, this disadvantage is minimized. Available curb frontage is improved considerably with the dual frontage of the new terminal, but may be strained if processing functions for passengers are centralized.

In Alternative 1, additional frontal gates could be developed along a new connection from the east end of the existing terminal to the south end of the new north/south concourse. Dual taxi-lane capability should be maintained which will limit the size of aircraft in this area. This alternative also offers the opportunity for a central baggage make-up area, directly accessible to the apron for baggage cart traffic and conveyor (or baggage cart if advantageous) connection between the terminal and aircraft.

Assessment –

- Facilities Program
  Level of Service – Short walking distances between terminal buildings, very long distances between new structured parking and the existing terminal. Initially, as two terminals, there will be a duplication of passenger services and concessions.

- Efficiency
  Terminal Concept – Unit terminals, initially, that can grow into a central terminal over time that will increase overall terminal area functional efficiency.
  Reuse – Close proximity of existing and new terminals allows for the most likely continued use of the existing terminal and consequent delay in centralizing terminal functions. The replacement of the existing structured parking at a further distance from the existing terminal is problematic to users of that terminal.

- Financial
  Costs – Initial costs are increased due to the need to replace the capacity of the existing structured parking. As with all alternatives, gates can be added incrementally and accessed from the existing terminal. The need for additional terminal capacity, however, requires the implementation of the entire terminal area drives system as part of the initial new terminal phase. Subsequent expansion of the new terminal and new parking structure can be implemented with minimal impact on existing operations.
  Landside Circulation – Extensive and complex turning radii and weaves to change lanes all occur and are required within a constrained area.

- Development Alternatives
  Implementation – Phasing of improvements, incremental growth, and constructability all will be difficult. See "*Costs*" above.

- Architectural Opportunities – Opportunities to maintain and enhance the unique character of the airport are available with this concept.

- Airfield Impacts
  Airfield – Runway 17-35 closure is requisite, dual taxiway/taxilanes can be provided.
  Aircraft Apron - Apron depth is adequate to provide for aircraft parking and for dedicated vehicle service roads.

- Community Impacts
  Regional Access – This alternative utilizes existing regional access to the terminal area. There may be advantages to providing additional access via Girard to the north as a reliever entrance and exit for the airport. This would have traffic impacts on the community that would require assessment, though access to the airport currently exists using this route.

ALTERNATIVE 2

General – This alternative will be refined for further consideration and will have two options. The alternatives, 2A and 2B, differ in the location of the entrance roadway for the new terminal. Alternative 2A locates the roadway passing through the south half of the existing parking structure. Alternative 2B relocates the roadway north of the existing parking structure and will be developed and assessed as part of the next phase of alternatives study. The assessment of Alternative 2 is as follows:

Alternative 2 removes half of the parking structure to provide space for the by-pass lanes, on two levels, to the new terminal curb. Likewise, by-pass lanes would be required at the new terminal for exiting traffic from the existing terminal. Weave distances for traffic to change lanes are limited. Ample curb frontage would be provided at the new terminal. This alternative offers the simplest roadway alignment of the four alternatives: a single, dual level loop drive. With the removal of half of the existing parking structure, there would be the opportunity to improve curb frontage at the existing terminal by the use of island curbs. This alternative develops the new terminal as a second unit terminal with limited opportunity to centralize functions in the future.

Part of the new parking structure would be required immediately to replace parking lost in the existing structure.

A secure connection between the existing terminal and the new concourse, with potential small aircraft frontal gates and dual taxiway between these and the existing Concourse A, could be provided. An additional security checkpoint would be required. Access to the existing terminal from the potential Light Rail Station would be difficult.

Assessment –

- Facilities Program
  Level of Service – Two separate terminals, each with its own parking, curb frontage, and aircraft gates, provide clear destinations, shorter walking distances for origin and destination passengers. The connection from the potential Light Rail Station to the existing terminal would be more difficult and walking distances for passengers between the two terminals would be long for flight connections or other business.

- Efficiency
  Terminal Concept – Separated unit terminals, a complete duplication of passenger services and concessions, airport operations and maintenance, and other building services would be necessary.
  Reuse – As all existing functions continue in use, there is efficiency of space utilization over time for all except space vacated by tenants moving to the new unit terminal. New tenants would need to be identified for this space that may change use. Also, all constraints of the existing terminal would remain into the future. The most significant issue will be the location and access of the replacement parking for the existing terminal. If located in the new parking structure, walking distances to the existing terminal would be extensive.

- Financial
  Costs – As with Alternative 1, gates can be added incrementally and accessed from the existing terminal. The need for additional terminal capacity, however, requires the implementation of the entire terminal area drives system as part of the initial new terminal phase. Subsequent expansion of the new terminal and new parking structure can be implemented with minimal impact on existing operations. In addition, this alternative would bear the added initial costs associated with the replacement and then demolition of half the existing structured parking. The new terminal area drives in this alternative would be the least expensive, and have the fewest bridges and elevated roadways.

- *Landside Circulation* – Straight forward drives system with a single loop roadway, two levels at the two terminals. However, there is a difficult weave to change lanes required between the existing and new terminals for the by-pass and curb access lanes.

- Development Alternatives
  Implementation – Phasing of improvements, incremental growth, and constructability of this

alternative are straightforward with minimal complication. Relief to the existing terminal curb congestion would be available in this alternative. Also, see "*Costs*" above.

- Architectural Opportunities – Opportunities to maintain and enhance the unique character of the airport are available with this concept. Care must be exercised in developing the new terminal and associated parking structures to maintain views to the mountains from the existing terminal (that was a goal of the development of the existing terminal).

- Airfield Impacts
  Airfield – Runway 17-35 closure is requisite; dual taxiway/taxilanes can be provided.
  Aircraft Apron - Apron depth is adequate to provide for aircraft parking and for dedicated vehicle service roads.

- Community Impacts
  Regional Access – This alternative utilizes existing regional access to the terminal area. There may be advantages to providing additional access via Girard to the north as a reliever entrance and exit for the airport. This would have traffic impacts on the community that would require assessment, though access to the airport currently exists using this route.

ALTERNATIVE 3

General – This alternative will be refined for further consideration as Alternative 2B. The assessment of Alternative 3 is as follows:

Alternative 3 retains the existing terminal and parking structure initially and adds a new terminal and parking structure to the north. Available curb frontage is improved considerably with the dual frontage of the new terminal, but they may become strained in the future if processing functions for passengers are centralized. Available curb frontage is similar to Alternative 1. Access to the north/south concourse is centralized, which is in balance at full build out, but a lengthy connection would be required initially to the south gates of the concourse. If and when the processing functions are centralized in the new terminal, either dual moving walkways or automated peoplemovers would be required to access the existing terminal and gates (under, through, or over the existing parking structure), the new concourse, and the potential Light Rail Station (through the new parking structure). There would be a potential centralized security location under this option.

In Alternative 3, additional frontal gates could be developed along a new connection from the east end of the existing terminal to the south end of the new north/south concourse. Dual taxi-lane capability should be maintained which will limit the size of aircraft in this area. This alternative also offers the opportunity for a central baggage make-up area, directly accessible to the apron for baggage cart traffic and conveyor (or baggage cart if advantageous) connection between the terminal and aircraft.

Assessment –

- Facilities Program
  Level of Service – This alternative gives the clearest future potential for a centralized terminal. It also allows the new terminal and new concourse to be built with less impact on continuing operations of the existing terminal, curbs, and parking structure. There will be a duplication of passenger services and concessions in the initial phase until all processing operations are consolidated into the new terminal facilities. Walking distances from parking to the existing or new terminals are the same as present. The creation of a peoplemover system (moving walkways or automated vehicle), from the potential Light Rail Station to existing terminal, and from new terminal to new concourse, offers the opportunity for centralized security at the crossings of these systems at the new terminal. This would help reduce walking distances and improve levels of service.

- Efficiency
  Terminal Concept – This development approach could begin as a unit terminal growing into a centralized terminal over time.
  Reuse – Utilization of existing parking to serve the new or existing terminals is efficient. Reuse of existing ticketing and baggage claim areas, if these functions are centralized in the new terminal facilities, is yet to be determined.

- Financial
  Costs – As with previous alternatives, gates can be added incrementally and accessed from the existing terminal. The need for additional terminal capacity, however, requires the implementation of the entire terminal area drives system as part of the initial new terminal phase. Subsequent expansion of the new terminal and new parking structure can be implemented with minimal impact on existing operations.
  Landside Circulation – The terminal area roadways are extensive and complex, but with adequate distances to make decisions for lane change weaving and for turning radii.

- Development Alternatives
  Implementation – Phasing of improvements, incremental growth, and constructability will be complex but can be achieved while keeping the terminal area operational.

- Architectural Opportunities – Opportunities to maintain and enhance the unique character of the airport are available with this concept.

- Airfield Impacts
  Airfield – Runway 17-35 closure is requisite; dual taxiway/taxilanes can be provided.
  Aircraft Apron - Apron depth is adequate to provide for aircraft parking and for dedicated vehicle service roads.

- Community Impacts
  Regional Access – This alternative utilizes existing regional access to the terminal area. There may be advantages to providing additional access via Girard to the north as a reliever entrance and exit for the airport. This would have traffic

impacts on the community that would require assessment, though access to the airport currently exists using this route.

ALTERNATIVE 4

General – This alternative will not be carried forward for further consideration. As previously noted, proposals related to airfield development that recommend closure of Runway 17-35 to increase overall airfield capacity and safety would render the less efficient linear single-sided frontal gate airside concourse configuration unnecessary. Alternatives that include pier concourse configurations (double-sided aircraft gates) are more efficient and thus will be carried forward in lieu of this alternative.

ALTERNATIVE 5

General – This alternative will not be carried forward for further consideration. As previously noted, recommendations related to airfield development that the general aviation (GA) activity at the airport would remain at the current site eliminated this Alternative. This alternative would also require new regional access to the airport and an entirely new terminal area road system. As a replacement terminal area for the existing, it would also result in the vacation of extensive resources that have current high value, and would not lend itself to incremental development to achieve necessary growth.

Chapter Eight

Passenger Terminal Facilities

Section Five

ALTERNATIVES REFINEMENT

Chapter Eight
Passenger Terminal Facilities

Section Five
ALTERNATIVES REFINEMENT

Following the review of the terminal facility alternatives presented in Section Four, the number of potential terminal development alternatives were reduced from seven to four. This section describes the refined terminal alternatives. The analysis provided in this section provides the underlying rationale for the recommended terminal area program presented later in Section Six.

The refined terminal area alternatives focus on maintaining all commercial airline functions in the northwest quadrant where the current terminal building, departure concourse, and support facilities are located. Following the airfield recommendations presented in Chapter Five, the refined terminal area alternatives assume Runway 17-35 will be closed when major pavement rehabilitation is required. The north area of Runway 17-35 will then be available to convert to terminal uses.

The refined alternatives consider two separate development options for expanded terminal needs.

Alternatives 1A and 1B consider a centralized terminal concept. A centralized terminal is characterized by a single building accommodating passenger check-in and baggage handling which serves multiple departure concourses. Alternatives 2A and 2B consider a second unit terminal. A second unit terminal would operate similar to the existing terminal building, providing its own ticketing, baggage claim, departure concourse, and support facilities.

Short term terminal area development and development costs are the same for each alternative and have not been included in the following analyses. Short term improvements include capacity enhancements to the existing terminal for passenger processing, terminal curbs, and security checkpoint

processing. Other capacity enhancements to the existing concourse include additional passenger holdroom space to accommodate the slightly larger aircraft anticipated in the future. Additionally, the concourse is extended to the west in order to accommodate the slightly longer wingspans of anticipated aircraft and maintain the total number of gates currently available. Short term improvements are estimated to cost $47,430,000 in 2002 dollars.

ALTERNATIVE 1A CENTRAL TERMINAL

Alternative 1A is a refinement of Site E1, Alternative 1 presented in Section Four and is shown on **Exhibit VIII-5-A**. Improvements include a new terminal located on the site of the existing parking structure. Additional new facilities include new aircraft gates that are linked to the existing terminal as well as new terminal drives and roadways, and parking. This alternative could grow into a centralized terminal for the airport in the future.

Long range development includes expansion of the terminal, addition of another parking structure, and expansion of aircraft gates and concourse facilities. This alternative can provide capacity beyond the plan activity level.

The alternative incorporates a revised two-sided multi-level terminal facility. The airside remains a multi-pier concourse configuration linked by a pedestrian connector to the terminal. Inbound baggage handling is proposed within the terminal with outbound facilities proposed at the concourse.

In the future, if the need arises, an international arrivals facility could be constructed at the west end of the existing terminal or at the north end of the new concourse. The east end of the existing terminal could be converted to a regional terminal if the new terminal becomes a centralized terminal.

Regional access is from existing Sunport Boulevard, and could also be provided from Gibson Boulevard. The planned regional transit station for the airport could be integrated into the north end of the future parking facility. This alternative requires the closure of Runway 17-35.

ALTERNATIVE 1B CENTRAL TERMINAL

Alternative 1B is a refinement of Site E1, Alternative 3 presented in Section Four and is shown on **Exhibit VIII-5-A**. Improvements include a new terminal located on the site of the existing long-term parking lot. Additional facilities include aircraft gates that are linked to the existing terminal as well as the new terminal drives and roadways, and parking. Like Alternative 1A, this alternative could grow into a centralized terminal for the airport in the future.

Long range development includes expansion of the terminal, parking structure, and expansion of aircraft gates and concourse facilities. This alternative can provide capacity beyond the plan activity level.

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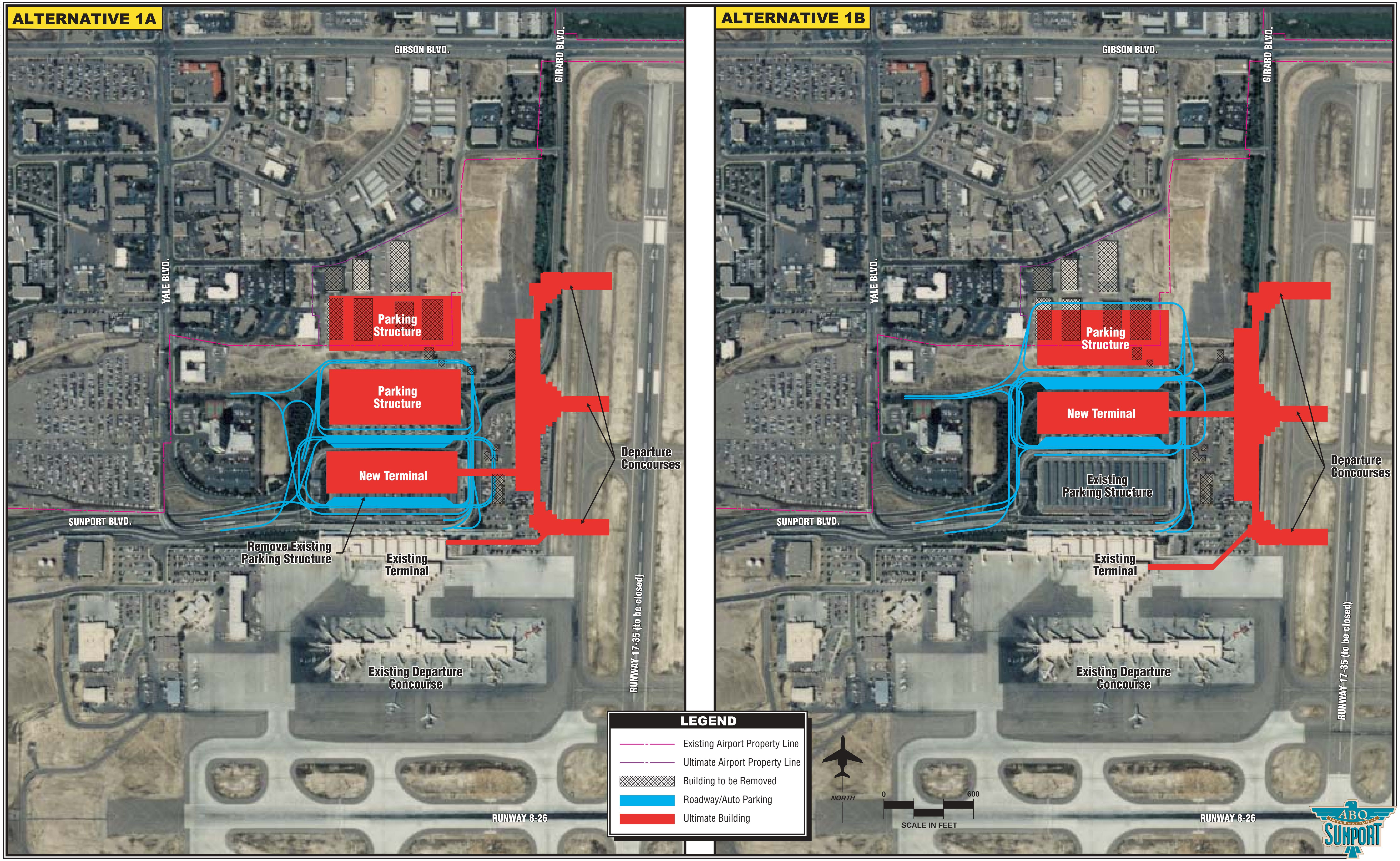

Exhibit VIII-5-A
REFINED TERMINAL ALTERNATIVES 1A & 1B

The terminal area facilities are as described for Alternative 1A. The differences occur at the concourse where the linkage between the new concourse and existing terminal is a greater distance, and in the roadway system where there is considerably more site area to accomplish terminal area circulation. Also, an automated peoplemover system could be implemented in the future to connect the centralized terminal to remote airside areas and the consolidated rental car facility.

ALTERNATIVE 2A SECOND UNIT TERMINAL

This alternative is a refinement of Site E1, Alternative 2 presented in Section Four and is shown on **Exhibit VIII-5-B**. Improvements include a new terminal located northeast of the existing parking structure. The south half of the existing parking structure would be demolished and re-built to implement the roadway system. Additional facilities include aircraft gates that are attached to the second terminal and linked to the existing terminal, terminal drives and roadways, and a new parking structure.

Long range development includes expansion of the terminal, parking structure, and expansion of aircraft gates and concourse facilities. This alternative can provide capacity beyond the plan activity level.

The terminal is a single-sided multi-level terminal facility with associated curbs and roads and a multi-pier concourse. Consolidated inbound and outbound baggage handling facilities would be located in the terminal and concourse. If the need arises, an international arrivals facility could be constructed between terminals with "swing mode" aircraft gates. Multi-level parking structures are located north and west of the terminals. Regional access would be provided from existing Sunport Boulevard, and could also be provided from Gibson Boulevard. This alternative requires the closure of Runway 17-35. The planned regional transit station for the airport could be located adjacent to the north parking structure.

ALTERNATIVE 2B SECOND UNIT TERMINAL

This alternative is a variation of Alternative 2A described previously and is shown on **Exhibit VIII-5-B**. This alternative is essentially the same as Alternative 2A, except that it does not require the removal of the south half of the existing parking structure to implement the roadway system. Long range development is the same as for Alternative 2A, and this alternative can also provide capacity beyond the plan activity level. The terminal area facilities are as described for Alternative 2A; differences are limited to the roadway system where there is more site area to accomplish necessary circulation.

PRELIMINARY COSTS

The project costs for the alternatives are developed at a planning level order of magnitude based on quantity of improvements and their anticipated unit values. Where noted, cost allowances are included for systems based on quantity allocation and unit value as identified by industry providers. Planning and design contingencies, as well as construction contingencies, have been added to arrive at a total cost. Administrative and other "soft costs" necessary for implementing improvements are not included in the totals. The costs are phased and improvements are categorized as noted below.

Table VIII-5-A summarizes intermediate and long range development costs for Alternative 1A. **Table VIII-5-B** summarizes intermediate and long range development costs for Alternative 1B. Intermediate and long range development costs for Alternatives 2A and 2B are summarized in **Table VIII-5-C** and **Table VIII-5-D**, respectively.

EVALUATION OF ALTERNATIVES

As has been noted earlier, three issues are common to all alternatives:

- The Master Plan recommends closure of Runway 17-35 in the future. While all four alternatives can be developed with varying degrees of efficiency providing initial frontal gates only, the full airside capability incorporating double-sided piers cannot occur until the runway is closed.
- All alternatives must provide improved regional road access to the terminal area. All four alternatives offer this improvement. However, it is achieved with varying degrees of difficulty in terms of layout, simplicity, and cost.
- All alternatives must offer the opportunity for incremental growth, phasing, and re-use of terminal facilities whose existing function has been relocated. Again, each alternative meets this requirement to differing degrees.

Evaluation criteria are described earlier in this section. Their application to the initial five alternatives was also described earlier in this section. Since Alternatives 1A and 1B were developed from the original Site E1 – Alternative 1 and Site E1 – Alternative 3, respectively, and Alternatives 2A and 2B were developed from the original Site E1 – Alternative 2, the assessment of those original alternatives applies to the final alternatives as well. The assessments that follow add to these earlier assessments and lead to the selection of a preferred alternative.

ALTERNATIVE 1A

- **Facility Program:** Alternative 1A meets projected program requirements, landside and airside. The central terminal development optimizes response to the program. Road access is somewhat constrained, thus less optimal than Alternative 1B.

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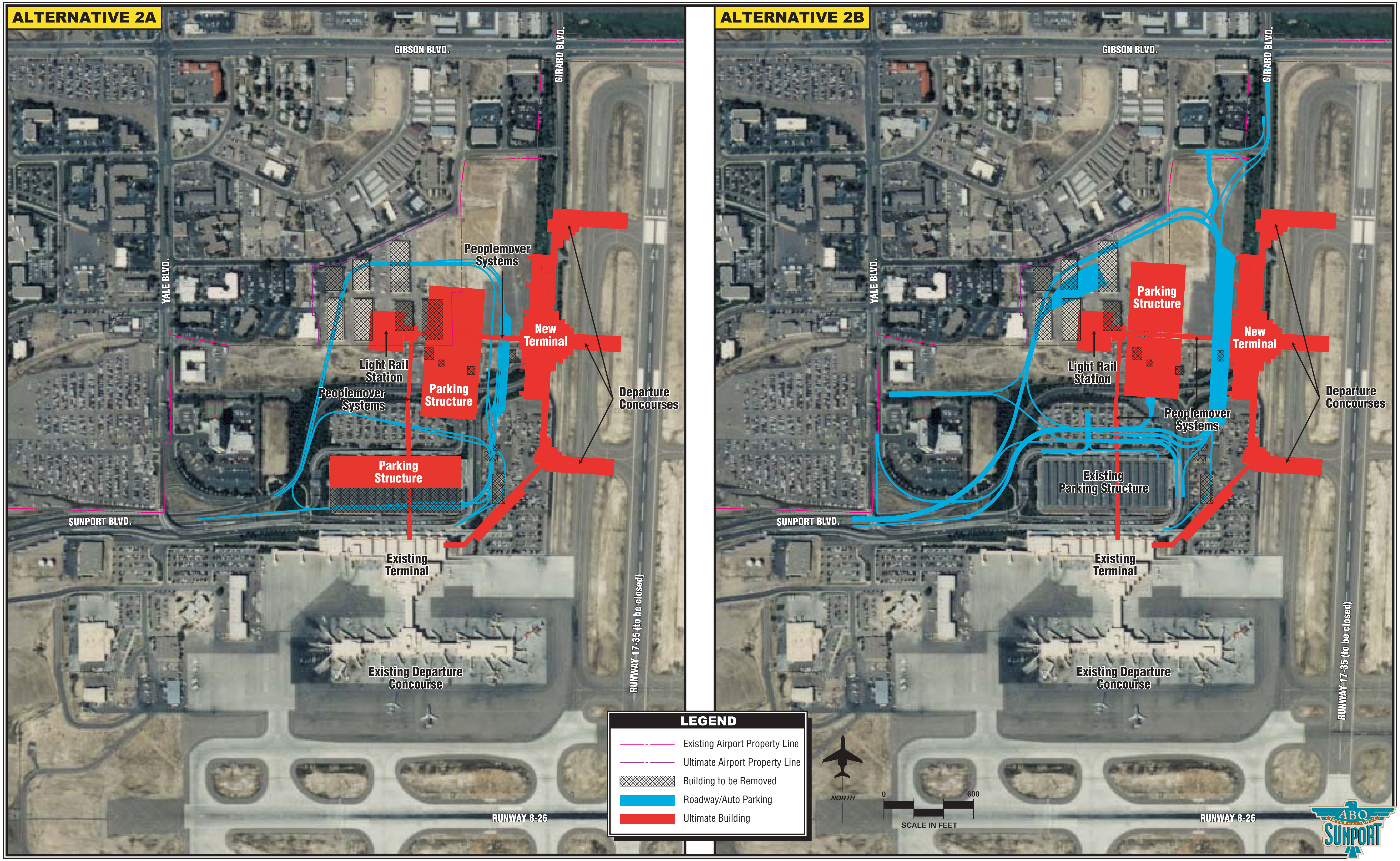

Exhibit VIII-5-B
REFINED TERMINAL ALTERNATIVES 2A & 2B

TABLE VIII-5-A
Development Costs
Passenger Terminal Alternative 1A

Description	Total Cost
INTERMEDIATE TERM PLANNING HORIZON	
Airside	
Aircraft Apron, Taxiways, Taxilanes	$17,000,000
Subtotal Airside	**$17,000,000**
Terminal and Concourses	
New Terminal & Concourse	$157,521,000
Existing Terminal/Concourse Upgrades	31,250,000
Peoplemover/Division 14 Systems	12,040,000
Inbound Baggage Handling Systems	4,550,000
Aircraft Loading Bridge Systems	1,000,000
Subtotal Terminal and Concourses	**$206,361,000**
Parking and Access	
Terminal Drives/Roadways	$23,924,500
Structured & On-Grade Parking	64,200,000
Subtotal Parking and Access	**$88,124,500**
Site/Support	
Property Acquisition	$20,000,000
Facility Demolition	14,462,500
Subtotal Site/Support	**$34,462,500**
Total Intermediate Term Planning Horizon	**$345,948,000**
LONG RANGE PLANNING HORIZON	
Airside	
Aircraft Apron, Taxiways, Taxilanes	$14,000,000
Subtotal Airside	**$14,000,000**
Terminal and Concourses	
New Terminal & Concourse	$113,490,500
Existing Terminal/Concourse Upgrades	15,625,000
Peoplemover/Division 14 Systems	12,080,000
Inbound Baggage Handling Systems	2,150,000
Aircraft Loading Bridge Systems	2,500,000
Subtotal Terminal and Concourses	**$145,845,500**
Parking and Access	
Structured & On-Grade Parking	$34,800,000
Subtotal Parking and Access	**$34,800,000**
Total Long Range Planning Horizon	**$194,645,500**
TOTAL DEVELOPMENT COST - ALTERNATIVE 1A	***$540,593,500***

TABLE VIII-5-B Development Costs Passenger Terminal Alternative 1B	
Description	**Total Cost**
INTERMEDIATE TERM PLANNING HORIZON	
Airside	
Aircraft Apron, Taxiways, Taxilanes	$17,000,000
Subtotal Airside	**$17,000,000**
Terminal and Concourses	
New Terminal & Concourse	$173,280,375
Existing Terminal/Concourse Upgrades	31,250,000
Peoplemover/Division 14 Systems	13,180,000
Inbound Baggage Handling Systems	4,550,000
Aircraft Loading Bridge Systems	1,000,000
Subtotal Terminal and Concourses	**$223,260,375**
Parking and Access	
Terminal Drives/Roadways	$25,915,500
Structured & On-Grade Parking	19,200,000
Subtotal Parking and Access	**$45,115,500**
Site/Support	
Property Acquisition	$20,000,000
Facility Demolition	2,762,500
Subtotal Site/Support	**$22,762,500**
Total Intermediate Term Planning Horizon	**$308,138,375**
LONG RANGE PLANNING HORIZON	
Airside	
Aircraft Apron, Taxiways, Taxilanes	$14,000,000
Subtotal Airside	**$14,000,000**
Terminal and Concourses	
New Terminal & Concourse	$97,731,125
Existing Terminal/Concourse Upgrades	15,625,000
Peoplemover/Division 14 Systems	12,840,000
Inbound Baggage Handling Systems	2,150,000
Aircraft Loading Bridge Systems	2,500,000
Subtotal Terminal and Concourses	**$130,846,125**
Parking and Access	
Structured & On-Grade Parking	$34,800,000
Subtotal Parking and Access	**$34,800,000**
Total Long Range Planning Horizon	**$179,646,125**
TOTAL DEVELOPMENT COST - ALTERNATIVE 1B	***$487,784,500***

TABLE VIII-5-C
Development Costs
Passenger Terminal Alternative 2A

Description	Total Cost
INTERMEDIATE TERM PLANNING HORIZON	
Airside	
Aircraft Apron, Taxiways, Taxilanes	$17,000,000
Subtotal Airside	**$17,000,000**
Terminal and Concourses	
New Terminal & Concourse	$141,913,250
Existing Terminal/Concourse Upgrades	36,250,000
Peoplemover/Division 14 Systems	8,590,000
Inbound Baggage Handling Systems	5,600,000
Aircraft Loading Bridge Systems	1,000,000
Subtotal Terminal and Concourses	**$193,353,250**
Parking and Access	
Terminal Drives/Roadways	$24,929,300
Structured & On-Grade Parking	41,400,000
Subtotal Parking and Access	**$66,329,300**
Site/Support	
Property Acquisition	$20,000,000
Facility Demolition	14,462,500
Subtotal Site/Support	**$34,462,500**
Total Intermediate Term Planning Horizon	**$311,145,050**
LONG RANGE PLANNING HORIZON	
Airside	
Aircraft Apron, Taxiways, Taxilanes	$14,000,000
Subtotal Airside	**$14,000,000**
Terminal and Concourses	
New Terminal & Concourse	$48,417,375
Existing Terminal/Concourse Upgrades	31,250,000
Peoplemover/Division 14 Systems	2,540,000
Inbound Baggage Handling Systems	2,750,000
Aircraft Loading Bridge Systems	2,500,000
Subtotal Terminal and Concourses	**$87,457,375**
Parking and Access	
Structured & On-Grade Parking	$34,800,000
Subtotal Parking and Access	**$34,800,000**
Total Long Range Planning Horizon	**$136,257,375**
TOTAL DEVELOPMENT COST - ALTERNATIVE 2A	***$447,402,425***

TABLE VIII-5-D
Development Costs
Passenger Terminal Alternative 2B

Description	Total Cost
INTERMEDIATE TERM PLANNING HORIZON	
Airside	
Aircraft Apron, Taxiways, Taxilanes	$17,000,000
Subtotal Airside	**$17,000,000**
Terminal and Concourses	
New Terminal & Concourse	$143,129,250
Existing Terminal/Concourse Upgrades	36,250,000
Peoplemover/Division 14 Systems	10,540,000
Inbound Baggage Handling Systems	5,600,000
Aircraft Loading Bridge Systems	1,000,000
Subtotal Terminal and Concourses	**$196,519,250**
Parking and Access	
Terminal Drives/Roadways	$44,397,761
Structured & On-Grade Parking	19,200,000
Subtotal Parking and Access	**$63,597,761**
Site/Support	
Property Acquisition	$20,000,000
Facility Demolition	14,462,500
Subtotal Site/Support	**$34,462,500**
Total Intermediate Term Planning Horizon	**$311,579,511**
LONG RANGE PLANNING HORIZON	
Airside	
Aircraft Apron, Taxiways, Taxilanes	$14,000,000
Subtotal Airside	**$14,000,000**
Terminal and Concourses	
New Terminal & Concourse	$47,517,375
Existing Terminal/Concourse Upgrades	31,250,000
Peoplemover/Division 14 Systems	2,540,000
Inbound Baggage Handling Systems	2,750,000
Aircraft Loading Bridge Systems	2,500,000
Subtotal Terminal and Concourses	**$86,557,375**
Parking and Access	
Structured & On-Grade Parking	$34,800,000
Subtotal Parking and Access	**$34,800,000**
Total Long Range Planning Horizon	**$135,357,375**
TOTAL DEVELOPMENT COST - ALTERNATIVE 2B	***$446,936,886***

- **Level of Service:** The replacement and removal of the existing parking structure produces longer walks from parking to existing gates, such as long walks to northernmost future gates. The re-use of the existing terminal could include modernization and expansion of the west end for international arrivals, the east end for regional carrier operations, and/or conversion as an airside only facility.

- **Efficiency:** The close proximity of the new central terminal is provided to both existing and new gates by redevelopment and removal of the existing parking structure. There is clarity of central terminal functions and efficient use of the existing site. The central terminal would have very good adaptability for change. A functional re-use of the existing terminal would need to be determined.

- **Financial:** Alternative 1A requires the removal of the existing parking structure to provide the site for the new central terminal, thus is the most expensive, both initially and at ultimate build-out (UBO). Alternatives 1A and 1B would also incur costs to improve and modernize the existing terminal and concourses as an airside facility.

- **Development Strategy:** It would be awkward to develop a new parking structure that will serve the existing terminal if they are separated from each other by the construction site of the new central terminal. Parking for the ultimate build-out of the terminal area will be remote from both the existing terminal and the new central terminal - requiring a peoplemover or moving walkways to assist passenger circulation.

- **Architectural Opportunities:** All alternatives offer the opportunity for architectural excellence, sense of place and expression of the uniqueness of the area. The orientation along the length of the terminal in Alternatives 1A and 1B is a north and south exposure, thus affording more control of environmental conditions for comfort and energy efficiency.

- **Airfield Impacts:** All alternatives anticipate the closure of Runway 17-35. Each alternative could be developed with only frontal gates initially, if required, but would be limited to Group III aircraft. This alternative was assessed positively in part due to initial phase proximity between the new central terminal and the existing terminal and new gates.

- **Community Impacts:** Roadway development can maintain current connections to the surrounding community. There may be a need to acquire land directly to the north of the existing airport property for ultimate development of the terminal area.

- **Airlines:** The proximity of the central terminal to the existing terminal and new gates appears to be superior to Alternative 1B, but less efficient than unit terminal Alternatives 2A and 2B as viewed from an airline operational perspective.

ALTERNATIVE 1B

- **Facility Program:** Alternative 1B meets projected program requirements, landside and airside. The central terminal development optimizes response to program.

- **Level of Service:** This alternative required the longest walks between parking, central terminal, and gates. It will require a peoplemover system or moving walks in the long-term. The terminal drive traffic circulation is complex.

- **Efficiency:** The organizational efficiency of a centralized terminal is tempered by long walking distances. Terminal roadway circulation is somewhat complicated. The central terminal would have very good adaptability for change. The functional re-use of the existing terminal is still to be determined.

- **Financial:** Apron development costs will be approximately the same between Alternatives 1A and 1B although roadway costs will be substantially higher than Alternative 1A. Alternative 1B's initial cost was estimated as somewhat less than Alternative 2A. Ultimate build-out costs, however, are appreciably higher than Alternative 2A.

- **Development Strategy:** Implementation will have minimal impact on continuing airport operations. This alternative has good incremental expansion capability although walking distances will be long from the future parking structure to the existing terminal.

- **Architectural Opportunities:** All alternatives offer the opportunity for architectural excellence, sense of place, and expression of the uniqueness of the area. Like Alternative 1A, the exposure of the length of the terminal is north and south, thus affording more control of environmental conditions for comfort and energy efficiency.

- **Airfield Impacts:** All alternatives anticipate the closure of Runway 17-35. Each could be developed with only frontal gates initially, if required, but would be limited to Group III aircraft.

- **Community Impacts:** Roadway development can maintain current connections to the surrounding community. There is a need to acquire land directly to the north of the existing airport property for development of the terminal, parking, and roadways.

- **Airlines:** Of the two central terminal alternatives, the Alternative 1B terminal is more remote from the existing gates and, therefore, operationally less attractive to the airlines.

ALTERNATIVE 2A

- **Facility Program:** Alternative 2A meets program requirements, but the unit terminal configuration provides duplication of support facilities and concessions. This alternative requires partial removal and replacement of the existing parking structure in order to meet the number of traffic lanes required.

- **Level of Service:** Once passengers are directed to the proper terminal, the unit terminal concept can simplify passenger functions and wayfinding. This alternative has a more complicated road circulation system than Alternative 2B. Replacement and removal of half the existing parking structure will require longer walks to the new parking and to the existing terminal gates.

- **Efficiency:** Unit terminals trade clarity of location of airlines with duplication of support functions. Consequently, there is less efficient site utilization. Unit terminals have good adaptability for change, but are also inherently less flexible from an airport operations standpoint. Growth of tenants may be more difficult to stage depending on magnitude and the airport's ability to move tenants between terminal buildings.

- **Financial:** Apron development costs will be approximately the same between Alternatives 2A and 2B, although roadway costs will be lower than Alternative 2B. The initial phase cost of Alternative 2A is somewhat higher than Alternatives 1B and 2B. Ultimate build-out costs, however, are substantially lower than Alternative 1B, but higher than Alternative 2B. Alternatives 2A and 2B may incur higher costs than other alternatives for the improvements and modernization of the entire existing terminal for both passenger processing and gates.

- **Development Strategy:** Implementation will be difficult. Capacity equal to half the existing parking structure must be provided in the new parking structure, and passenger access maintained to the existing terminal while half the existing parking structure is removed to widen the existing terminal drives. Once this step has been accomplished, long term growth and incremental expansion can be easily accommodated. Access from the new parking structure to the existing terminal will continue to be awkward, thus reducing some operational flexibility.

- **Architectural Opportunity:** All alternatives offer the opportunity for architectural excellence, sense of place, and the uniqueness of the area. The orientation along the length of the terminal in Alternatives 2A and 2B is an east and west exposure, thus affording less control of environmental conditions for comfort and energy efficiency.

- **Airfield Impacts:** All alternatives anticipate the closure of Runway 17-35. Each could be developed with only frontal gates initially, if required, but would be limited to Group III aircraft. The configuration currently shown for the connection of the existing terminal airside and the new concourse for Alternatives 2A and 2B was judged as beneficial. It should be noted that further study of this linkage would improve its value.

- **Community Impacts:** Improved community access to the airport could be provided.

- **Airlines:** The unit terminal alternatives, 2A and 2B, offer a direct connection between terminal functions, airside gates, and operations areas. This will optimize the operational efficiency for the airlines.

ALTERNATIVE 2B

- **Facility Program:** Like Alternative 2A, this meets the program requirements with the same duplication of support facilities and concessions due to the unit terminal configuration.

- **Level of Service:** Once passengers are directed to the proper terminal, the unit terminal concept can simplify passenger functions and wayfinding. This alternative has a simpler but more extensive road circulation system than Alternative 2A.

- **Efficiency:** Unit terminals trade clarity of location of airlines with duplication of support functions and, consequently, less efficient site utilization. The unit terminals provide superior adaptability to change but are also inherently less flexible from an airport operations standpoint. Growth of tenants may be more difficult to stage depending on magnitude and the airport's ability to move tenants between terminal buildings. Alternative 2B provides efficient terminal drive circulation and continued use of existing terminal and its drives.

- **Financial:** Apron development costs will be approximately the same between this alternative and Alternative 2A. Roadway costs will be higher than Alternative 2A. The initial phase cost of Alternative 2B is somewhat lower than Alternatives 1B and 2A. Ultimate build-out costs for Alternative 2B are lowest of the alternatives. Alternatives 2A and 2B would incur higher costs than other alternatives for the improvements and modernization of the entire existing terminal for both passenger processing and gates although the use and cost to remodel the existing terminal in Alternatives 1A and 1B is to be determined.

- **Development Strategy:** Alternative 2B offers the most flexible implementation strategy as it has minimal impact on the existing facilities and their continuing operation. When the new terminal, concourse, and parking structure are needed, they can be built with only minimal adjustment to the exit roadway alignments. Each terminal area component can be expanded incrementally.

- **Architectural Opportunity:** All alternatives offer the opportunity for architectural excellence, sense of place, and expression of the uniqueness of the area. The orientation along the length of the terminal is an east and west exposure, affording less control of environmental conditions for comfort and energy efficiency than the opposite orientation.

- **Airfield Impacts:** All alternatives anticipate the closure of Runway 17-35. Each could be developed with only frontal gates, initially if required, but would be limited to Group III aircraft. The configuration currently shown for the connection of the existing terminal airside and the new concourse was judged as beneficial. Further study of this linkage would improve its value.

- **Community Impacts:** Improved community access to the airport is provided. There is somewhat of an improvement over Alternative 2A in that there is no construction required on the curb and drives at the existing terminal.

- **Airlines:** The unit terminal alternatives, 2A and 2B, offer a direct connection between terminal functions, airside gates, and operations areas. This will optimize the operational efficiency for the airlines.

PREFERRED ALTERNATIVE

Alternative 2B is the preferred terminal area development alternative. Unlike Alternatives 1A and 1B, Alternative 2B maximizes the use of the existing terminal building and departure concourse. This preserves the existing terminal infrastructure development and public and private investments in the building. While this alternative duplicates ticketing and baggage claim functions in the second unit terminal, it allows for the continued use of the existing terminal building. Alternatives 1A and 1B would have replaced these functions in the central terminal building. This would have rendered a large portion of the existing terminal unusable, requiring additional costs to rebuild these areas for alternative uses or to be removed.

This alternative also provides development and phasing opportunities which do not impact the operation or use of the existing terminal building and departure concourse. Since Alternative 2B focuses on new terminal development northeast of the existing terminal building, in an area currently not in use, Alternative 2B can be implemented with little or no impacts on the operation of the existing terminal building. Alternatives 1A and 2A impact the existing parking structure.

Chapter Eight

Passenger Terminal Facilities

Section Six

RECOMMENDED PROGRAM

Chapter Eight
Passenger Terminal Facilities

Section Six
RECOMMENDED PROGRAM

The previous sections evaluated the passenger terminal area needs both short and long term, then examined potential alternatives to accommodate those needs. That effort resulted in the selection of a concept for future terminal area development. The passenger terminal recommendations were prepared after considering the functional, environmental, and financial factors involved. This also included how the terminal concept would fit in concert with the other functional components of the airport.

The purpose of this chapter is to refine and define the recommended development, how it would be phased over the planning horizons, and provide estimated costs for later consideration in the financial plan. This chapter will present the proposed improvement plan for the passenger terminal and related facilities such as access and parking as well as belly freight and other support facilities.

PASSENGER TERMINAL RECOMMENDATIONS

Terminal Alternative 2B is the concept recommended for development. It is depicted on **Exhibit VIII-6-A**. This concept involves continuing to utilize the existing terminal, then when demand dictates, supplement it with a second unit terminal located just north and east of the existing terminal. It is important to note that the new unit terminal is an addition alongside the existing terminal. It is not a replacement for the existing terminal. In fact, one of the key factors in the selection of the unit terminal over the central terminal was that the unit terminal will continue to maximize the use of the existing terminal infrastructure. The proposed improvements are discussed below, first for the existing terminal, then for the unit terminal.

EXISTING TERMINAL

The passenger terminal has been undergoing several modifications in the months since the events of September 11, 2001. Security has been increased, putting an even greater strain on the security checkpoint in the terminal. Modifications are underway in this area as well as throughout the terminal to upgrade security and maintain the capacity of the facility. While they will be incorporated into future terminal design, they are being implemented separately from the long range terminal plan. The plan does provide for a terminal building addition located adjacent to the existing security checkpoint to increase the processing capacity of passenger security screening stations.

Still, the initial terminal recommendations are to focus on maintaining and modifying the existing terminal building to meet the short term needs of the airport. This will involve apron rehabilitation and improvements to add more space for gates at the existing concourses. As part of this plan, the existing belly freight terminal will be removed and placed at a new location further south and west along the flightline to Runway 8-26. This will create more space for aircraft circulation and a gate addition to the west.

Additions to Concourses A and B and an extension to the west of Concourse B will allow for re-spacing existing aircraft gates plus adding three new B737-700 equivalent gates. This also allows for passenger circulation, concessions, airport and airline support space, building services, ramp level operations space (assumed 40 percent enclosed but not fitted out), airport special systems, and baggage handling space.

An addition to the east end of the main terminal will provide more space for baggage claim and ticketing facilities including all circulation, concessions, airport and airline support space, vertical circulation elements (elevators and stairs), building services, airport special systems, and baggage handling space.

The plan also allows for expansion of existing outbound baggage systems by tenants and inbound baggage systems by the airport. The outbound systems are assumed to be manual conveyor type delivery from terminal to loop-sort devices at terminal. Inbound systems are planned as a tug and cart operation to the terminal with conveyor type delivery to sloped plate devices in baggage claim.

The intent of the improvements in the existing terminal is to maximize the use and efficiency of the terminal and delay the need for the second terminal.

SECOND UNIT TERMINAL

Once the current terminal has been optimized, the focus will then turn to

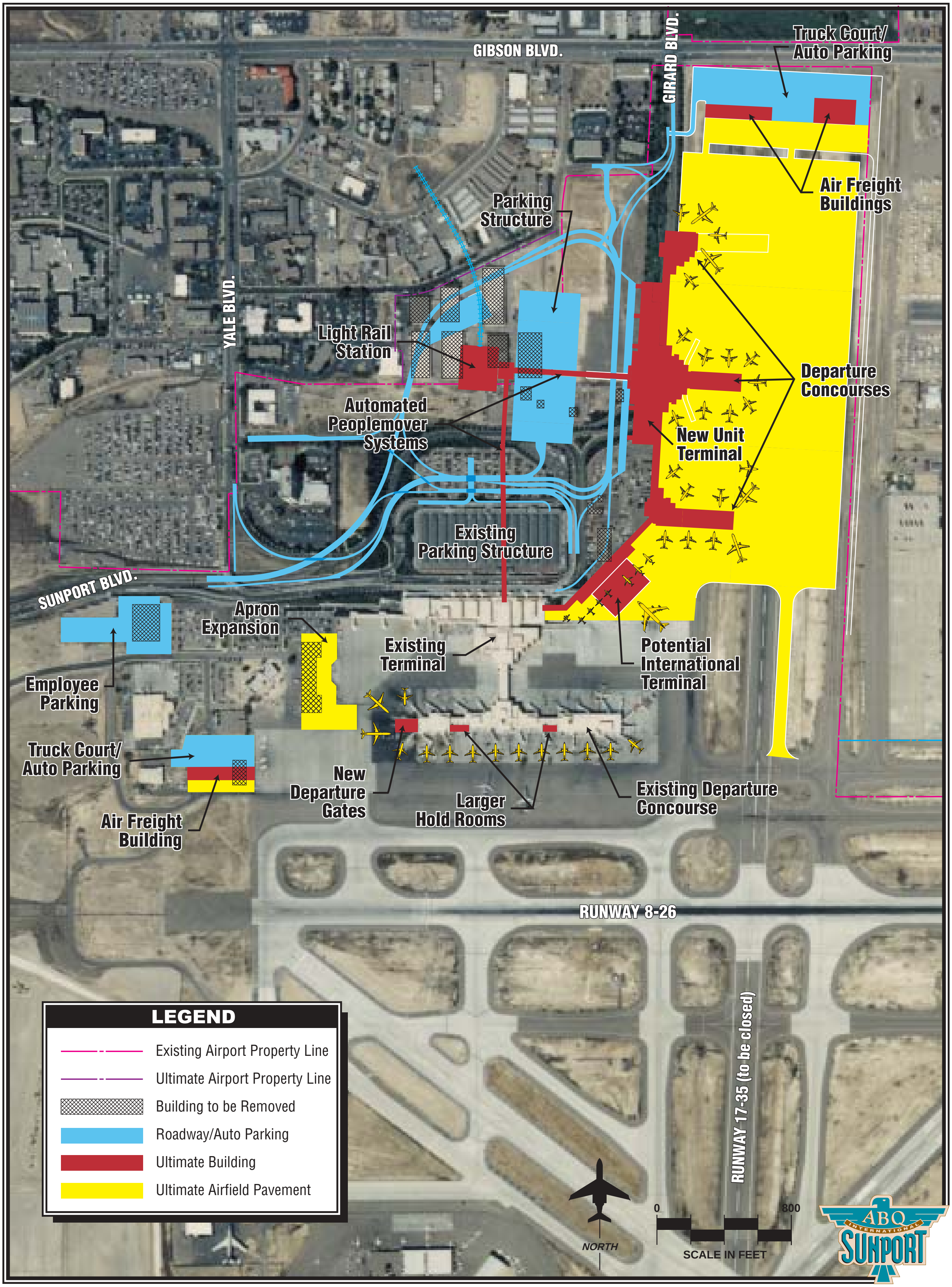

Exhibit VIII-6-A
RECOMMENDED TERMINAL AREA PLAN

development of the second unit terminal. As shown on **Exhibit VIII-6-A**, the new unit terminal is planned to allow for up to three concourses, with the capability to accommodate up to nine gates each.

The aircraft parking apron and dual taxilane circulation will be developed on the east side of the terminal and between the concourses. Dual taxilanes running north-south from Taxiway A will provide ingress and egress to the second terminal. Parallel Taxiway D will be incorporated into this system as the outboard taxilane. The inboard taxilane will be a ramp taxiway.

The new concourse and holdroom gate facilities include all circulation, concessions, airport and airline support space, vertical circulation elements (escalators, elevators, stairs), peoplemover (moving walkways as depicted in plans), building services, ramp level operations space (assumed 40 percent enclosed but not fitted out), airport special systems, and baggage handling space.

The new unit terminal will be able to operate independently of the existing terminal but will still have the capability for a public interface between the terminals. This connection will be provided by pedestrian bridges. These elevated enclosed walkways will connect between terminals, concourses, and parking structures. They will be concourse-type structures with glazed sides, climate-controlled, including a moving walkway system.

The new unit terminal will also include all circulation, concessions, airport and airline support space, vertical circulation elements (escalators, elevators, stairs), building services, basement level operations/building maintenance space, airport special systems, and baggage handling space.

As with the renovations to the existing terminal, the outbound baggage systems are anticipated to be incorporated by the tenants and assumed to be a manual conveyor-type delivery system to loop-sort devices at the terminal. Inbound baggage systems will be put in place by the airport and are planned to be tug and cart operations to the terminal with conveyor-type delivery to sloped plate devices in the baggage claim area.

The second terminal will also be capable of accommodating Federal Inspection Services (F.I.S.) processing facilities including all circulation, concessions, office support space, vertical circulation elements (escalators, elevators, stairs), building services, airport special systems, and baggage handling space.

An additional belly freight building and flight kitchen are planned at the north end of the terminal area to provide support to the second terminal. Access to these support facilities will be available from Girard. A limited access may also be considered from Gibson at the northeast corner of these facilities.

The second terminal will require a major change in the access loop system in the terminal area. The recommended roadway system is depicted on **Exhibit VIII-6-A**. The roadway plan will allow the airport to continue to utilize the same access corridors to Sunport Boulevard, Yale Boulevard, and Girard. In the terminal area, the roadway systems allow vehicles to bypass one of the terminals or go between terminals. Each terminal will have a re-circulation route as well.

The terminal curb will be increased with the addition of the second terminal. Curbfront will be available on both the upper and lower levels as it is with the existing terminal. Additional lane capability will be built into the second terminal design to avoid the limitations that currently face the existing terminal.

A second parking structure adjacent to the second terminal will provide for additional on-airport parking as passenger traffic grows. As indicated before, the parking structures will be connected to the terminals and each other by pedestrian bridges. There will also be the capability for a vehicle to access both structures without leaving the parking area. This connection also allows for a single location for toll booths. While the current surface lot will be removed for the terminal roadway system, there is capability for developing another surface lot north of the existing lot and behind the second parking structure.

A regional transit center for interface with the potential light rail system is included in the plan as well. To connect the transit center with the terminals, a peoplemover system utilizing automated vehicles is allowed for in the plan. The shuttle-type cable-driven rubber-tired automated enclosed vehicle peoplemover system operates within an enclosed space with a maintenance base at one end offline. Single steel guideway structures, supported at approximately 60-foot centers with concrete-supporting columns and footings, were assumed for spatial planning.

TERMINAL CAPITAL IMPROVEMENT PROGRAM

With the concept of the plan in place, the next step is to establish a realistic schedule and costs for implementing the terminal plan. This subsection examines the overall cost of the proposed improvements and a demand-based schedule for implementation.

The demand-based schedule can be initially established by dividing the improvements into three planning horizons of short term, intermediate term, and long range. For the passenger terminal, the key activity indicator is passenger enplanements. A secondary indicator is airline operations. **Table VIII-6-A** summarizes the operational milestones for each planning horizon.

Table VIII-6-B outlines the capital improvement program for the passenger terminal. These improvements are depicted on **Exhibit VIII-6-B**.

The short term planning horizon focuses on improvements that will optimize the capacity and operation of the existing terminal. Some modest expansion improvements to increase capacity to meet current demand levels are included as well as some that address near term needs such as new facilities

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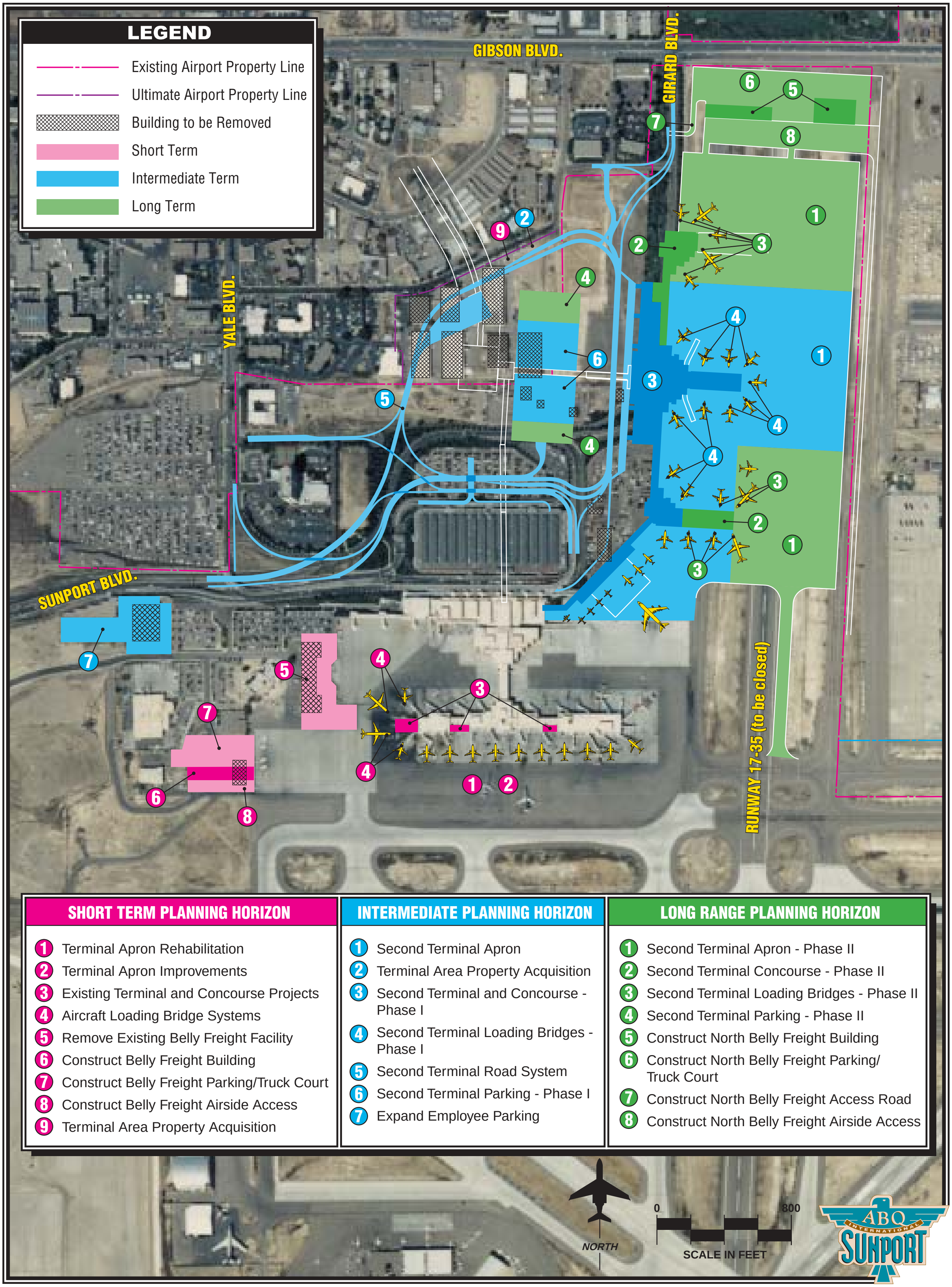

Exhibit VIII-6-B
TERMINAL AREA
DEVELOPMENT STAGING

necessary to enable re-spacing of aircraft parking to meet the need for larger aircraft gates. It is anticipated that, with these improvements, the existing terminal will be capable of carrying the airport at least through the short term activity level of 3.9 million passenger enplanements.

TABLE VIII-6-A
Terminal Planning Horizons
Albuquerque International Sunport

	Current	Short Term	Intermediate Term	Long Range
ANNUAL ENPLANEMENTS				
Majors	3,037,900	3,783,000	4,559,000	6,887,000
Regionals	94,051	117,000	141,000	213,000
Total	3,131,951	3,900,000	4,700,000	7,100,000
ANNUAL OPERATIONS				
Majors	77,056	91,000	104,800	143,600
Regionals	22,694	22,600	22,800	23,200
Total	99,750	113,600	127,600	166,800

The intermediate term planning horizon focuses on constructing a second unit terminal for the airport and includes all associated airfield, landside, and site/support improvements. In addition, upgrade of the existing terminal would be necessary so that all passenger facilities at the airport can provide a consistent high level of service to the public. This phase would not be implemented until a known demand for the additional facilities is evident.

The long range horizon focuses on adding capacity to the second terminal and continuing the upgrade of the existing terminal to address long-range need for facilities.

ENVIRONMENTAL OVERVIEW

The development of the second terminal building will likely require compliance with the *National Environmental Policy Act (NEPA) of 1969*, as amended. Compliance with the provisions of NEPA for the terminal building will be required prior to project implementation and is outside the scope of the master plan. As detailed in *FAA Order 5050.4A, Airport Environmental Handbook*, compliance with NEPA is generally satisfied with the preparation of an Environmental Assessment (EA). All terminal projects will be further evaluated to ensure compliance with environmental issues such as wetlands, threatened or endangered species, and cultural resources during the federal, state, and/or local permitting processes.

TABLE VIII-6-B
Passenger Terminal
Capital Improvement Program
Albuquerque International Sunport

No.	Project	Total Costs	FAA-AIP Eligible	ABQ Match
SHORT TERM PLANNING HORIZON				
1	Terminal Apron Rehabilitation	$17,600,000	$13,200,000	$4,400,000
2	Terminal Apron Improvements	2,514,000	1,885,500	628,500
3	Existing Terminal & Concourse Projects	36,630,000	23,580,000	13,050,000
4	Aircraft Loading Bridge Systems	1,125,000	0	1,125,000
5	Remove Existing Belly Freight Facility	624,000	468,000	156,000
6	Construct Belly Freight Building	2,848,000	0	2,848,000
7	Construct Belly Freight Parking/Truck Court	634,000	475,500	158,500
8	Construct Belly Freight Airside Access	790,000	592,500	197,500
9	Terminal Area Property Acquisition	13,250,000	9,937,500	3,312,500
Short Term Project Costs		**$76,015,000**	**$50,139,000**	**$25,876,000**
INTERMEDIATE PLANNING HORIZON				
1	Second Terminal Apron - Phase I	$22,000,000	$16,500,000	$5,500,000
2	Terminal Area Property Acquisition	13,250,000	9,937,500	3,312,500
3	Second Terminal and Concourse - Phase I	202,155,000	98,752,500	103,402,500
4	Existing Terminal/Concourse Upgrades	54,375,000	27,187,500	27,187,500
5	Second Terminal Loading Bridges - Phase I	5,250,000	0	5,250,000
6	Second Terminal Road System	49,000,000	36,750,000	12,250,000
7	Second Terminal Parking - Phase I	53,550,000	0	53,550,000
8	Expand Employee Parking	1,050,000	0	1,050,000
Intermediate Term Project Costs		**$400,630,000**	**$189,127,500**	**$211,502,500**
LONG RANGE PLANNING HORIZON				
1	Second Terminal Apron - Phase II	$18,000,000	$13,500,000	$4,500,000
2	Second Terminal/Concourse - Phase II	65,955,000	39,881,250	26,073,750
3	Existing Terminal/Concourse Upgrades	46,875,000	23,437,500	23,437,500
4	Second Terminal Loading Bridges - Phase II	3,750,000	0	3,750,000
5	Second Terminal Parking - Phase II	52,200,000	0	52,200,000
6	Construct North Belly Freight Building	2,848,000	0	2,848,000
7	Construct North Belly Freight Parking/Truck Court	1,800,000	0	1,800,000
8	Construct North Belly Freight Access Road	300,000	225,000	75,000
9	Construct North Belly Freight Airside Access	1,250,000	937,500	312,500
Long Range Project Costs		**$192,978,000**	**$77,981,240**	**$114,996,750**
TOTAL DEVELOPMENT COSTS		**$669,623,000**	**$317,247,750**	**$352,375,250**

Table VIII-4-C summarizes a preliminary review of environmental issues that would need to be analyzed in more detail within the NEPA and permitting processes. This review considers the main environmental resources required to be studied by FAA Order 5050.4A. This analysis ***does not*** address mitigation or the resolution of environmental issues. Mitigation measures are determined in the NEPA or permitting processes. A complete description of the environmental resources is provided in Section Five of Chapter Five.

TABLE VIII-4-C
Review of Environmental Resources
Proposed Passenger Terminal Building Facility Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Noise	• No impacts anticipated.
Compatible Land Use	• No impacts anticipated.
Social Impacts	• The development of the second terminal building parking structure and access roadways requires the acquisition of land and existing commercial businesses. *FAA Order 5050.4A* provides that where the relocation of a residence, business or farmland is involved, the provisions of the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (URARPAPA)* must be met. The Act requires that businesses be offered assistance in finding a new site and funding relocation costs.
Induced Socioeconomic Impacts	• No impacts anticipated.
Air Quality	• Two detailed air quality assessment studies have been completed in recent years at the airport as part of an EA and the *Landside Master Plan*. Results of these previous studies indicate that with the use of best management practices the impacts to air quality are negligible. Therefore, it is not anticipated that the proposed projects will have a dramatic affect on air quality. However, a new air quality assessment will most likely be required during the NEPA documentation process for the proposed second terminal projects.
Water Quality	• As discussed in Chapter One, the airport will need to continue to comply with their current NPDES operations permit requirements. • With regard to construction activities, the airport and all applicable contractors will need to comply with the requirements and procedures of the construction related NPDES General Permit, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan*, prior to the initiation of project construction activities.

TABLE VIII-4-C (Continued)
Review of Environmental Resources
Proposed Passenger Terminal Building Facility Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Section 4(f) Lands	• No impacts anticipated.
Historical and Cultural Resources	• Further coordination with the State Historic Preservation Officer (SHPO) will be required prior to project implementation and field surveys may be required.
Threatened or Endangered Species and Biological Resources	• Correspondence received from the U.S. Fish and Wildlife Service (FWS) indicated that no federally-listed threatened or endangered species are present and thus will not be affected by the proposed projects. • Under the Migratory Bird Treaty Act (MBTA) the taking of migratory birds, nests, and eggs is prohibited. To minimize the likelihood of a taking, the FWS recommended that construction activities occur outside the nesting season of March through August, or a survey be completed prior to construction to determine the potential affect on these protected species.
Waters of the U.S. including Wetlands	• No impacts anticipated.
Floodplains	• No impacts.
Wild and Scenic Rivers	• No impacts.
Farmland	• No impacts.
Energy Supply and Natural Resources	• No significant impacts anticipated.
Light Emissions	• No significant impacts anticipated.
Solid Waste	• No significant impacts anticipated.

Chapter Nine

Parking, Access and Support Facilities

Section One
INVENTORY

Chapter Nine
Parking, Access, and Support Facilities

Section One
INVENTORY

This chapter of the Master Plan focuses on the passenger terminal area parking, access and circulation facilities and support facilities at Albuquerque International Sunport. The passenger terminal area parking and access facilities include the terminal roadway system, terminal curbs and parking facilities. Support facilities include airport maintenance, airport rescue and firefighting and fuel storage.

This chapter includes four sections: Inventory, Demand/Capacity, Facility Requirements, and Recommended Program. Section One is a description of available facilities. Section Two compares forecast demand to the capacity of the available facilities to estimate when new facilities may be needed. Section Three establishes the type and size of facilities needed to accommodate future demand. Section Four coordinates support facility development with the plans for other components at Albuquerque International Sunport, then describes the recommended development plan and include the future capital projects required to implement the plan.

TERMINAL ACCESS, CIRCULATION AND PARKING

Exhibit IX-1-A identifies the components of the passenger terminal area ground transportation and parking facilities. The following provides a detail description of these facilities.

BACKGROUND

The 1994 Master Plan addressed the needs of the airport through the year 2015 and included the following findings and recommendations related to access, circulation and parking at Albuquerque International Sunport. These findings were based on a year 2015 forecast of 5.9 million enplanements.

- ➢ Construct Sunport Boulevard to provide direct access to Interstate 25 and relieve traffic congestion along Gibson and Yale Boulevards (completed in 1998).
- ➢ Relocate rental car facilities to provide for terminal expansion (presently under construction).
- ➢ Construct a second parking structure to accommodate forecast public parking demands.
- ➢ Relocate the terminal loop to provide for the second parking garage. Widen terminal frontage roads to accommodate forecast traffic volumes.
- ➢ Relocate Girard boulevard to provide for the construction of an additional terminal employee automobile parking north of the proposed second terminal.

The *Albuquerque International Sunport Landside Master Plan* was completed in 1998. The Landside Master Plan re-examined and refined access, circulation, and parking recommend-ations consistent with the 1994 Master Plan. The primary conclusion of the Landside Master Plan resulted in establishing the location along University Boulevard for the development of the consolidated rental car facility.

REGIONAL ACCESS

Passenger terminal facilities at Albuquerque International Sunport are accessed via Sunport Boulevard, Yale Boulevard, and Girard Boulevard. Sunport Boulevard was constructed in the mid-1990s. Sunport Boulevard is a four-lane divided arterial roadway connecting to Interstate 25. A diamond interchange is located at Interstate 25 and University Boulevard. Yale Boulevard is a four-lane divided arterial. Yale Boulevard extends north from the airport across Gibson Boulevard to Central Avenue. Gibson Boulevard connects with Interstate 25. Central Avenue is an east-west oriented roadway connecting to both Interstate 25 and Interstate 40. Signals are utilized at the Randolph Road and Gibson Boulevard intersections. Girard Boulevard is a two-lane collector, extending to Gibson Boulevard to the north. The Girard Boulevard/Gibson Boulevard inter-section is signalized.

Table IX-1-A summarizes 1998 traffic volumes as complied by the Middle Rio Grande Council of Governments and summarized in the *1998 Traffic Flows for the Greater Albuquerque Area* publication. Traffic counts along Sunport Boulevard, Yale Boulevard, and Girard Boulevard provide an indication of the number of vehicles entering the passenger terminal area. According to the study, traffic on

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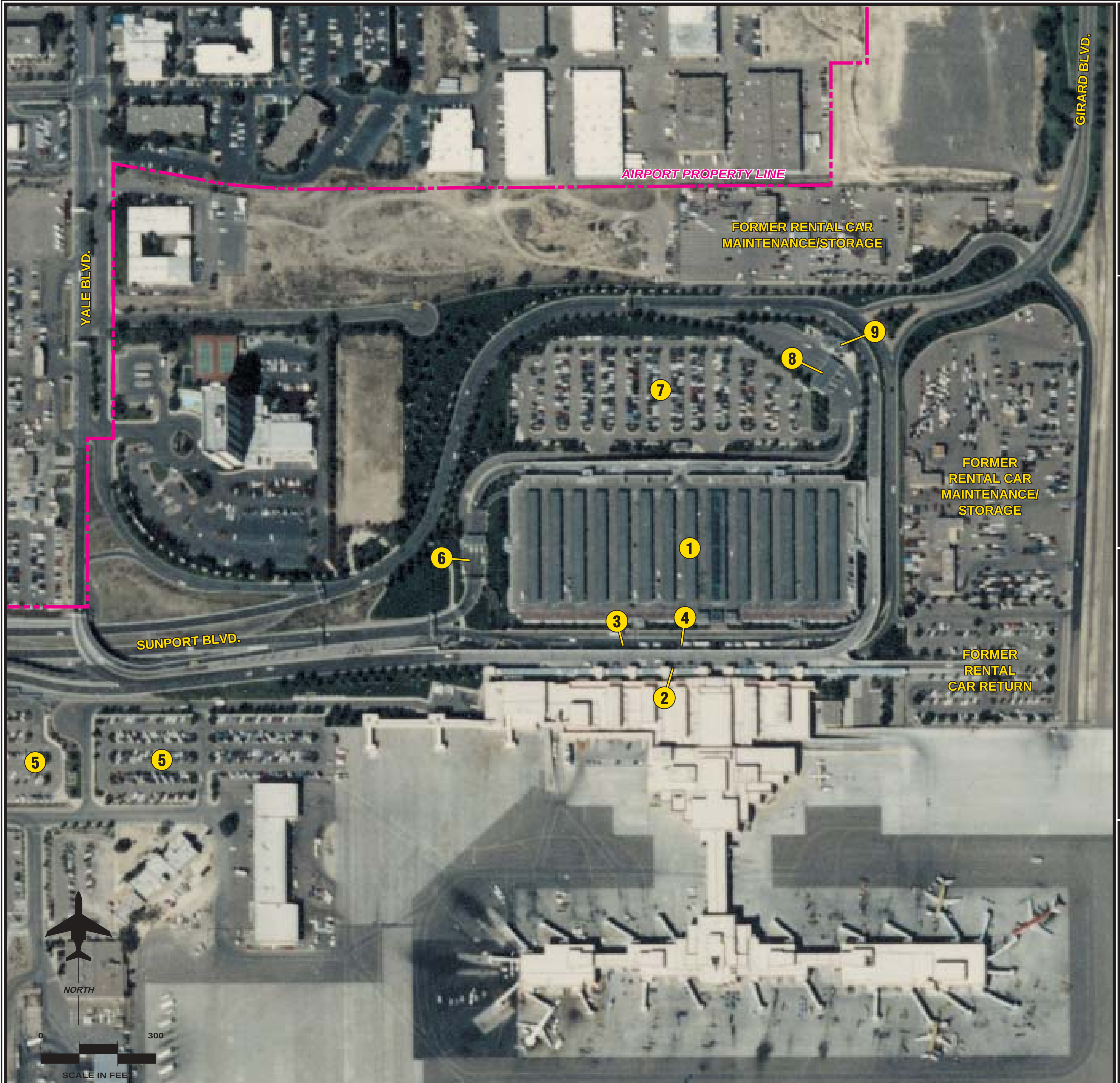
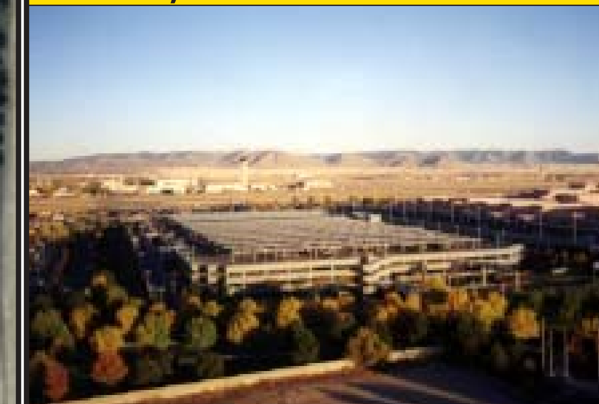


1) PARKING STRUCTURE



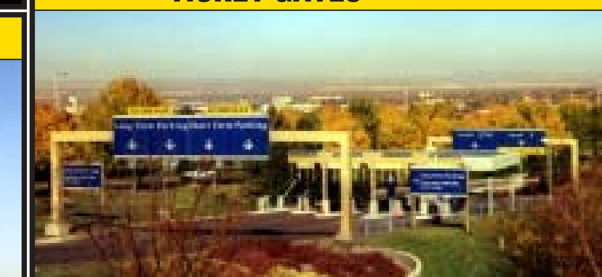
2) DEPARTURE CURB

3) ARRIVAL CURB

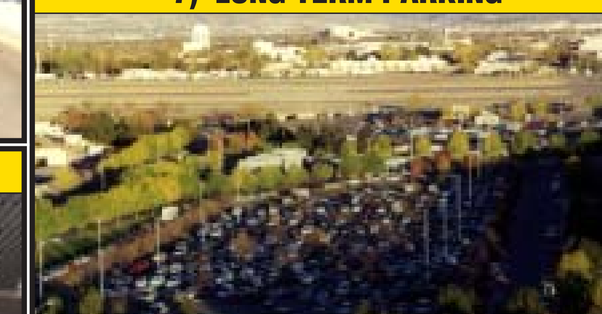
4) COMMERCIAL VEHICLE CURB (arrivals) ARRIVAL CURB BY-PASS LANE (right)

5) TERMINAL EMPLOYEE PARKING

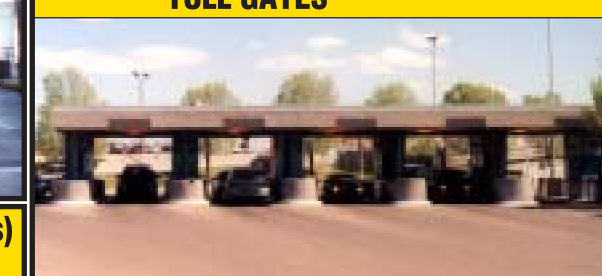
6) SHORT/LONG TERM PARKING TICKET GATES



7) LONG TERM PARKING



8) SHORT/LONG TERM PARKING TOLL GATES



9) LANDSIDE ADMINISTRATIVE BUILDING

ABQ INTERNATIONAL SUNPORT

Exhibit IX-1-A
TERMINAL ACCESS/PARKING FACILITIES

Sunport Boulevard at Yale averaged approximately 11,600 vehicles daily. Traffic on Yale Boulevard at Sunport Boulevard average approximately 10,200 vehicles daily. Traffic along Girard Boulevard averaged 3,800 vehicles daily. Combined, an average of 25,600 vehicles access or egress the passenger terminal area daily.

TABLE IX-1-A
1998 Traffic Volumes

	1998 Average Daily Traffic
Sunport Blvd. from I-25 to University Blvd.	16,900
Sunport Blvd. from University Blvd. to Yale Blvd.	11,600
Yale Blvd. from Gibson Blvd. to Randolph Road	19,500
Yale Blvd. from Randolph Road to Sunport Blvd.	10,200
Girard Blvd. South from Gibson Road	3,800
University Blvd. to Access Road B	9,700
University Blvd. from Access Road B to Clark Carr Road	6,400
University Blvd. from Clark Carr Road to Spirit Drive	4,500
University Blvd. from Spirit Drive to Interstate 25	7,600

Source: *1998 Traffic Flows for the Greater Albuquerque Area*, Middle Rio Grande Council of Governments

TERMINAL ROADWAYS, CURBS AND CIRCULATION

The passenger terminal roadway system consists of a loop road encompassing the parking structure and long term parking area. As shown on **Exhibit IX-1-B**, circulation within the terminal area is one-way, operating in a counterclockwise fashion, from west to east across the arrival and departure curbs. The terminal roadway includes both ground level and second levels roadways, which segregate the arrival and departure curb functions at the terminal building, respectively.

Sunport Boulevard splits west of Yale Boulevard to segregate arrival and departure traffic. Vehicles bound for the departure curb and ticketing counters (enplaning passengers) follow two-lanes to the south of Sunport Boulevard to the departure curb ramp which provides access to the second-level departure curb roadway extending the length of the passenger terminal. As shown in **Exhibit IX-1-C**, there are four lanes on this section of the roadway, including two through lanes and two curb lanes for passenger unloading. At the east end of the passenger terminal, the departure lanes turn north. A ramp returns traffic to ground level and directs traffic towards the west to exit the terminal roadway system via Yale Boulevard or Sunport Boulevard. Vehicles can return to the terminal area via the terminal return lane at Yale Boulevard. Vehicles from the departure curb cannot access Girard Boulevard.

Prior to constructing the consolidated rental car facility, all rental car returns were completed in the rental car return lot located east of the passenger terminal building as shown on **Exhibit IX-1-A**. Access was provided from a ramp located at the far east end of the departure curb.

The Yale Boulevard Bridge across Sunport Boulevard provides access to both the arrival and departure curbs. At the bridge, the two southbound Yale Boulevard lanes split, two-lanes direct vehicles to the departure curb ramp, a single lane ramp returns vehicles to ground level where these vehicles merge with eastbound Sunport Boulevard vehicles accessing the arrival curb or parking areas.

Vehicles bound for long term or short term parking or the arrival curb do not exit from Sunport Boulevard. Instead, these vehicles continue on the two east-bound Sunport Boulevard lanes. Near the terminal, these lanes split, two lanes direct traffic to the long term and short term parking ticket gates, while two lanes direct traffic to the arrival curb. At the arrival curb, these two-lanes are split by a median. The far left lane is the arrival curb by-pass lane. Vehicles utilize this lane to avoid traveling along the arrival curb lanes.

Six lanes are provided along the arrival curb. Four lanes are located under the second-level departure curb roadway. These lanes are dedicated to arriving passengers. There are two through lanes and two curb lanes. Designated taxi staging points, accommodating two taxis each, have been established in three locations along the arrival curb.

The two outside lanes are dedicated to commercial vehicles, which are separated from the four arrival curb lanes by a median surrounding the pylons supporting the second-level roadway. Commercial vehicles include hotel courtesy vehicles, off-site parking shuttles, rental car shuttles, buses and charters services. Access to the commercial vehicle curb is restricted by a gate. Each commercial vehicle is required by the City of Albuquerque to carry a transponder. The transponder in the commercial vehicle is used to open the gate and track the number of times a vehicle has accessed the commercial lane and the length of time the vehicle remains along the curb. Fees have been established and are charged to the commercial vehicle operators based on the data collected through this process.

After exiting the arrival curb, vehicles are directed along two ground level lanes to the north. Vehicles can exit the terminal area via Girard Boulevard or follow the terminal loop roadway to exit via Yale Boulevard or Sunport Boulevard. Vehicles can return to the terminal via Yale Boulevard.

PARKING FACILITIES

Parking facilities at Albuquerque International Sunport include areas for public, terminal employee and rental car parking needs. Terminal employee parking is available in two lots located south of Sunport Boulevard along George Road. There are approximately 550 parking spaces for terminal employees.

98MP19-IX1B-6/5/00

LEGEND

- Second Level Traffic Lanes (Departure Curb)
- Ground Level Traffic Lanes (Arrival Curb)
- Traffic Entering Terminal Area
- Traffic Exiting Terminal Area
- General Traffic Circulation
- Merge Areas

Exhibit IX-1-B
TERMINAL AREA CIRCULATION

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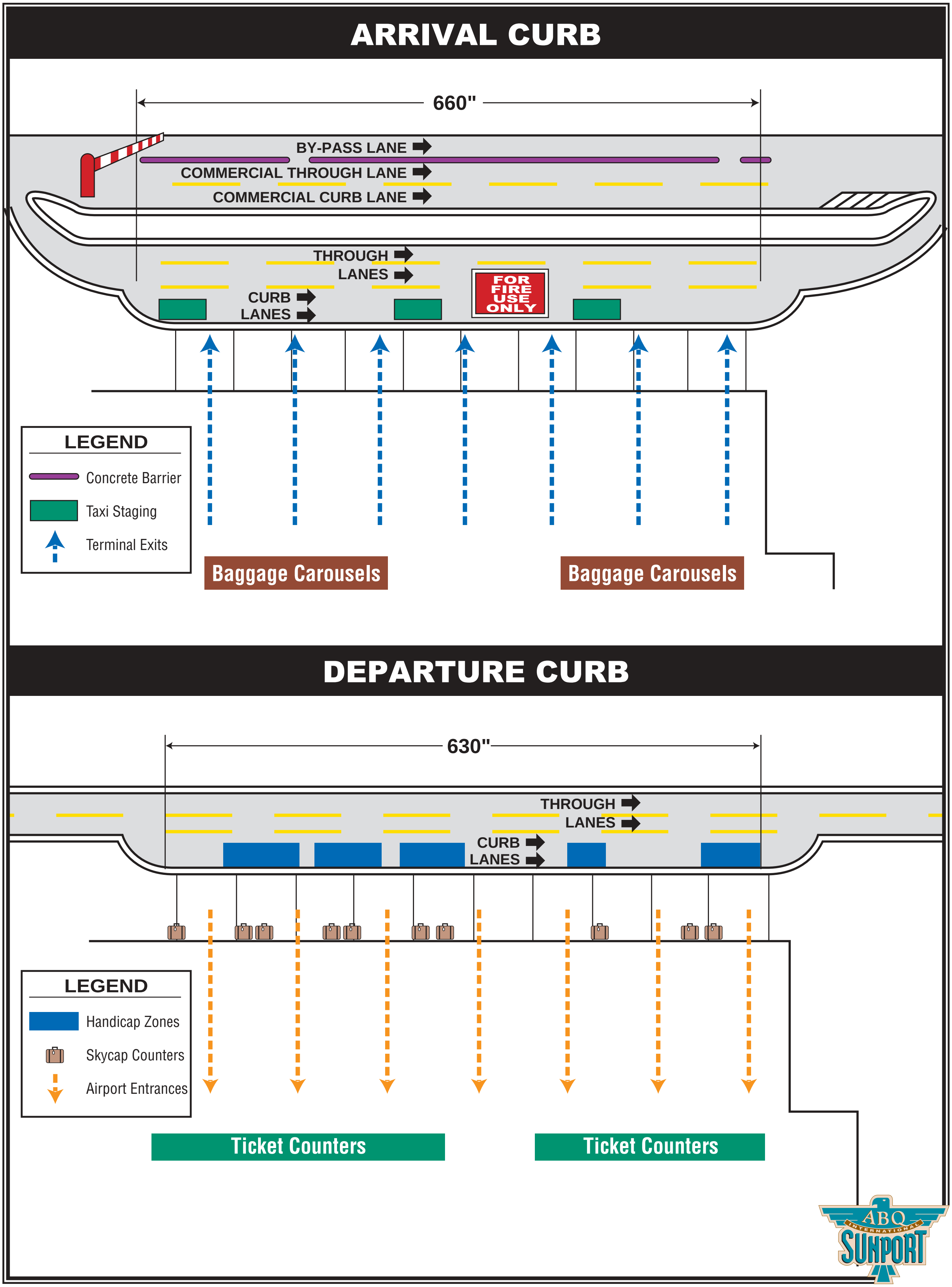

Exhibit IX-1-C
TERMINAL CURB
CONFIGURATIONS

Public parking needs at Albuquerque International Sunport are met through a combination of on-airport and off-airport (privately-owned) parking facilities. On-airport public parking facilities include the 3,346 space parking structure and 481 space ground level parking area located directly north of the parking structure. Completed in 1989 (concurrent with the terminal expansion project), these facilities are owned and operated by the City of Albuquerque. The parking structure includes four levels. Access to the terminal is provided through a tunnel under the arrival curb roadway. While intended for short-term parking, the parking structure is utilized for long term parking, as well. The ground level parking lot is dedicated for long term parking. Since 1994, most of the top level of the parking structure has been dedicated to rental car ready positions. With the construction of the Consolidated Rental Car Facility, this level will be returned to public use.

There are four off-airport parking facilities. Privately-owned and operated, these parking facilities provide an additional 6,100 parking spaces for public use. Courtesy shuttles provide access to the terminal for air passengers using these lots.

CONSOLIDATED RENTAL CAR FACILITY

Exhibit IX-1-D depicts the site plan for the Consolidated Rental Car Facility under construction. Segregated from the terminal area to provide for additional public parking capacity in the parking structure and ultimately provide for the development of a second terminal building, the Consolidated Rental Car Facility concentrates the maintenance, storage and ready and return functions of the rental car agencies in a single location east of University Boulevard, south of Sunport Boulevard.

The Consolidated Rental Car Facility is owned by the City of Albuquerque. A 22,100 square-foot terminal will provide area for rental car offices and counters. The floorplan is depicted on **Exhibit IX-1-E**. A common shuttle will provide access to the terminal building.

The rental car facility will initially provide approximately 1,200 rental car ready/return spaces. A two-way loop road connecting to University Boulevard provides access and egress to the rental car ready/return spaces. Areas for rental car maintenance and storage are located to the north, south, and west of the rental car terminal. Each rental car agency will maintain separate fueling, wash, and service facilities.

GENERAL AVIATION/ AIR CARGO ACCESS AND PARKING

Regional access to the general aviation and air cargo areas is from University Boulevard which connects with Access Road B and Spirit Drive, which provide access to the general aviation (via Clark Carr Road) and air cargo areas, respectively. University Boulevard is a four-lane arterial extending from Sunport Boulevard (to the north) to Interstate 25 (to the south). **Table IX-**

1-A previously summarized average traffic volumes along University Boulevard. Spirit Drive is a four-lane road extending from Clark Carr Boulevard (to the north) to University Boulevard (south). Access Road B provides access to the general aviation (via Clark Carr Road) and air cargo areas. Access Road B has two-lanes and was recently rerouted to extend outside the Consolidated Rental Car Facility.

Automobile parking at the general aviation area is primarily centered inside the apron and buildings area. There are approximately 630 designated parking areas near the FBO facilities. There are 30 designated parking areas at Four Seasons and 10 at Western Air. Approximately 50 designated parking spaces are available at the Century Aerospace hangar and Sandia Hangar areas, respectively.

A designated parking area, west of the air cargo building truck court provides for employee and visitor parking at the air cargo building. There are approximately 113 designated parking spaces in this lot.

SUPPORT FACILITIES

AIRPORT MAINTENANCE

The City of Albuquerque, Aviation Department, airfield maintenance facility is located at the terminus of Access Road C, north of the air cargo complex as shown in **Exhibit IX-1-F**. Encompassing approximately three acres, the airport maintenance facility includes a 14,000 square-foot maintenance building, 13,100 square-foot equipment storage building, 2,500 square-foot fleet maintenance building and paved yard for additional equipment storage and circulation.

AIRPORT RESCUE AND FIREFIGHTING

Albuquerque International Sunport operates as an air carrier facility under certification by the U.S. Department of Transportation. The Code of Federal Regulations (CFR) 14, Part 139, governs the operations of land airports serving certificated air carrier aircraft. The regulations define specific requirements for the operation of airport rescue and fire fighting (ARFF) equipment and service.

The deed transferring ownership of the runways to the City of Albuquerque dated March 16, 1970 and subsequent Memorandum of Agreement dated August 24, 1984 established that ARFF services at Albuquerque International Sunport are to be provided by the Kirtland Air Force Fire Department. The Kirtland Air Force Base maintains a fleet of 14 vehicles for ARFF services at Albuquerque International Sunport. ARFF services are provided 24 hours daily. The Kirtland Air Force Base operates two ARFF facilities: one located northeast of Taxiway A9 (Station #2); one located south of Taxiway E near the old airport traffic control tower (Station #5).

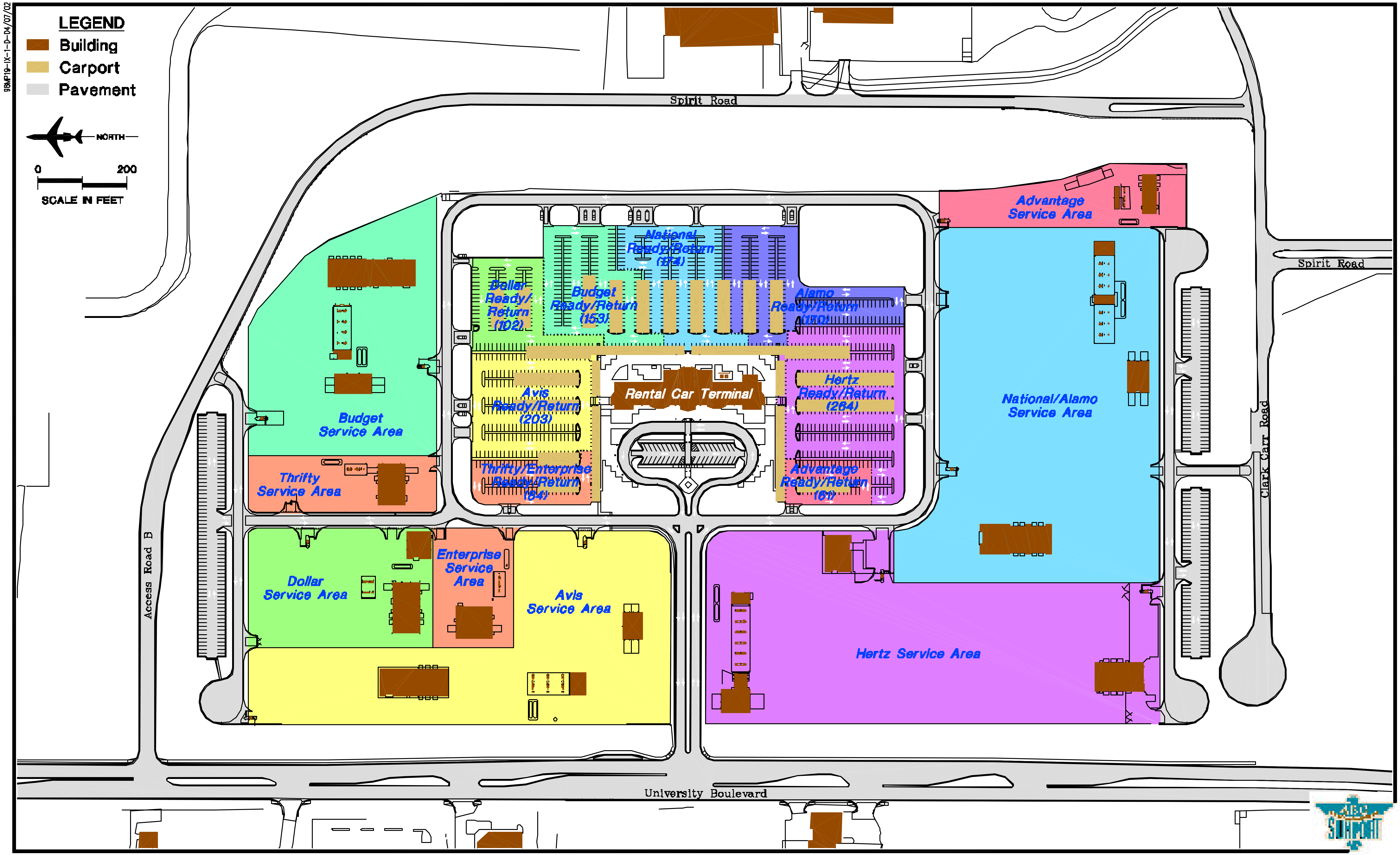

Exhibit IX-1-D

CONSOLIDATED RENTAL CAR FACILITY SITE PLAN

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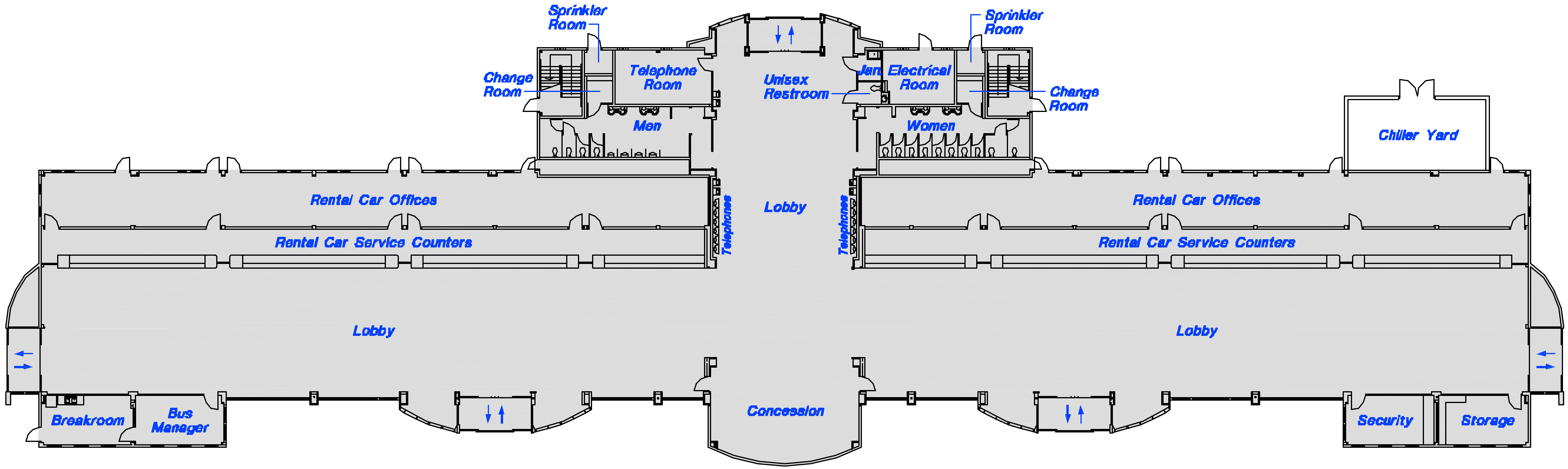

NOT TO SCALE

Exhibit IX-1-E

RENTAL CAR TERMINAL FLOOR PLAN

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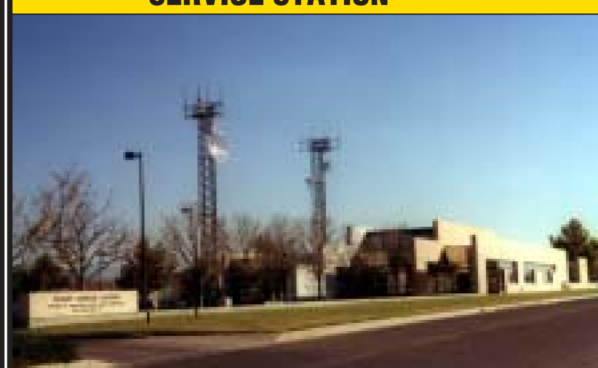
1) AIRFIELD MAINTENANCE

2) FAA AUTOMATED FLIGHT SERVICE STATION



3) NATIONAL WEATHER SERVICE

Exhibit IX-1-F
NATIONAL WEATHER SERVICE,
AFSS AND AIRPORT MAINTENANCE

AVIATION FUEL STORAGE

Both 100LL and Jet-A fuel are available to civil aircraft operators at Albuquerque International Sunport. All fuel facilities are privately-owned and operated.

Aircraft Service International Group (ASIG) provides Jet-A fuel services to the commercial air carriers at the passenger terminal building. ASI fuel storage totals 120,000 gallons in underground storage tanks located adjacent to their vehicle maintenance and storage facility.

Both Jet-A and 100LL Avgas are provided to general aviation users. Cutter Flying Service and Seven Bar Aviation maintain separate underground fuel storage facilities, however, these facilities are located in a common area along the western edge of the general aviation complex, south of Taxiway K. Cutter Flying Service fuel storage totals 80,000 gallons which includes 20,000 gallons for 100LL Avgas and 60,000 gallons for Jet-A fuel storage. Seven Bar Aviation fuel storage totals 60,000 gallons which includes 15,000 gallons of 100LL Avgas storage and 45,000 gallons of Jet-A fuel storage.

The fuel storage facilities associated with a former FBO operation are now owned and operated by the City of Albuquerque. They are no longer used for aviation fuel storage; instead, these tanks are used for the storage of potassium-acetate used during snow removal operations. Storage totals 25,000 gallons in separate 12,500 gallon underground tanks.

OTHER TENANTS

The National Weather Service (NWS) and FAA AFSS are located at Albuquerque International Sunport. The NWS is located north of the Clark Carr Road/Access Road B intersection as shown on **Exhibit IX-1-F**. The NWS maintains weather observations and forecasting from this location.

The FAA AFSS is located along Access Road C, south of Clark Carr Boulevard **Exhibit IX-1-F**. The AFSS provides weather and flight services to pilots.

UTILITIES

Albuquerque International Sunport is served by electrical, sewer, water and natural gas services. The following provides a summary of these systems at Albuquerque International Sunport.

WATER

The City of Albuquerque supplies Albuquerque International with potable water. The Terminal Ramp is served by three water mains. A 14-inch main enters the ramp area from the north on Girard Blvd. An 8-inch line enters near the east end of the parking facility, and a 12-inch main enters the ramp area from the west near the Old Terminal Building. These lines are interconnected and are fed through mains located in Girard Blvd. and Yale Ave.

The General Aviation Area and Consolidated Rental Car Facility are served by a 14-inch waterline installed in University Blvd. and a 20-inch water main that crosses the west end of the airfield. The 20-inch main crosses the airfield off the end of Runway 8, through the General Aviation Area and Air Cargo Freight Facility. These lines are interconnected. The primary water lines at Albuquerque International Sunport are shown on **Exhibit IX-1-G**.

SANITARY SEWER

The City of Albuquerque owns the sanitary sewer system that collects wastewater from Albuquerque International Sunport. The collection system enters the Terminal area from two locations, an 8-inch main east of the Facility and an 8-inch main on the West end of the Facility. Both of these lines connect to a 12-inch main that runs to the north in Yale Blvd. The triturator (dump station for airline waste) is located near the west side of the ramp area. The triturator discharge is collected in the Yale Blvd. main.

The General Aviation Area and the Consolidated Rental Car Facility are served by an 8-inch sanitary sewer main located in University Blvd and Clark Carr Blvd. This line crosses the University of New Mexico Golf Course to the west.

An eight-inch sewer line serves the property adjacent to the southern portion of Spirit Drive. The Clark Carr/University sewer lines serve the northern portion of Spirit Drive including the Air Cargo Freight Facility and Southwest Airlines Reservation Facility. The primary sanitary sewer lines at Albuquerque International Sunport are shown on **Exhibit IX-1-G**.

STORM SEWER

Albuquerque International Sunport has an extensive storm sewer system that drains over 2,200 acres. The storm sewer system divides the airport and a portion of Kirtland Air Force Base into drainage basins that drain to outfalls to the Tijeras Arroyo to the south and the South Diversion Channel to the west. The areas located east of Runway 17-35 and north of Taxiway E flow to three outfalls located on KAFB property. The drainage basins located within KAFB north of Taxiway A also flow to these outfalls. A large detention basin, 85-acre-ft. capacity, is located on the largest outfall to lower the peak flow into the arroyos feeding the Tijeras arroyos.

The basins south of Taxiway E flow either to an outfall located south of the MIT site or to the west to an outfall through the UNM Golf Course. The southern outfalls lead to the Tijeras Arroyo while the west outfalls lead to the Southern Diversion Channel.

The area north or Taxiway E and east of Runway 17-35 all drain to storm drain pipes leading to outfalls to the South Diversion Channel. Most notable of the outfalls from these basins are the systems that drain the west Terminal Ramp and western portion of the airfield, the east portion of the Terminal Ramp, Runway 17-35 and the landside area of the Terminal and Parking Facility. Two major outfalls serve these

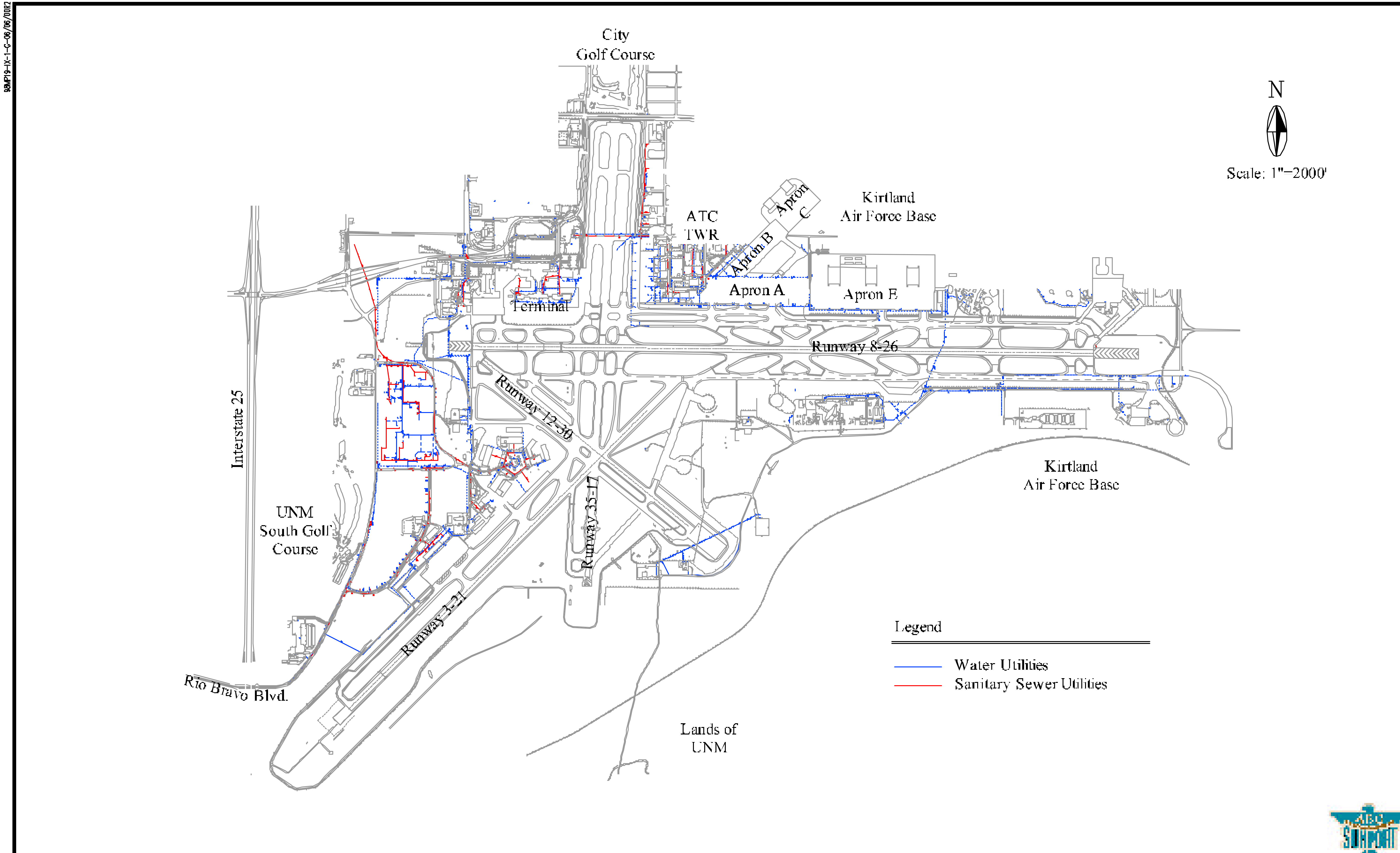


Exhibit IX-1-G
EXISTING SANITARY SEWER AND WATER UTILITIES

systems. One exits the airfield off the end of Runway 8 and crosses I-25 near the Sunport Interchange. The second system exits airport property north of the Terminal loop road to Yale Blvd. and eventually to the Kirtland Channel.

Additionally, a storm drainage system was constructed with Sunport Blvd. This system drains the area in front of the Terminal and Sunport Blvd. This system discharges under I-25 adjacent to the system that comes from the west end of the airfield.

The City of Albuquerque Public Works Department and Aviation Department maintain the storm drain system located on City or Airport property. The Tijeras Arroyo and the South Diversion Channel maintenance are the responsibility of the Albuquerque Metropolitan Arroyo and Flood Control Authority (AMAFCA). Kirtland Air Force Base is responsible for maintenance of the storm drain systems on Air Force property. The storm drainage system at Albuquerque International Sunport is shown on **Exhibit IX-1-H**.

ELECTRICAL POWER

Public Service Company of New Mexico provides electrical power to Albuquerque International Sunport. The Terminal is fed from the Miles Substation located northwest of the airport. The airfield is fed from the WESMECO Substation and the Sewer Plant Substation through two electrical control vaults located on the airfield.

The Terminal building has back-up generators that automatically switch on-line if there is a failure in the PNM feed. The Parking Facility is fed from an emergency generator located near the toll booths and the Terminal Building is fed from two generators located adjacent to the Operations office. PNM can switch the terminal feed from the Miles Substation to the Wesmeco Substation if there is a need by closing a pole mounted switch located west of the airport.

The airfield has back up utility feeds through automatic transfer switches located at the North and South Electrical Vaults. The South Electrical Vault uses the Sewer Plant feed as its preferred source and the North Electrical Vault uses the Wesmeco feed as its preferred feed. If one of the PNM feeds fails, the automatic transfer switch will bring the other PNM feed on-line. If both PNM feeds fail, emergency generators located at each vault will come on line and will provide power for the runway and taxiway lights and the FAA navaids on Runway 8-26 and 3-21. The control of the airfield lighting and sign system is provided through a redundant radio link with the Air Traffic Control Tower. Each electrical vault has control equipment to also control the system. The airfield lighting and control system is a fail-safe system where all of the lights and signs on the airfield will come on if the control system fails. **Exhibit IX-1-J** depicts primary electrical service lines at the airport. **Exhibit IX-1-K** depicts communication, natural gas, and Kirtland Air Force Base fuel facilities.

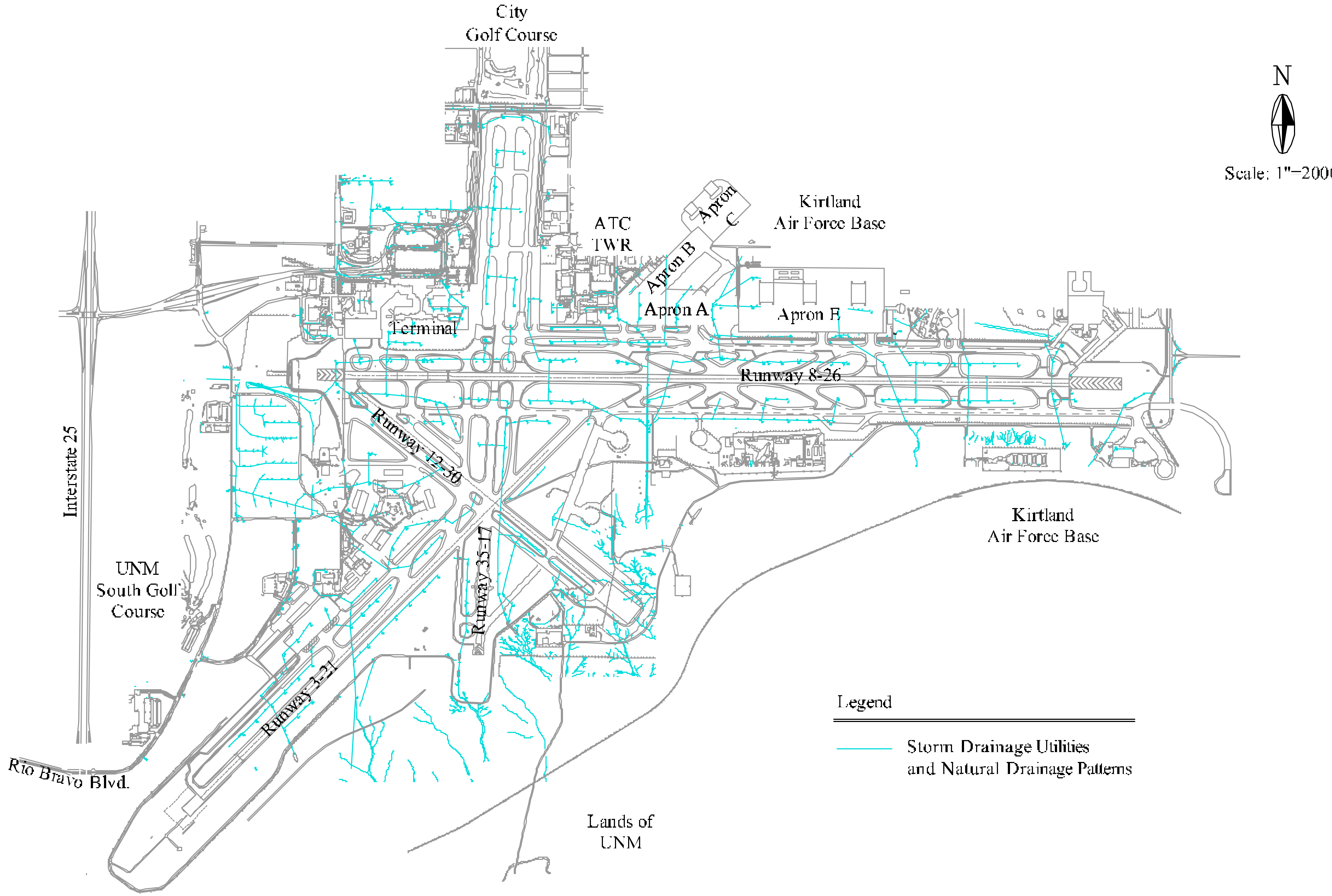


Exhibit IX-1-H
EXISTING STORM DRAINAGE UTILITIES AND NATURAL DRAINAGE PATTERNS

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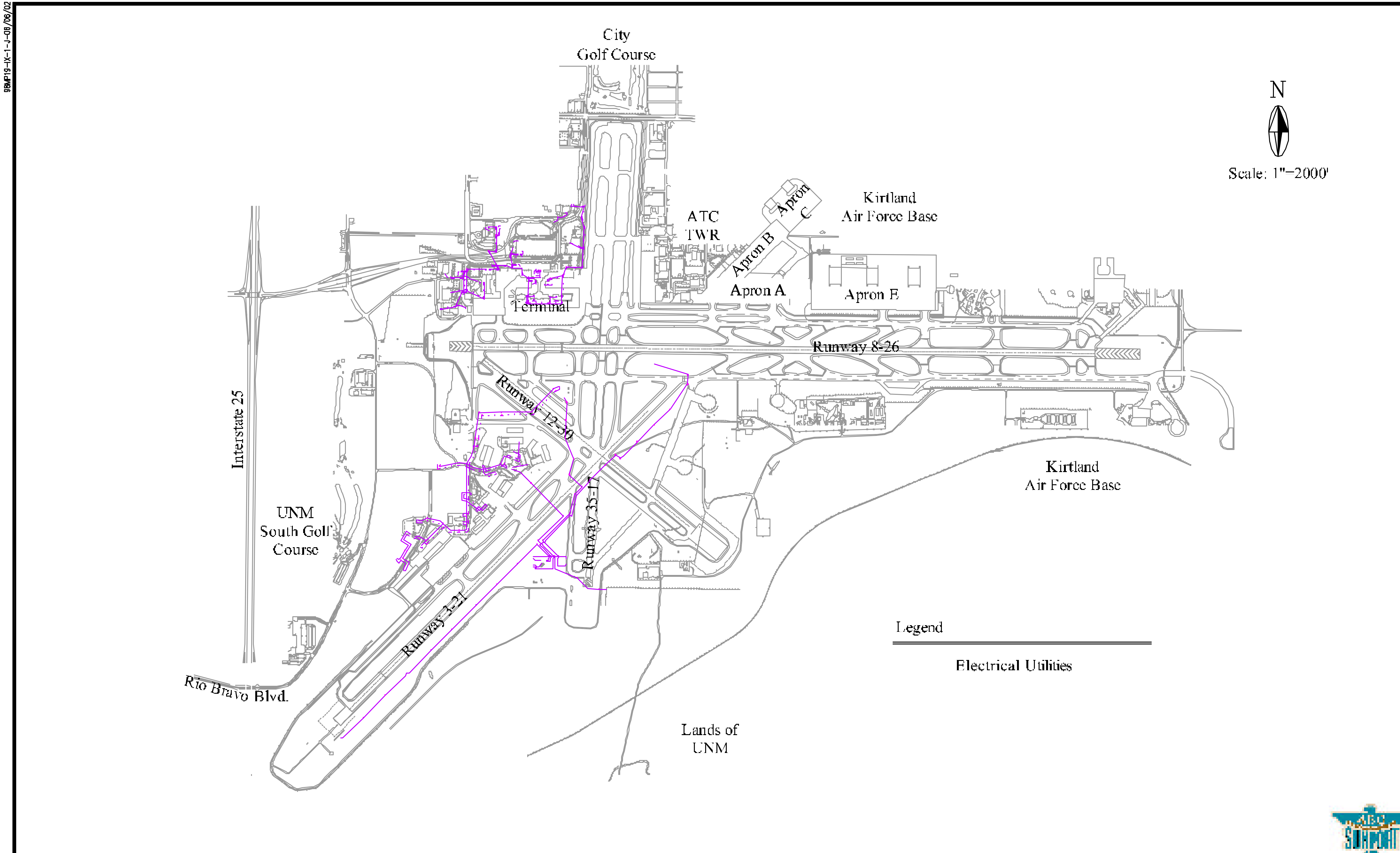

Exhibit IX-1-J
EXISTING ELECTRICAL UTILITIES

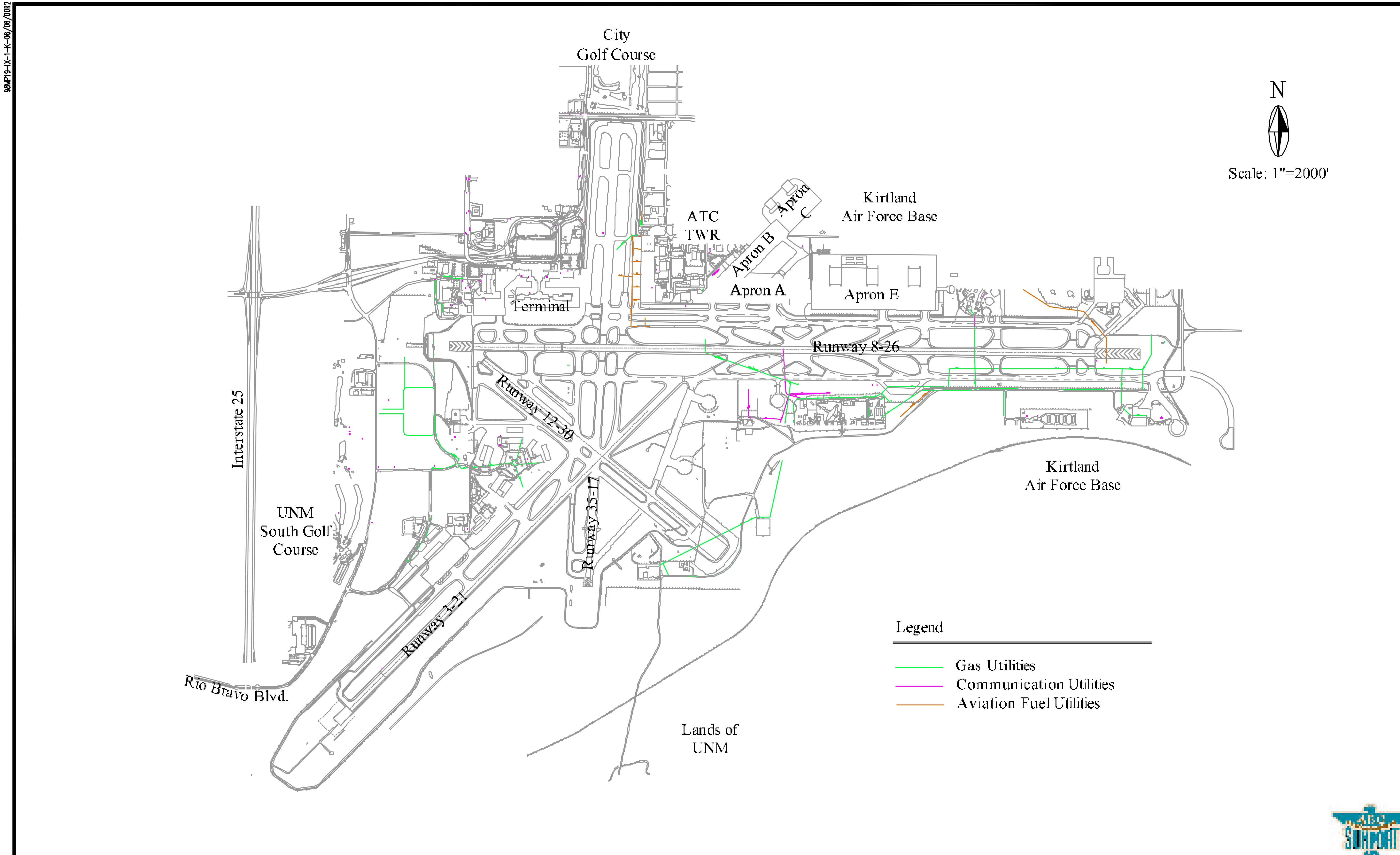

Exhibit IX-1-K
EXISTING GAS, COMMUNICATION AND AVIATION FUEL UTILITIES

Chapter Nine

Parking, Access and Support Facilities

Section Two
DEMAND/CAPACITY

Chapter Nine
Parking, Access, and Support Facilities

Section Two
DEMAND/CAPACITY

PASSENGER FORECASTS

Planning horizon milestones of passenger traffic at Albuquerque International Sunport were derived from the forecasts in Chapter Two and are summarized in **Table IX-2-A**. The planning horizon milestones were utilized to develop facility requirements for roadways, the terminal curb and parking as discussed in the following sections.

GROUND ACCESS CAPACITY

As a means of describing the operational efficiency of a given roadway segment or intersection, the range of service quality has been defined in terms of six descriptive service levels. These levels are described in **Table IX-2-B**. Level of service (LOS) "C" is generally used as the standard for planning of transportation facilities for peak hour traffic conditions. However, LOS "D" is often accepted in urbanized areas where the cost or impacts to provide LOS "C" is prohibitive.

OFF-AIRPORT ACCESS CAPACITY

As part of the 1998 **Landside Master Plan**, an assessment of the quality of traffic service on the roadways and intersections in the vicinity of the airport was performed. This assessment found that the intersection of Yale and Gibson Boulevard was operating at or above capacity during morning and afternoon peak periods. Further south, the intersection of Yale with Randolph Road is exceeding capacity during the afternoon peak. The southernmost I-25 interchange used by airport traffic is at University and Rio Bravo Boulevards. The signalized intersection of these roads with the northbound ramp is also at or above capacity during the morning and afternoon peaks., while the southbound ramps operate at LOS F during the two peak periods. The northbound on-ramp to I-25 from Gibson Boulevard operates at LOS F during the morning peak.

TABLE IX-2-A
Passenger Planning Horizon Milestones

	Planning Horizons			
	1999	**Short Term**	**Inter-mediate**	**Long Range**
Airline Enplanements				
Annual	3,131,951	3,900,000	4,700,000	7,100,000
Peak Month	299,599	374,000	451,000	682,000
Design Day	9,987	12,500	15,000	22,700
Design Hour	1,178	1,450	1,690	2,315
Total Passengers				
Design Day	19,974	25,000	30,000	45,400
Design Hour	2,080	2,550	2,970	4,040

TABLE IX-2-B
Levels Of Service

Level of Service	Description
A	Free flow, minimal delays
B	Stable flow, occasional delays
C	Stable flow, periodic delays
D	Restricted flow, regular delays
E	Maximum capacity, extended delays
F	Forced flow, excessive delays

Source: Highway Capacity Manual, Transportation Research Board

The 1993 **Airport Master Plan** indicated that the Gibson and Yale intersection was at or above capacity even then. Since that time, Sunport Boulevard was constructed, and traffic was relieved. Average daily traffic (ADT) on Gibson west of Yale was counted by the Middle Rio Grande Council of Governments (MRCOG) at 28,200 in 1998 compared to 44,000 in 1989.

The 1998 **Landside Master Plan** also assessed the intersections for projected 2005 traffic levels. The study had forecast annual enplanements at 5.1 million that year, which would be just beyond the intermediate horizon milestone of 4.7 million. The LOS of the intersections previously mentioned would continue to deteriorate. In addition, the intersection of I-25 ramps with Sunport Boulevard would fall below LOS D, as would the I-25 ramps at Gibson. The intersection of Girard Boulevard with Gibson would also be operating above capacity.

TERMINAL AREA ACCESS CAPACITY

With the development of Sunport Boulevard, there are now three different roadways that approach the airport. The other two, Girard and Yale Boulevards have long provided access to the terminal loop.

Exhibit IX-2-A compares peak hour traffic levels in the terminal area to the levels of service of the roadway. These counts are based upon traffic counts taken with in the last two years at Albuquerque International Sunport. The counts have been adjusted to represent the design hour of the peak month. They have also been adjusted to reflect the relocation of the rental car ready and return area to the consolidated facility on University Boulevard in early 2001. This will result in fewer rental cars in the terminal loop, but an increase in shuttle buses.

The quality of traffic service on key roadway segments in the airport area was assessed using planning-level capacities for each type of roadway. The FAA outlines LOS C and D traffic volumes for airport roadways in FAA Advisory Circular 150/5360-13 **Design Guidelines for Airport Terminal Facilities**. Volumes range from 1,600 vehicles per lane per hour for limited access with grade separations to 300 vehicles per hour for the lane closest to the terminal curbfront. Merge areas can reduce capacity as well.

The results shown in **Exhibit IX-2-A** are based on the maximum volume per hour per lane under LOS C and D conditions. As might be expected, the earliest bottlenecks will occur in front of the terminal. The departure curb on the upper level has three lanes plus curb loading. The inside lane essentially acts as a merge and a double parking lane, so it provides no throughput capacity. The middle lane also is affected by maneuvering at the curb front so it provides a limited service volume of 300 vehicles per hour. The outside lane can accommodate up to 600 vehicles per hour, resulting in an effective capacity of 900 vehicles per hour in front of the terminal. This should be adequate through the intermediate planning horizon, but the long range horizon is expected to generate 974 vehicles during the peak hour, exceeding the departure roadway capacity.

On the lower level, there is a short weave area where traffic merges from the Yale and Sunport Boulevard entrances to the entrances to the parking lot and the arrival curb. The capacity of this area is estimated at 1,200 vehicles per hour. Long range horizon traffic levels will be approaching this volume by the long range planning horizon.

Another area for future concern is the terminal return lane where it merges with Yale Boulevard. The capacity of this lane is estimated at 420 vehicles per hour due to the limited space for merging with oncoming traffic. This will begin to slow down by the intermediate horizon, and will be more seriously affected in the long term.

TERMINAL CURB CAPACITY

The terminal curb element is the direct interface between the terminal building and the ground transportation system. The length of curb available for loading and unloading passengers and baggage is determined by the type and volume of ground vehicles anticipated during the peak period on the design day. The airport has approximately 630 feet of enplaning or departure curb along the elevated roadway fronting the terminal. On the lower level, there is 660 feet of deplaning or arrival curb fronting the building for use by autos and taxis. In addition, there is an commercial island with 660 feet of additional space for use by commercial vehicles such as shuttles and full-size buses.

A curb survey was performed January 10-13, 2000 to determine the vehicle mix, and average dwell times at the curb fronts. **Table IX-2-C** depicts the vehicle mix as adjusted for the relocation of the rental cars facilities. This resulted in a lower percentage of autos and a higher percentage of shuttles than actually observed.

TABLE IX-2-C
Vehicle Mix Enplaning and Deplaning Curbs

	Enplaning Curb (%)	Deplaning Curb (%)
Auto	77	46
Taxi	3	8
Limo/Shuttle	20	43
Bus/Other	0	3
Total	100	100

Source: Terminal Curb Survey performed by Coffman Associates, January 10-13, 2000. Adjusted for relocation of rental car facilities.

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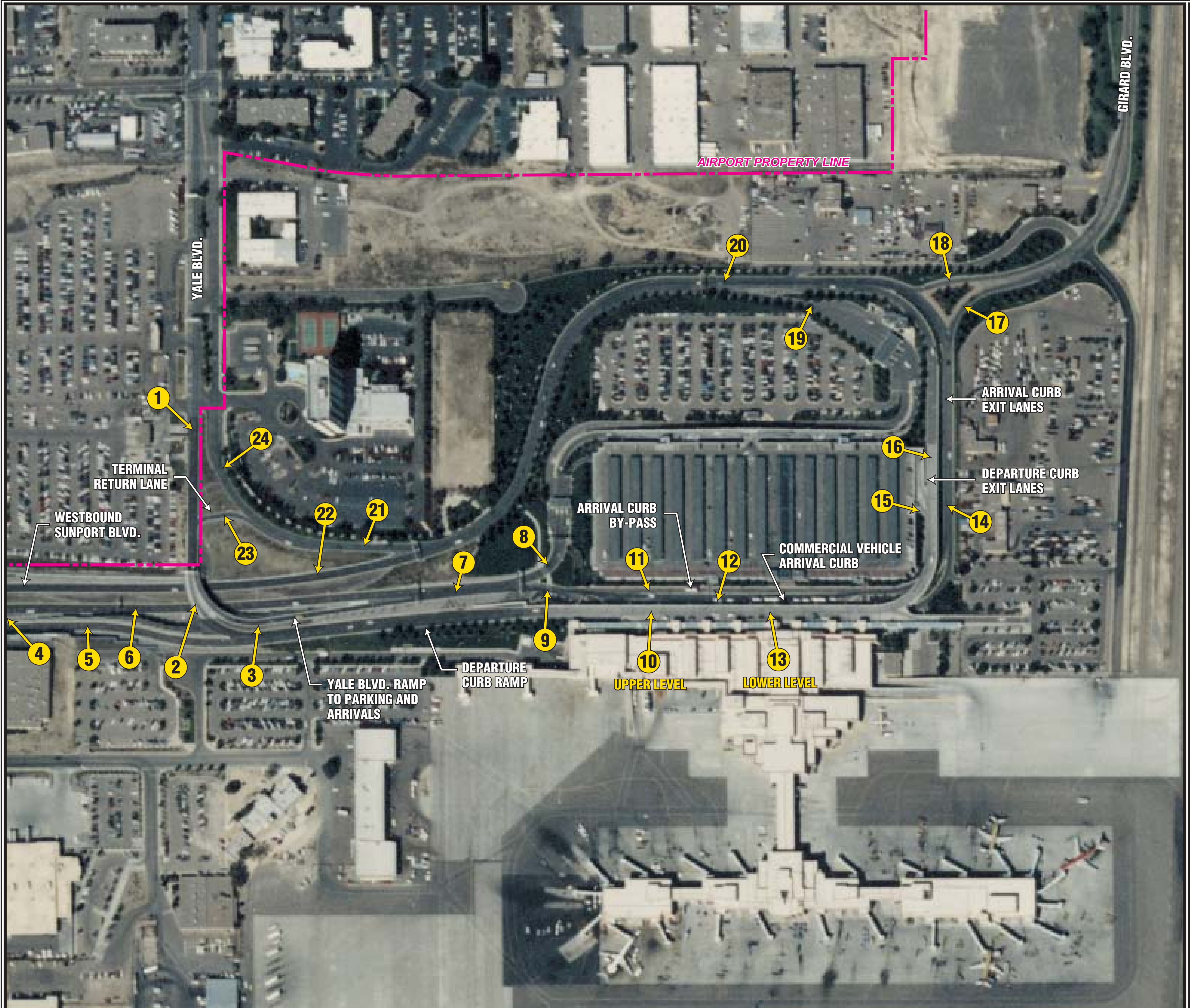


PEAK HOUR VOLUMES

Location	LOS C-D Volume	Current	Short Term	Intermediate	Long Range
1	1,800	417	513	596	813
2	900	284	349	406	553
3	900	414	509	592	806
4	2,400	435	535	622	848
5	1,800	218	268	312	421
6	1,800	197	242	281	383
7	1,200	611	751	873	1,190
8	1,200	294	362	421	574
9	1,200	317	389	452	616
10	900	502	617	718	974
11	600	90	111	129	176
12	300	97	119	138	189
13	900	130	160	186	253
14	1,200	317	390	453	618
15	300	69	85	99	135
16	1,200	433	532	619	839
17	900	146	180	209	285
18	600	219	269	312	426
19	1,200	404	497	620	791
20	2,700	1,227	1,508	1,753	2,389
21	1,800	684	841	978	1,332
22	2,400	543	667	775	1,057
23	420	281	345	401	547
24	1,800	403	496	577	786

Note: **Red number** indicates level of service below LOS D.

NORTH

0 300
SCALE IN FEET

ABQ INTERNATIONAL SUNPORT

Exhibit IX-2-A
TERMINAL ROADWAY DEMAND/CAPACITY

Dwell times by the various types of vehicles were also observed. From the survey, the average dwell time was determined for each vehicle type and is included in **Table IX-2-D**. The observations indicated that dwell times on the enplaning curb were within reason for an efficiently-operating curb. Private autos averaged two minutes, and taxis averaged 1:30. Limos and shuttles averaged approximately a minute.

TABLE IX-2-D
Vehicle Curb Dwell Times
Albuquerque International Sunport

		Average Dwell Time*		Curbfront/Vehicle	
Vehicle Type	**Vehicle Length (ft.)**	**Enplaning (min: sec.)**	**Deplaning (min: sec.)**	**Enplaning (ft.-min.)**	**Deplaning (ft.-min.)**
Auto	25	2:03	6:57	51	174
Taxi	25	1:33	4:46	39	119
Limo/Shuttle	35	1:02	4:54	36	172
Bus	45	NA	5:09	NA	232

Source: Terminal curb survey performed by Coffman Associates, January 10-13, 2000.

On the lower level, the deplaning curb experiences much longer dwell times. At the inside curb, taxis and autos were found to average nearly seven and five minutes respectively. At the commercial curb, dwells also averaged five minutes. Dwell times of over four minutes are considered excessive and an inefficient use of the available curb space. Stricter enforcement should be considered to reduce the longer parking periods on the curb.

With the vehicle mix and the dwell time information, the capacity of the existing arrival and departure curbs can be determined. The curb front capacity, expressed in vehicles per hour is presented in **Table IX-2-E**. The curb space is determined by dividing the curb space available (feet-minutes per hour) by the average curb occupancy per vehicle (feet-minutes/vehicle). Curb space available is determined by multiplying the length of curb by 42 minutes for each hour. This was determined separately for the enplaning curb, the auto deplaning curb, and the commercial island.

The table compares the curb capacity with the vehicles per hour expected for each planning horizon. It is evident from the table that the deplaning curb is already operating above capacity, while the enplaning curb will exceed its capacity by the 4.1 million enplanement level of the short term horizon. The commercial curb will be adequate through at least the intermediate horizon of 4.7 million enplanements.

TABLE IX-2-E Curbfront Capacity Albuquerque International Sunport		Planning Horizons			
	Capacity (veh/hour)	Current	Short Term	Inter-mediate	Long Range
Enplaning Curb	570	477	**586**	**682**	**925**
Deplaning Curb					
Auto/Taxi	167	**180**	**222**	**258**	**351**
Shuttle/Bus	157	97	119	138	**189**

VEHICLE PARKING

Vehicle parking associated with the passenger terminal includes spaces utilized by passengers, visitors, employees, and rental cars. Parking spaces are classified as public, employee, and rental car.

Local air travelers using ABQ have several parking choices if they elect to drive and park. The airport has a parking structure and long term surface lot immediately north of the terminal building. With the recent opening of the consolidated rental car facility, these two lots provide 3,727 public parking spaces.

In addition, privately-owned and operated remote lots are available along Yale and Sunport Boulevards, the main access roads to the airport. Each private lot offers shuttle service to and from the terminal. There are presently an estimated 8,100 spaces available in the private lots.

It is unusual to have such a large reserve of private parking lots located in close proximity to a medium hub airport such as ABQ.

Historically, the on-airport parking has captured approximately 50 percent of the market. This declines when on-airport spaces are not available. The airport's lots were full on 75 days in 1999. Occupancy has averaged 80 percent. This indicates that the on-airport demand is exceeding the capacity. When space is not available on-airport, vehicles essentially use the off-airport parking as overflow lots. This results in a loss of potential revenue for the airport.

With over 2.7 million originating passengers in 1999 and 3,397 on-airport public spaces, the airport provided 1,256 spaces per million originations. The relocation of the rental cars from the parking garage increases the on-airport spaces to 3,727. Based upon current activity, it was estimated that the airport needed at least a 20 percent increase in the spaces available or 1,500 spaces per million originating passengers. Given that half the market for parking traditionally goes to the private lots, this would equate to a total parking requirement of 3,000 spaces per million originations. This is a typical ratio at many airports.

Table IX-2-F depicts the capacity of the existing public parking in relation to annual passenger originations. Assuming the traditional 50 percent split, on-airport parking is approximately 10 percent over capacity. Under this same assumption, off-airport parking would be sufficient to 5.4 million originations.

If no additional parking is provided, the available parking would be operating at capacity by 3.9 million originations, or shortly before the intermediate planning horizon milestone is reached.

Terminal employee parking is provided in a 550 space lot west of the terminal. Typically, airport employee parking averages 175 spaces per million annual originations. This ratio was applied to determine the existing capacity to be the 3.14 million originations. Therefore, additional employee parking could become necessary in the short term.

TABLE IX-2-F
Auto Parking Capacity

	Available (spaces)	Originating Passenger Capacity (millions)	Capacity Horizon
Public Parking Space			
On-Airport	3,727	2.48*	Short
Off-Airport (estimates)	8,100	5.40*	Long
Total (@3,000 per million originations)	11,827	3.94	Intermediate
Rental Car (@315 per million originations)	1,200	3.81	Intermediate
Employee (@175 per million originations)	550	3.14	Short

* Assumes traditional 50 percent split between on- and off-airport parking. Total capacity assumes parking split according to space availability.

Rental car ready/return spaces have been increased to 1,200 with the opening of the consolidated facility. Based upon rental car surveys conducted for the **Landside Master Plan** in 1996, the ratio for ready/return spaces at ABQ is 315 per million annual originations. **Table IX-2-F** includes the rental ready/return capacity. The current ready/return space should be adequate through the intermediate horizon level.

EXTERIOR UTILITIES CAPACITY

WATER

The existing terminal and parking facilities appear to have sufficient water supply, both for potable use and for fire flow. Additional facilities constructed in the future may require additional supply lines depending on the size and use of the facility as well as the location of the new facilities and existing water mains.

The U.S. Post Office, Old Terminal Building, the flight kitchen and other facilities located west of the existing terminal building are supplied water from a main that runs north-south from Yale Blvd. to the southern portion of the airport. The main was relocated and upgraded during the Sunport Blvd. and Runway 8-26 Reconstruction projects in 1996-1997. The old water main's alignment crossed the old Yale Landfill and a portion was out of service due to the line breaking from the settling landfill. The new line was relocated out of the landfill and is adequate for the existing facilities that it supplies in this area.

Developable property lies to the west of the existing facilities and the water mains. It is expected that the existing lines would have the capacity for development in this area depending on the type and use of the facilities. Care should be exercised in locating new lines in the area due to the location of landfill material in this area.

The new Rent-a-Car Facility (RAC) constructed east of University Blvd, south of Access Road B is supplied through a water main in University Blvd. and a connected main in Access Road B. The water system is looped through the City mains that run north-south along the west boundary of the airport. The South General Aviation Area and Air Freight Cargo Facility and other smaller facilities located in the southern portion of the airport property are supplied water through the same mains that serve the new RAC Facility. The water supply mains to these facilities have been upgraded recently and appear to be adequate for the existing development. Additional development may require additional supply lines fed off of the same mains depending on the type, use and location of the facilities.

The airport property located south of the airfield, namely south of Runway 12-30 and Runway 3-21 does not have City of Albuquerque water feed in the area. There is a 4-inch water line that parallels South Gate Road on Air Force property that serves the FAA Airport Surveillance Radar and the Air Force installations to the east. Development by the City would require extension of the City water system to this area.

SANITARY SEWER

The existing terminal and parking facilities are connected to the City sanitary sewer system to an 8-inch sewer on the east side of the facility and an 8-inch sewer on the west side of the facility. Both 8-inch lines connect to a 12-inch main located in Yale Blvd. The existing sewer lines appear to be adequate for the flows generated from the existing facilities.

The U.S. Post Office, flight kitchen and other facilities located to the west of the terminal building are connected to the City sanitary sewer system through collectors tied to the Yale Blvd. main. These facilities appear to have sufficient collection through the existing sanitary sewer system. Additional development may require additional capacity in the connector lines depending on the type, use and location of the facilities.

The new RAC facility is served by the City's sanitary sewer system by an 8-inch main located in University Blvd. The new development has a collection system within the development that discharges into the existing main in University Blvd.

The development south of the RAC facility as well as the South General Aviation Area is served by sanitary sewers in Clark Carr Blvd. and Spirit Drive. These systems discharge into mains located in University Blvd. These facilities are adequately served by the existing system. The collectors in Spirit Drive were designed to accommodate full commercial development along the Spirit Drive corridor.

The portion of the airport located south of Runway 12-30 and Runway 3-21 is not served by a City sanitary sewer line. There is not currently development on airport property in this area that requires sanitary sewer service. Development in this area will require installation of collectors and connection to the City system.

STORM SEWER

The Albuquerque International Drainage Master Plan, May 1995 analyzed the existing airport storm drainage systems for capacity and discharge flows and volumes. Since the drainage master plan was published, many of the drainage improvements recommended have been accomplished. Most significantly, a drainage diversion was made for the flows generated north of the South General Aviation Area. The historic discharge for storm water flows originating in this area was to the west. In order that the flows at the crossing at University Blvd and Clark Carr Blvd. could be brought within the crossing's capacity, a portion of the storm water was diverted to the south of the airport through a system constructed in the Runway 3-21 reconstruction project. Other discharge and storm drainage improvements recommended in the drainage master plan have been made in the construction projects completed since 1995.

There are three remaining portions of the airport that have storm drainage improvements recommended in the drainage master plan that have not been accomplished. One area is the portion of the airfield located adjacent to the northern end of Runway 17-35. The existing storm drainage system capacity is not sufficient just upstream of the discharge point into the 36-inch Gibson Blvd. storm drain.

The second area with storm drainage problems within the airport drainage area is on the terminal ramp, north of the B Concourse. The storm water drains in this area by surface flows. The slope of the pavement does not allow the storm water to drain satisfactorily. The recommendation included in the drainage master plan called for extension of a storm drain installed in 1991 to this area. It was anticipated that the drain line extension would be constructed when a rehabilitation project was accomplished on the terminal apron pavement in this area.

The third area with storm drainage problems identified in the drainage master plan that has not been remedied begins at the northeast side of the terminal apron. A restrictor plate was installed during the terminal expansion project in the late 1980's because the storm drain downstream does not have the capacity for the flows generated upstream. The restrictor plate causes ponding on the terminal apron during larger storms and over time, the ponding will harm the pavement. Resolution of the capacity problem downstream of the restrictor plate involves replacing the downstream storm drain with larger pipe.

Downstream of the basin discussed above, the storm drainage discharges into the Kirtland Channel. This is a concrete lined storm drainage channel located west of Yale Blvd. During large storm events, the freeboard in the channel is not sufficient to contain the flows. Extension of the freeboard through a portion of the channel should eliminate this problem.

ELECTRICAL POWER

The existing Terminal and Parking Structure are fed from the Miles Substation. The Terminal and the Parking Structure are both supported by the emergency generators that are switched automatically when the primary power feed fails. The generators supply enough power for essential operations. In the Terminal most of the jetways are not powered by the emergency generators, however. The exception is at gates A9-12. These gates were added in the last terminal expansion project and are fed by emergency power generators. No other major capacity issues have been reported on the terminal and parking structure electrical feeds.

The airfield is fed from redundant power sources and is backed by emergency generators. This system has been tested with real-time outages and has operated successfully. All of the runways are fed by the redundant system. A computer control system will automatically turn on the selected runway and taxiway lights if there is a control failure. Some of the FAA installations such as the Runway 8 and Runway 3 glide slopes and ILS are also included in the redundant power system. The airfield electrical power feed system was updated to the current configuration and capacity during the Runway 8-26 Reconstruction project. There is some excess capacity in the system if additional demand is installed in the airfield lighting system.

Chapter Nine

Parking, Access and Support Facilities

Section Three
REQUIREMENTS

Chapter Nine
Parking, Access, and Support Facilities

Section Three
REQUIREMENTS

Access and parking facility requirements based upon demand/capacity relationships were developed for the components of terminal access, parking, curb front. Additionally, support facility needs with regard to airport rescue and firefighting, snow removal, fuel storage, and maintenance were also evaluated. Phased requirements for the activity milestone levels are presented in the following subsections.

AIRPORT ACCESS ROADWAYS

OFF-AIRPORT ACCESS

The previous demand-capacity review has indicated that several intersections around the airport have operated at LOS D or lower. Of particular concern in the past has been Gibson Boulevard and its intersections with Yale Boulevard and Girard. These roadways provided the primary access to the airport terminal until the late 1990's. The construction of Sunport Boulevard to provide a more direct route to the terminal from Interstate 25 has reduced the level of terminal-related traffic on Gibson, Yale, and Girard. The opening of the new rental car facility was expected to further reduce terminal traffic utilizing these three roadways. This has given only a temporary reprieve as other traffic continues to grow on this roadway.

The other locations experiencing lower LOS are the ramp intersections of the airport access routes with I-25. Intersections improvements at Sunport Boulevard and I-25 will need upgrading as activity increases. Traffic signals have provided short term capacity improvements, additional turning lanes and ramp improvements may be necessary in the future.

Another consideration is alternative transportation modes for airport access, in particular light rail. As a major transportation center, the airport will need to be considered as a destination in regional light rail plans. Airport planning must consider the potential for light rail access in future.

ON-AIRPORT ACCESS

According to the demand-capacity analysis. The terminal loop roadway currently has adequate capacity. As traffic increases long term, key bottlenecks could develop in merge areas and in front of the terminal building. A design to improve this condition will be necessary in the long term.

The first area is on the lower (arrival) level where traffic from Sunport Boulevard merges with traffic from Yale Boulevard. The traffic must merge then split for two destinations -- the arrival curb and the parking garage.

The upper (departure) level of the terminal roadway is presently limited to two through lanes. Additional lanes or a bypass system could be necessary depending upon the ultimate terminal concept.

The third area of future constraint is the intersection of the return loop road with the Yale Boulevard. The facility needs for the roadway system will be dependent upon the ultimate terminal concept and will be addressed in the alternatives analysis.

TERMINAL CURB FRONTAGE

The demand-capacity analysis of the terminal curb front indicated the auto curb on the lower (arrival) level is currently operating above capacity. The commercial curb on the lower level will reach capacity by 5.5 million enplanements, or in the long term. The upper (departure) level curb will be at capacity by the short term horizon of 3.9 million enplanements. **Table IX-3-A** outlines the curb requirements for each planning horizon milestone.

AUTO PARKING

PUBLIC PARKING

The capacity analysis indicated that, based upon current usage patterns, the on-airport parking is above capacity. The overflow is being accommodated by the privately owned and operated off-airport lots. Without any additional parking, the combined on- and off-airport parking lots would be sufficient through the short term activity milestones and nearly to the intermediate milestone.

Safety and convenience to the traveling public is a priority of the Aviation Department. The options to respond to the increasing demand for on-airport parking include providing more infrastructure or use pricing to alter public parking preferences. Pricing increases would reduce on-airport demand at least in the short term.

TABLE IX-3-A Terminal Curb Requirements Albuquerque International Sunport	Available	Current	Short Term	Intermediate	Long Term
Departure Curb (l.f.)	630	540	665	775	1,050
Arrival Curb (l.f.)					
Auto/Taxi	660	710	875	1,020	1,385
Commercial	660	385	470	550	750

The parking facility requirements presented in **Table IX-3-B** take into account the overall parking requirements. A total of 19,200 spaces will be needed long range. These can be provided publicly or privately. The on-airport requirements based on a 50 percent market split are also presented for planning purposes. It should be noted, however, the private off-airport parking operators have the option to convert their property to other uses in the future. This could ultimately reduce the available parking. Future planning should account for this possibility.

The airport will need to provide short term parking regardless of the on/off-airport split. Convenient and reasonably-priced short term parking is necessary for control of terminal curb usage. If not adequate, the use of the curb for parking increases as does loop road re-circulation.

Typically, short-term parking comprises 15 to 25 percent of the total public parking requirement at airports. Previous parking studies at ABQ have indicated that the lower end of this range is representative of the local condition. The table relates the number of spaces that will need to be provided for short tem users. With a long range need for 2,900 short term parking spaces, most of the existing parking structure's 3,246 spaces would be needed just for short term parking.

RENTAL CAR PARKING

The new consolidated rental car facility provides 1,200 rental car ready/return spaces and 34 acres for service and storage. The capacity analysis indicated that the existing ready/return spaces would be adequate into the intermediate term. This is based upon a surveyed need of 315 spaces per one million originations. The projected ready/return parking requirements are presented in **Table IX-3-B** and include 2,000 ready/return spaces long range.

Service and storage needs were determined to be approximately seven (7.0) acres per one million passenger originations. The projected requirements for service and storage are also presented in **Table IX-3-B**. The present space should be adequate beyond the intermediate term, but an area of 45 acres will be needed long range.

TABLE IX-3-B
Auto Parking Requirements
Albuquerque International Sunport

		Planning Horizons			
	Available	**Current**	**Short Term**	**Inter-mediate**	**Long Range**
Enplanements (millions)	NA	3.13	3.90	4.70	7.10
Originations (millions)	NA	2.70	3.39	4.14	6.39
Public Parking (spaces)					
Total (includes off-airport)	11,827	8,100	10,200	12,400	19,200
On-Airport					
Total	3,727	4,000	5,100	6,200	9,600
Short-term	NA	1,200	1,500	1,900	2,900
Rental Car					
Ready/Return (spaces)	1,200	850	1,070	1,300	2,010
Service/Storage (acres)	34	19	24	29	45
Employee Parking					
Spaces	550	470	590	720	1,120

EMPLOYEE PARKING

Employee parking requirements are presented on **Table IX-3-B** as well. As indicated in the capacity analysis, a ratio of 175 spaces per one million originations was used. Additional employee parking could be necessary as the short term activity milestone is reached. Employee parking requirements can be expected to double the spaces currently available.

AIRPORT RESCUE AND FIREFIGHTING

Requirements for Airport Rescue and Firefighting (ARFF) services at an airport are established under **F.A.R. Part 139.** Part 139.49 establishes an ARFF index determination. The index is determined by the longest index group with an average of five or more daily departures. The following defines each index:

- Index A - aircraft less than 90 feet in length
- Index B - aircraft less than 126 feet in length
- Index C - aircraft less than 159 feet in length
- Index D - aircraft less than 200 feet in length
- Index E - aircraft at least 200 feet in length

If there are not five daily departures by the largest aircraft, then the next lower index will apply. Initially, the airport could expect to be Index B, but as larger aircraft serve the airport on a regular basis, the index could rise to as high as Index D.

The airfield facility requirements indicate that current critical aircraft for commercial operations are ARC D-IV aircraft including the B-757, A310, and DC-8-70 series. The DC-8 has a length of 187 feet, but does not currently have five daily departures. The B-757-200 and the A310 have lengths of 155 and 153 feet. There are also several other aircraft using the airport on a regular basis that fit the Index C category. As activity increases, Index D aircraft, such as the DC-8, can be expected to provide adequate departures to warrant Index D.

ARFF services at ABQ are presently provided by the Kirtland Air Force Base under a Memorandum of Agreement with the City. The Air Force Base has a fleet of 14 vehicles maintained in two locations to respond to airport emergencies. The available equipment meets Index E requirements under FAR Part 139. This will be adequate for the planning period.

SNOW REMOVAL EQUIPMENT

Albuquerque receives an average of 10.8 inches of snowfall annually. FAA Advisory Circular (FAA AC)150/5200-30A, **Airport Winter Safety and Operations** provides general guidance for snow clearance that is acceptable under **FAR Part 139**. According to the AC, "commercial service airports should have sufficient equipment to clear one inch of snow weighing up to 25 pounds per cubic foot for the primary instrument runway, one or two principal taxiways to the ramp area, emergency access roads, and sufficient ramp area to accommodate anticipated aircraft operations." The time in which one inch of snow should be cleared is based upon the annual air carrier operation level at the airport. The Sunport is in the highest category with over 40,000 annual operations, so the clearance time is one-half hour.

Snow removal equipment (SRE) includes four snowplows with 20-foot blades. Two of the plows also have brooms. These are assigned to the runway and taxiway system. There is also fifth snowplow with an 11-foot blade assigned to the cargo ramp. The runway/taxiway system is also cleared with a combination blower/broom and an combination blower/loader. Two pickup trucks equipped with 7.5-foot blades and spreaders are used to clear the jetway areas. Another truck carries de-icer for the runway/taxiway system. Two other trucks with 10-foot blades are assigned to both the airfield and the airport roadways. The roadways and parking lots are also cleared with two trucks with 10-foot blades and two pickups with 7.5 foot blades and spreaders.

The current equipment inventory is adequate for the current airfield. Additional equipment could become necessary if airfield and apron pavements are increased significantly.

Snow removal materials storage is currently limited to bins within the airport maintenance building. Stand alone storage buildings would increase capacity and loading efficiency.

AIRPORT MAINTENANCE

The Aviation Departments airport maintenance facilities encompass approximately three acres and include three buildings. The maintenance building is a 14,000 square foot facility with six maintenance bays, a wash bay, parts storage, electricians shop, and paint equipment and paint storage, locker room, restrooms, break room, and offices. The widest overhead door on the building is only 20 feet and there is no lubrication pit. The wash bay is exposed on three sides and is not adequate to wash larger equipment.

The vehicle storage building is approximately 13,100 square feet. It provides heated, enclosed storage for vehicles and de-icing materials. It includes storage bins for sand and urea that are undersized. The building's two overhead doors are located at either end and are both 20 foot wide. The building is also not conducive to efficient storage of equipment over 25 feet in length.

The third building is a smaller fleet maintenance building of approximately 2,500 square feet on the ground floor and 500 square feet of second floor space. It has three maintenance bays and two-story administrative space. The largest overhead door is just 16 feet wide.

Because of lack of space at the consolidated facility, additional equipment is stored in various locations around the airport where space is available.

A analysis was prepared for the recent **West Side Campus Study** that outlined the maintenance and equipment storage needs of the airport. The study recommended modifications to the existing maintenance building to better serve its purpose. This included relocating the de-icing materials storage to its own heated enclosure designed for storage and loading. A system of three hoppers each capable of storing three tons of materials was recommended.

Additional vehicle storage capable of accommodating the larger vehicles was also recommended. It was determined that a new 24,000 square foot building could adequately serve the large equipment storage needs. An additional unheated building of approximately 6,000 square feet was also recommended to be able to fully consolidate equipment storage at the site. Unless Part 139 requirements dictate major maintenance or snow removal changes, or airfield pavements change significantly, the additional space discussed above should be adequate for the planning period.

FUEL STORAGE

Aviation fuel is available to commercial and general aviation operators at the airport. Commercial carriers are served by Aircraft Storage International (ASI) with refuellers from 120,000 gallons of underground Jet A storage. General aviation aircraft can refuel at the fixed base operators who have a combined total of 105,000 gallons Jet A and 35,000 gallons of 100LL (avgas) in underground storage. Thus, the total civilian aviation fuel storage at the airport is 225,000 gallons of Jet A and 35,000 gallons of avgas.

Avgas storage requirements was estimated based upon maintaining a two week supply during the peak month of general aviation activity. Avgas flowage was forecast at six gallons per GA operation. The resulting storage requirements are presented on **Table IX-3-C**. The table indicates that the current avgas fuel storage capacity will be adequate for the long range.

TABLE IX-3-C
Fuel Storage Requirements
Albuquerque International Sunport

	Available	Current	Short Term	Inter-mediate	Long Range
Avgas (gallons)	35,000	18,000	21,000	23,000	28,000
Jet A (gallons)	225,000	660,000	780,000	910,000	1,350,000

Jet A fuel flowage is currently averaging approximately 710 gallons per commercial operation. This average is projected to increase as aircraft fly longer trip lengths and the fleet size increases. The planning horizon requirements are presented on **Table IX-3-C**. Based upon a three day reserve, the current Jet A storage is undersized. A consolidated fuel farm with pipeline delivery is currently being considered at the airport.

REQUIREMENTS SUMMARY

Exhibit IX-3-A summarizes the access and support requirements for Albuquerque International Sunport. Means to address these requirements will be examined further in the alternatives analyses to follow.

98MP19-IX3A-4/6/01

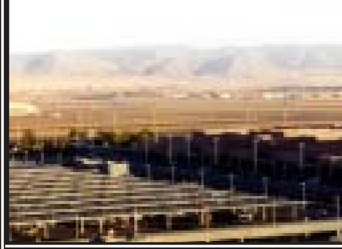
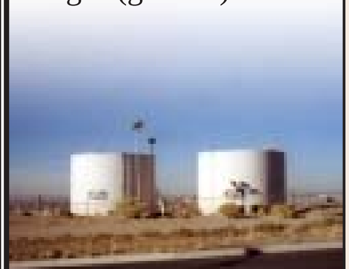
CATEGORY	AVAILABLE	CURRENT	SHORT TERM	INTERMEDIATE	LONG RANGE
TERMINAL CURB					
Departure Curb (l.f.)	630	540	665	775	1,050
Arrival Curb (l.f.)					
Auto/Taxi	660	710	875	1,020	1,385
Commercial	660	385	470	550	750
					
TERMINAL PARKING					
Public Total Parking	11,827	8,100	10,200	12,400	19,200
On-Airport Parking	3,727	4,000	5,100	6,200	9,600
Short Term Parking	NA	1,200	1,500	1,900	2,900
Employee Parking	550	470	590	720	1,120
		*All numbers refer to parking spaces*			
RENTAL CAR					
Ready/Return (spaces)	1,200	850	1,020	1,180	2,010
Service Storage (acres)	34	19	24	29	45
					
FUEL STORAGE					
JetA (gallons)	225,000	660,000	780,000	910,000	1,330,000
Avgas (gallons)	35,000	18,000	21,000	23,000	28,000
					

Exhibit IX-3-A
ACCESS AND SUPPORT
FACILITY REQUIREMENTS

Chapter Nine

Parking, Access and Support Facilities

Section Four

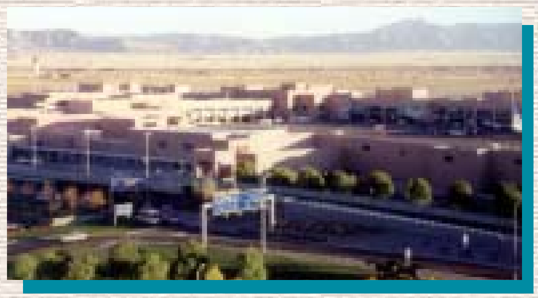
RECOMMENDED PROGRAM

Chapter Nine
Parking, Access, and Support Facilities

Section Four
RECOMMENDED PROGRAM

Each of the previous airport component chapters has indicated that the evaluation of component alternatives must also consider the function of the airport as a whole. This is especially true of the alternatives for airport parking and access as well as other support facilities. The location and function of support facilities are truly driven by the location and function of the other airport components to be served.

Each landside component (passenger terminal, general aviation, and air cargo) requires convenient and efficient access to the local surface transportation system. Similarly, parking interfaces are necessary for both autos and, in some cases, trucks or other commercial vehicles. The airfield must have fast and efficient access for airport rescue and firefighting (ARFF), as well as efficient airport maintenance and snow removal equipment (SRE).



As a result, most of the support facilities were considered in the previous chapters in conjunction with the other airport components they are designed to serve. This includes access and parking for general aviation and air cargo. In the case of the passenger terminal, this section will serve as a follow-up to summarize the support facility considerations from the previous chapters and bring forward the recommended program.

The facility requirements analysis in the previous section outlined those parking, access, and support facilities that will need to be upgraded in the future. They include:

- **Airport Access**

  - The existing passenger terminal access loop has bottlenecks that will need to be improved if the terminal stays in this location.

  - A new terminal location would require a new access system.

  - The terminal curb operates at or above capacity on the departure level.

  - Similarly, general aviation and air cargo access may need to be adjusted to serve the future of these components.

  - Light Rail Access.

- **Airport Parking**

  - The existing on-airport terminal parking has operated at or above capacity on a regular basis.

- **Airport Maintenance and SRE**

  - Additional storage facilities.

  - Stand-alone materials storage bins.

  - Reconsider location.

- **Fuel Storage**

  - Increased storage of Jet A.

The following support alternatives take into account the recommended concept for the airfield, passenger terminal, general aviation, and air cargo.

AIRPORT ACCESS CONSIDERATIONS

As indicated in the previous section, much of the airport's concerns with off-airport access capacity were relieved with the construction of Sunport Boulevard for direct access to Interstate 25. Even with reduced airport traffic, however, the nearby intersection of Gibson and Yale is expected to have capacity problems in the future. The Aviation Department should continue to coordinate with the City and regional transportation planners with regards to improvements off-airport.

Another off-airport consideration is the potential for light rail. The airport would be a natural terminus for light rail. A strong light rail system not only can reduce auto traffic, but also parking requirements. Light rail is still in the early planning phases in Albuquerque. It does appear that a link to the airport would likely come from the university area to the north. The right-of-way corridor has yet to be determined. Each terminal alternative considered access and circulation in the evaluation. Sketches of each concept, included in Chapter Four, Section Four, include a general circulation concept. The passenger terminal alternatives also considered the placement of a light rail station.

On-airport access considerations depend primarily upon the terminal concept selected. The terminal alternatives analysis determined the best location for the terminal was at the present location. With that determination, the terminal analysis focused in on either constructing a second unit terminal or redeveloping a new unit terminal.

Each terminal concept would serve to provide a solution to the curb front in its own unique way. With the unit terminal, the second terminal would add additional curb length. A key, however, would be to design a bypass of the existing terminal so that all vehicles going to the second terminal would not have to pass in front of the existing terminal. The central terminal would be designed to provide curb front on both the north and south sides of the terminal. The final recommendation, however, was a second unit terminal, primarily due to its flexibility to add terminal facilities more on an as-needed basis.

The on-airport access loop in the northeast quadrant posed another unique situation due to the perpendicular access points. Before the construction of Sunport Boulevard, all terminal traffic came into the airport by way of either the main access on Yale Boulevard or the secondary access on Girard Boulevard. These access points are maintained for convenient access from Kirtland AFB including the Sandia Labs as well as from the neighboring business and residential areas. In addition, several off-airport parking lots are located along Yale.

While these two access roads come from the north, Sunport Boulevard enters the terminal area from the west. The roadways now merge prior to entering the access loop road. With the development of a second unit terminal, the system must allow those going to the second terminal to bypass the existing terminal. A key point is the bridge that carries Yale Boulevard over Sunport Boulevard. Both the entrance and exit for Sunport Boulevard currently pass under this bridge. Unless a new corridor is developed, this point of return would need to be preserved.

Exhibit IX-4-A presents one alternative for providing the loop system for the unit terminal. In this alternative, the approach to the existing terminal remains the same, but the exit roadway under the bridge is modified to serve as an entrance roadway to the second terminal. The exit from the loop system is located north of the Wyndham Hotel along an existing cul-de-sac right-of-way. The exit route offers an at-grade intersection with Yale as well as an overpass to Sunport Boulevard. The overpass would run through the two southernmost off-airport parking lots on the west side of Yale.

A second alternative that maintains the Sunport Boulevard entrance and exit in the existing Yale underpass corridor is depicted on **Exhibit IX-4-B**. The primary advantage of this alternative is minimizing the off-site roadway construction. The primary on-site circulation differences are at the entrance and exit points. At the present time, this second alternative is preferred because it creates the least disruption on off-airport businesses (parking lots). As a result, it will be carried forward on the airport layout plan and in the capital improvement plan. As the second terminal will not be needed until the intermediate term, it is not likely to be developed for several more years. Thus, access loop alternatives can still be reviewed once more prior to final design.

TERMINAL PARKING CONSIDERATIONS

As with airport access, the parking alternatives varied with the terminal alternatives analyzed in Chapter Four. With the recommendation for the terminal defined, the parking lot considerations become considerably more focused. In fact, the parking lot is essentially the same for both access systems discussed above. The unit terminal plan will permit a second parking structure to be developed adjacent to the second terminal. Like the existing parking lot, a small surface lot can be developed on the backside if needed. The two lots will be connected by a roadway with grade separation from the access loop system. This will permit the exit toll booth area to be developed in one location.

The second parking structure will allow additional parking to be developed without disrupting the existing parking structure. If necessary for demand, a portion of the second structure could be developed prior to the new terminal or even the new access road system. In fact, a portion of the new parking structure will likely need to be constructed prior to the development of the new loop system to replace the spaces that will be lost in the existing surface lot.

The parking plan as depicted on **Exhibit IX-4-B** will increase the on-airport parking to meet future needs as outlined in the facility requirements. Off-airport parking, however, will still be an important part of the public parking system at Albuquerque International Sunport, potentially supplying half of the parking spaces required to meet the long range demand.

AIRPORT MAINTENANCE AND SNOW REMOVAL EQUIPMENT

The airport maintenance and snow removal equipment (SRE) facilities are presently located between the general aviation and air cargo area. This area is at-grade and makes an excellent area for development of additional air cargo facilities. Combining this with the need for additional storage space for maintenance and snow removal equipment, it is timely to consider relocating the maintenance and SRE facilities. Not only can the additional storage be developed, but the entire facility can be brought up to state-of-the-art.

A key advantage with relocating these facilities is that they do not need a public interface, and do not need to be located adjacent to any of the major landside components. With the passenger terminal planned to remain on the north side of the airport, and the general aviation and air cargo facilities to remain on the southwest side, there is ample room on the southeast side for the maintenance and SRE facility. This is depicted on **Exhibit IX-4-C.** The facility has ready access to the airfield as well as the perimeter road system. The planned extension of University

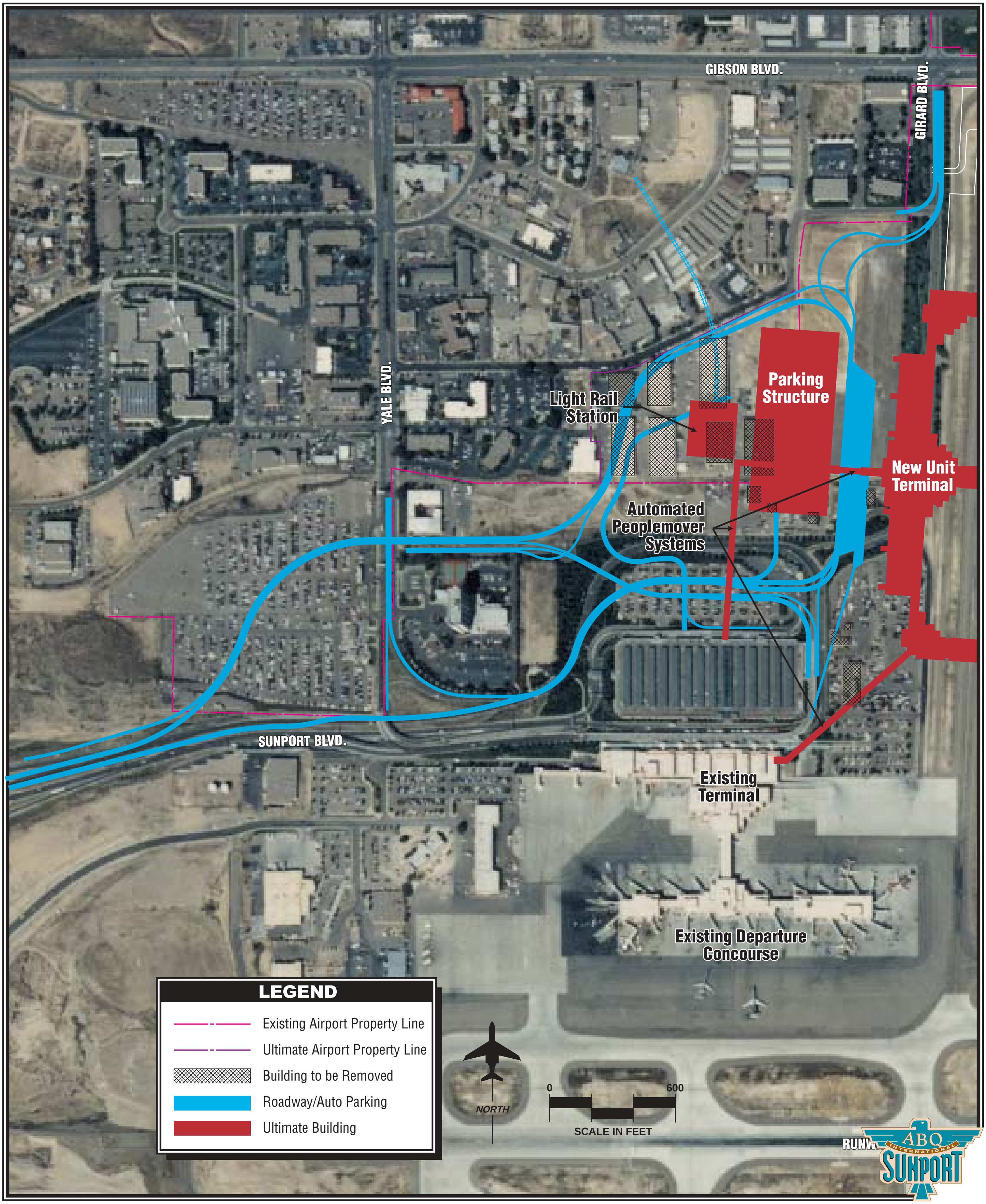


Exhibit IX-4-A
ROADWAY ALTERNATIVE A

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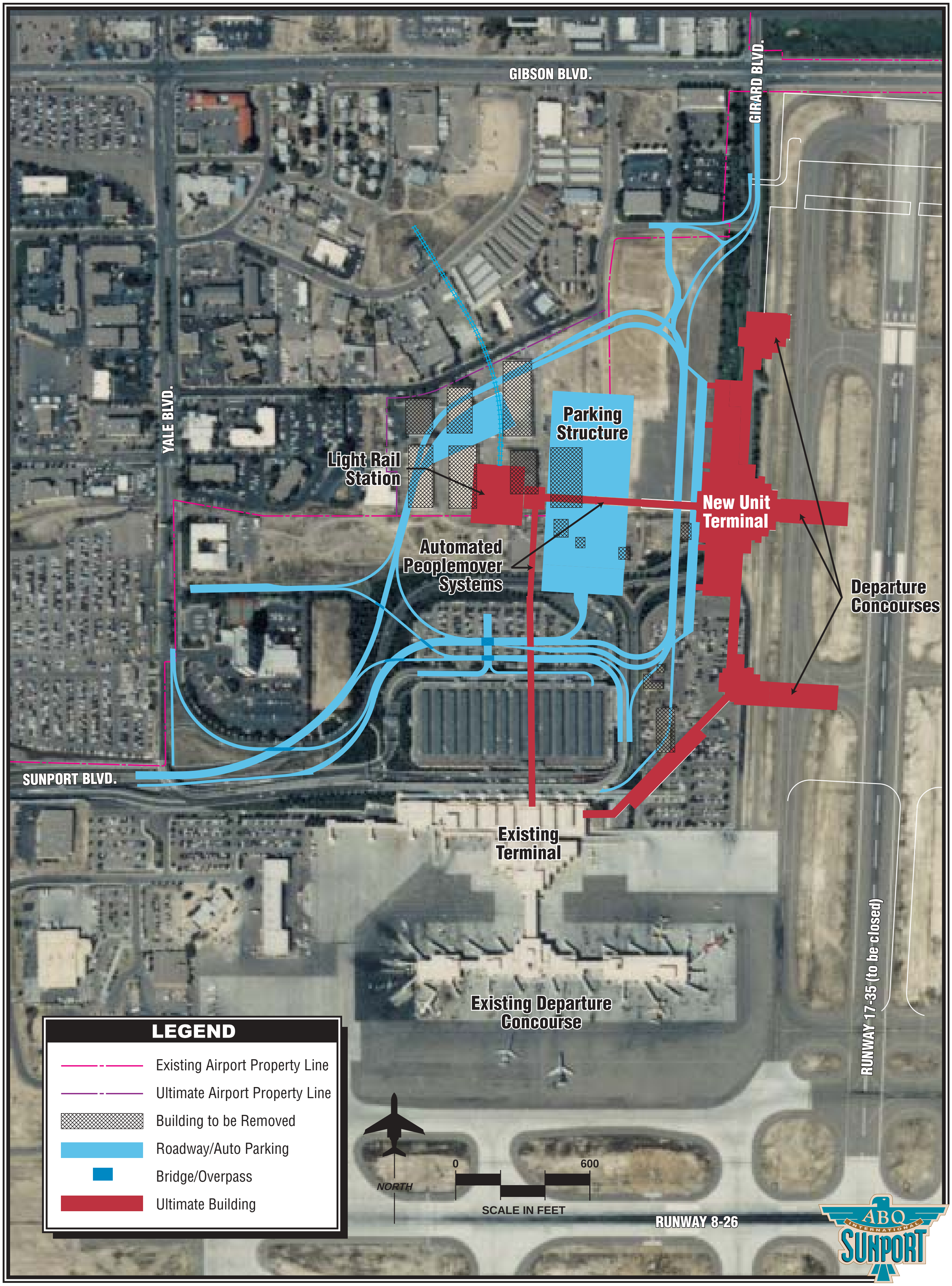

Exhibit IX-4-B
ROADWAY ALTERNATIVE B

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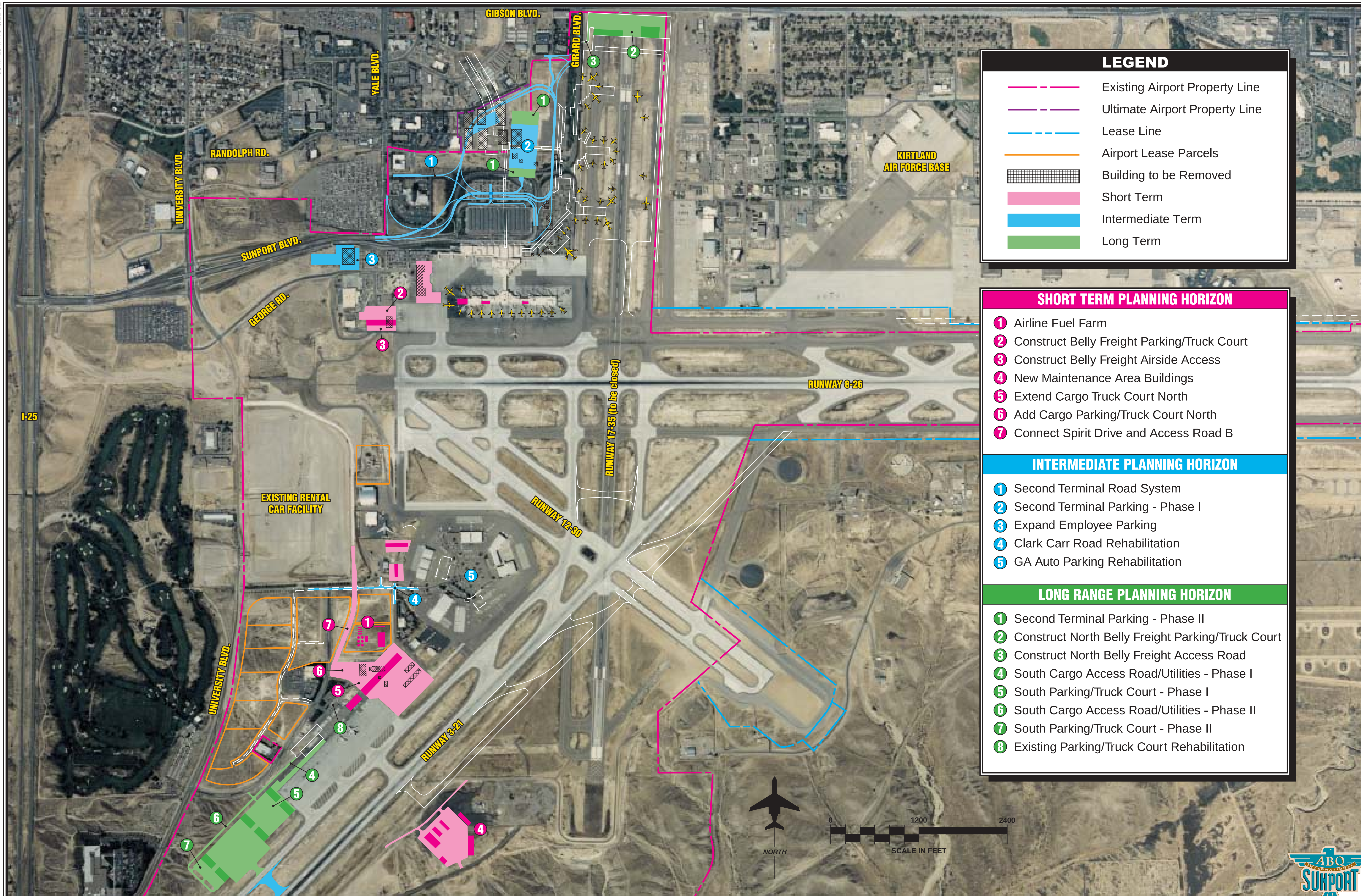


Exhibit IX-4-C
SUPPORT FACILITY DEVELOPMENT STAGING

Avenue will provide the initial connection for the development of public access.

While the rest of the area on the southeast side will be reserved for future aviation uses, the maintenance facility is sited so that it can be developed even before Runway 17-35 is closed. There is adequate room for the facilities as well as room for additional development should it be needed for purposes such as unforseen new technology in maintenance or snow removal.

FUEL STORAGE

The Aviation Department has been considering a consolidated fuel farm with pipeline delivery for the past several years. A location on the southwest side of the airport, behind the general aviation and air cargo facilities, has been considered. The Master Plan review suggests that this site is still valid. It is off the flight line, but accessible from the perimeter service roads. It would also be readily accessible from the existing pipeline located west of the airport. Therefore, it is recommended to continue to plan for the consolidated facility in the location depicted on **Exhibit IX-4-C**.

CAPITAL IMPROVEMENT PROGRAM

Once the specific needs and improvements for the access, parking, and support facilities have been established, the next step is to determine a realistic schedule and costs for implementing the plan. This sub-section examines the overall cost of development and a demand-based schedule for these improvements.

The development schedule can be initially established dividing the improvement needs into three planning horizons of short term, intermediate term, and long range. The timing on access and parking facilities as well as utility improvements are all driven by the landside components they are to serve. As a result, they were also depicted earlier in the appropriate chapter. The airline fuel farm, as well as the maintenance facilities, are both beneficial in the short term and are recommended as such. **Table IX-4-A** presents the parking, access, and support facility improvement program.

The short term horizon covers items of highest priority as well as items that should be developed as the airport approaches the short term activity milestones. Priority items should include improvements related to safety and major maintenance. Improvements to facilities that are inadequate for present demand should also be included in the short term. Because of their priority, these items will need to be incorporated into FAA and Aviation Department five-year programming. The short term items include the fuel farm, the connection of Spirit Drive with Access Road B, and the relocation of the airport maintenance facilities. Other projects include parking and access to new air cargo facilities and the relocated belly freight building.

TABLE IX-4-A
Parking, Access, And Support
Capital Improvement Program
Albuquerque International Sunport

No.	Project	Total Costs	FAA-AIP Eligible	ABQ Match
SHORT TERM PLANNING HORIZON				
1	Airline Fuel Farm	$12,000,000	$0	$12,000,000
2	Construct Belly Freight Parking/Truck Court	634,000	475,500	158,500
3	Construct Belly Freight Airside Access	790,000	592,500	197,500
4	New Maintenance Area Civil and Utilities	2,155,000	1,616,250	538,750
5	New Maintenance Area Buildings	5,049,000	2,524,500	2,524,500
6	Extend Cargo Truck Court North	375,000	0	375,000
7	Add Cargo Parking/Truck Court North	871,000	0	871,000
8	Connect Spirit Drive and Access Road B	1,320,000	990,000	330,000
Short Term Project Costs		**$23,194,000**	**$6,198,750**	**$16,995,250**
INTERMEDIATE PLANNING HORIZON				
1	Second Terminal Road System	$49,000,000	$36,750,000	$12,250,000
2	Second Terminal Parking - Phase I	53,550,000	0	53,550,000
3	Expand Employee Parking	1,050,000	0	1,050,000
4	Clark Carr Road Rehabilitation	75,000	0	75,000
5	GA Auto Parking Rehabilitation	500,000	0	500,000
Intermediate Term Project Costs		**$104,175,000**	**$36,750,000**	**$67,425,000**
LONG RANGE PLANNING HORIZON				
1	Second Terminal Parking - Phase II	$52,200,000	$0	$52,200,000
2	Construct North Belly Freight Parking/Truck Court	1,800,000	0	1,800,000
3	Construct North Belly Freight Access Road	300,000	225,000	75,000
4	South Cargo Access Road/Utilities - Phase I	500,000	375,000	125,000
5	South Parking/Truck Court - Phase I	1,800,000	0	1,800,000
6	South Cargo Access Road/Utilities - Phase II	500,000	375,000	125,000
7	South Parking/Truck Court - Phase II	875,000	0	875,000
8	Existing Parking/Truck Court Rehabilitation	25,000	0	25,000
Long Range Project Costs		**$58,000,000**	**$975,000**	**$57,025,000**
TOTAL DEVELOPMENT COSTS		**$185,369,000**	**$43,923,750**	**$141,445,250**

When short term horizon activity milestones are reached, it will be time to program for the intermediate term based upon the next milestones. Maintenance and rehabilitation projects that are not likely to be necessary within the next five years are included in the intermediate term as well.

Demand-driven intermediate term projects are expected to be tied to the access and parking for the unit terminal development. Therefore, this will be driven primarily by passenger enplanements.

Long range improvements will include a second phase of terminal parking as well as parking and access related to air cargo development. This will include both the south cargo area as well as new belly freight facilities for the passenger airlines.

ENVIRONMENTAL OVERVIEW

As mentioned previously, all of the improvements planned for Albuquerque International Sunport will require compliance with the *National Environmental Policy Act (NEPA) of 1969*, as amended. As detailed in *FAA Order 5050.4A, Airport Environmental Handbook*, the support facility improvements described previously in this chapter will be categorically excluded and will not require formal NEPA documentation. However, these projects will be further evaluated to ensure compliance with environmental issues such as wetlands, threatened or endangered species, and cultural resources during the federal, state, and/or local permitting processes.

Table IX-4-B summarizes a preliminary review of environmental issues that would need to be analyzed in more detail within the permitting processes. This review considers the main environmental resources required to be studied by FAA Order 5050.4A. This analysis ***does not*** address mitigation or the resolution of environmental issues. Mitigation measures are determined in the permitting processes. A complete description of the environmental resources is provided in Section Five of Chapter Three.

TABLE IX-4-B
Review of Environmental Resources
Proposed Support Facility Improvements
Albuquerque International Sunport

Environmental Resource	Resources Potentially Affected
Noise	• No impacts anticipated.
Compatible Land Use	• No impacts anticipated.
Social Impacts	• The development of the second terminal building parking structure and access roadways requires the acquisition of land and existing commercial businesses. *FAA Order 5050.4A* provides that where the relocation of a residence, business, or farmland is involved, the provisions of the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (URARPAPA)* must be met. The Act requires that businesses be offered assistance in finding a new site and funding relocation costs.
Induced Socioeconomic Impacts	• No impacts anticipated.
Air Quality	• Two detailed air quality assessment studies have been completed in recent years at the airport as part of an EA and the *Landside Master Plan*. Results of these previous studies indicate that with the use of best management practices, the impacts to air quality are negligible. Therefore, it is not anticipated that the proposed projects will have a dramatic affect on air quality. However, a new air quality assessment will most likely be required during the NEPA documentation process for the proposed second terminal projects.
Water Quality	• As discussed in Chapter One, the airport will need to continue to comply with their current NPDES operations permit requirements. • With regard to construction activities, the airport and all applicable contractors will need to comply with the requirements and procedures of the construction related NPDES General Permit, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan*, prior to the initiation of project construction activities.
Section 4(f) Lands	• No impacts anticipated.

TABLE IX-4-B (Continued) Review of Environmental Resources Proposed Support Facility Improvements Albuquerque International Sunport	
Environmental Resource	**Resources Potentially Affected**
Historical and Cultural Resources	• Further coordination with the State Historic Preservation Officer (SHPO) will be required prior to project implementation and field surveys may be required.
Threatened or Endangered Species and Biological Resources	• Correspondence received from the U.S. Fish and Wildlife Service (FWS) indicated that no federally-listed threatened or endangered species are present and thus will not be affected by the proposed projects. • Under the Migratory Bird Treaty Act (MBTA) the taking of migratory birds, nests, and eggs is prohibited. To minimize the likelihood of a taking, the FWS recommended that construction activities occur outside the nesting season of March through August, or a survey be completed prior to construction to determine the potential affect on these protected species.
Waters of the U.S. including Wetlands	• No impacts anticipated.
Floodplains	• No impacts.
Wild and Scenic Rivers	• No impacts.
Farmland	• No impacts.
Energy Supply and Natural Resources	• No significant impacts anticipated.
Light Emissions	• No significant impacts anticipated.
Solid Waste	• No significant impacts anticipated.

Appendix A

Glossary and Abbreviations

Appendix A

GLOSSARY OF TERMS

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): see declared distances.

AIR CARRIER: an operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transport mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRPORT REFERENCE CODE (ARC): a coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT ELEVATION: The highest point on an airport's usable runway expressed in feet above mean sea level (MSL).

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of existing and proposed airport facilities.

AIRCRAFT APPROACH CATEGORY: a grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

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

AIRPLANE DESIGN GROUP (ADG): a grouping of aircraft based upon wingspan. The groups are as follows:

- *Group I:* Up to but not including 49 feet.
- *Group II:* 49 feet up to but not including 79 feet.
- *Group III:* 79 feet up to but not including 118 feet.
- *Group IV:* 118 feet up to but not including 171 feet.
- *Group V:* 171 feet up to but not including 214 feet.
- *Group VI:* 214 feet or greater.

AIR TAXI: An air carrier certificated in accordance with FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): a central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling, and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): a facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the enroute phase of flight.

ALERT AREA: see special-use airspace.

ANNUAL INSTRUMENT APPROACH (AIA): an approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): an airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

APPROACH MINIMUMS: the altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

AUTOMATIC DIRECTION FINDER (ADF): an aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AUTOMATED WEATHER OBSERVATION STATION (AWOS): equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dewpoint, etc...)

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): the continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

BASE LEG: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BEARING: the horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: a barrier used to divert or dissipate jet blast or propeller wash.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on the airport.

CIRCLING APPROACH: a maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.

CLASS A AIRSPACE: see Controlled Airspace.

CLASS B AIRSPACE: see Controlled Airspace.

CLASS C AIRSPACE: see Controlled Airspace.

CLASS D AIRSPACE: see Controlled Airspace.

CLASS E AIRSPACE: see Controlled Airspace.

CLASS G AIRSPACE: see Controlled Airspace.

CLEAR ZONE: see Runway Protection Zone.

CROSSWIND: wind flow that is not parallel to the runway of the flight path of an aircraft.

COMPASS LOCATOR (LOM): a low power, low/medium frequency radiobeacon installed in conjunction with the instrument landing system at one or two of the marker sites.

CONTROLLED AIRSPACE: airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- *CLASS A:* generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.

- *CLASS B:* generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.

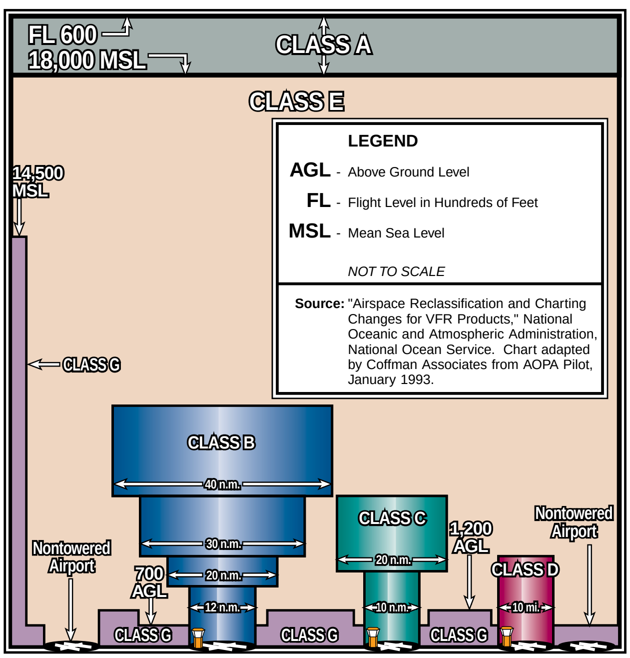
- *CLASS C:* generally, the airspace from the surface to 4,000 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- *CLASS D:* generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airport that have an operational control tower. Class D air space is individually tailored and configured to encompass published instrument approach procedures.
  Unless otherwise authorized, all

persons must establish two-way radio communication.

- *CLASS E:* generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

- *CLASS G:* generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.



CONTROLLED FIRING AREA: see special-use airspace.

CROSSWIND LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

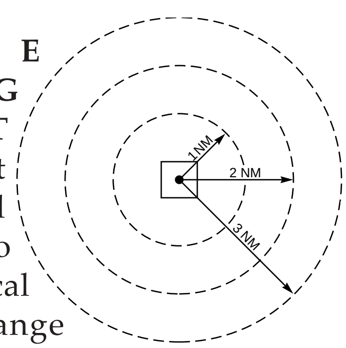
- *TAKEOFF RUNWAY AVAILABLE (TORA):* The runway length declared available and suitable for the ground run of an airplane taking off;

- *TAKEOFF DISTANCE AVAILABLE (TODA):* The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA;

- *ACCELERATE-STOP DISTANCE AVAILABLE (ASDA):* The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff; and

- *LANDING DISTANCE AVAILABLE (LDA):* The runway length declared available and suitable for landing.

DISPLACED THRESHOLD: a threshold that is located at a point on the runway other than the designated beginning of the runway.



DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

DNL: The 24-hour average sound level, in A-weighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

ENPLANED PASSENGERS: the total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and non-scheduled services.

FINAL APPROACH: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

FRANGIBLE NAVAID: a navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

GENERAL AVIATION: that portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM: See "GPS."

GPS - GLOBAL POSITIONING SYSTEM: A system of 24 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

HELIPAD: a designated area for the takeoff, landing, and parking of helicopters.

HIGH-SPEED EXIT TAXIWAY: a long radius taxiway designed to expedite aircraft turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

INSTRUMENT APPROACH: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

LANDING DISTANCE AVAILABLE (LDA): see declared distances.

LOCAL TRAFFIC: aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument approach procedures. Typically, this includes touch-and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): a facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LORAN: long range navigation, an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for enroute navigation.

MICROWAVE LANDING SYSTEM (MLS): an instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

MILITARY OPERATIONS AREA (MOA): see special-use airspace.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, after an instrument approach, a landing is not effected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or

2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: the runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

NAVAID: a term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc..)

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NONDIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NONPRECISION APPROACH PROCEDURE: a standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

OBJECT FREE AREA (OFA): an area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): the airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

OPERATION: a take-off or a landing.

OUTER MARKER (OM): an ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline indicating to the pilot, that he/she is passing over the facility and can begin final approach.

PRECISION APPROACH: a standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- *CATEGORY I (CAT I):* a precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.

- *CATEGORY II (CAT II):* a precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.

- *CATEGORY III (CAT III):* a precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION OBJECT FREE AREA (POFA): an area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PROHIBITED AREA: see special-use airspace.

REMOTE COMMUNICATIONS OUTLET (RCO): an unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering enroute clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): see remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: an airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: see special-use airspace.

RNAV: area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used enroute and for approaches to an airport.

RUNWAY: a defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

RUNWAY BLAST PAD: a surface adjacent to the ends of runways provided to reduce the erosive effect of jet blast and propeller wash.

RUNWAY END IDENTIFIER LIGHTS (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY GRADIENT: the average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

RUNWAY SAFETY AREA (RSA): a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY VISUAL RANGE (RVR): an instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

RUNWAY VISIBILITY ZONE (RVZ): an area on the airport to be kept clear of permanent objects so that there is an unobstructed line-of-site from any point five feet above the runway centerline to any point five feet above an intersecting runway centerline.

SEGMENTED CIRCLE: a system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: an area adjacent to the edge of paved runways, taxiways or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SPECIAL-USE AIRSPACE: airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- *ALERT AREA:* airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.

- *CONTROLLED FIRING AREA:* airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.

- *MILITARY OPERATIONS AREA (MOA):* designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.

- *PROHIBITED AREA:* designated airspace within which the flight of aircraft is prohibited.

- *RESTRICTED AREA:* airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.

- *WARNING AREA:* airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): a pre-planned IFR departure procedure.

STANDARD TERMINAL ARRIVAL (STAR): a pre-planned IFR arrival procedure.

STOP-AND-GO: a procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STRAIGHT-IN LANDING/APPROACH: a landing made on a runway aligned within 30 degrees of the final approach course following completion of an instrument approach.

TACTICAL AIR NAVIGATION (TACAN): An ultra-high frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA): see declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA): see declared distances.

TAXILANE: the portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: a defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY SAFETY AREA (TSA): a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TETRAHEDRON: a device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

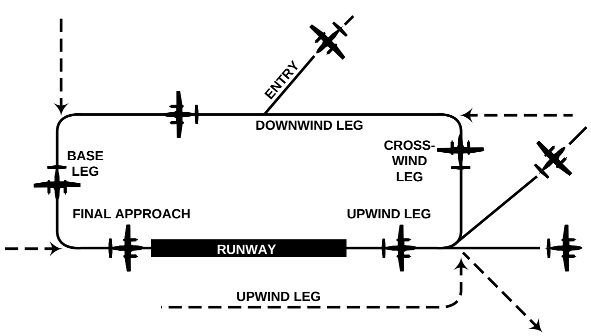
THRESHOLD: the beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

TOUCH-AND-GO: an operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and-go is recorded as two operations: one operation for the landing and one operation for the take-off.

TOUCHDOWN ZONE LIGHTING (TDZ): Two rows of transverse light bars located symmetrically about the runway centerline normally at 100-foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.

UNICOM: A nongovernment communication facility which may provide

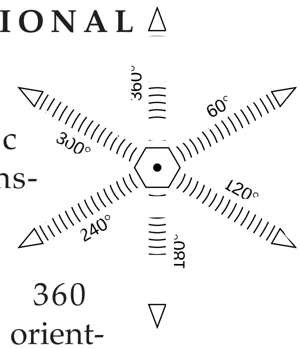


airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

UPWIND LEG: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE STATION (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.



VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION/TACTICAL AIR NAVIGATION (VORTAC): A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

WARNING AREA: see special-use airspace.

ABBREVIATIONS

AC: advisory circular

ADF: automatic direction finder

ADG: airplane design group

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach light ing system with sequenced flashers (CAT II configuration)

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircraft rescue and fire-fighting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100LL)

AWOS: automated weather observation station

BRL: building restriction line

CFR: Code of Federal Regulations

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity for air craft with dual-wheel type landing gear

DTWL: runway weight bearing capacity for aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

FY: fiscal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at middle marker

LOC: ILS localizer

LOM: compass locator at ILS outer marker

LORAN: long range navigation

MALS: medium intensity approach lighting system

MALSR: medium intensity approach lighting system with sequenced flashers

MALSR: medium intensity approach lighting system with runway alignment indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MSL: mean sea level

NAVAID: navigational aid

NDB: nondirectional radio beacon

NM: nautical mile (6,076 .1 feet)

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rulemaking

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAC: planning advisory committee

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCL: pilot-controlled lighting

PIW: public information workshop

PLASI: pulsating visual approach slope indicator

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

RCO: remote communications outlet

REIL: runway end identifier lighting

RNAV: area navigation

RPZ: runway protection zone

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplified short approach lighting system with sequenced flashers

SSALR: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel type landing gear

STWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TACAN: tactical air navigational aid

TORA: takeoff runway available

TODA: takeoff distance available

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omnidirectional range

VORTAC: VOR and TACAN collocated

Appendix B

Airfield Simulation Analysis

Appendix B
SIMMOD AIRFIELD ANALYSIS

Simulation models aid in planning and management over a wide variety of aviation issues. Studies using simulation offer advantages and disadvantages to the analyst. Advantages include the credibility of a well-designed model, economy, safety, and the ability to evaluate alternatives. Disadvantages include the data intensive and time consuming steps to produce the model as well as the fact that a simulation model cannot generate optimum solutions on its own.

This study uses the FAA's Airport and Airspace Simulation Model, SIMMOD, for evaluation of aircraft delays. SIMMOD aids in the study of en-route air traffic, terminal area air traffic, and airport ground operations. Using the program's flexible database, analysts can model airport and airspace systems ranging from a major route network to an individual terminal's gate operation. For this study, ground operations at Albuquerque International Sunport were modeled and the total aircraft delay was determined as an indicator of airfield capacity.

Most real-world systems feel the effects of random or unpredictable variables in the environment or in their own components. The randomness of other air traffic, the weather, the unpredictable nature of equipment breakdowns, and passenger arrival characteristics all contribute to delay in air traffic systems. A stochastic model, like SIMMOD, uses random linear variables based on user-defined probability distributions to produce output representing day-to-day variations in air traffic phenomena.

SIMMOD simulates the movement of aircraft, step by step, while monitoring the time along each segment of a flight or taxi path. SIMMOD traces the movement of an individual departing aircraft as it travels from the gate, through the taxiway structure, departure queue, take-off roll and through the airspace structure until the aircraft exits the simulation. For an arriving aircraft, the program reverses this procedure. The model produces quantitative measures of airport operations and aircraft delay.

SIMMOD defines delay as any adverse deviation from a pre-defined nominal flight path. Typically, conflict with other aircraft cause the deviation. Examples of delay on the ground include waiting in the departure queue or waiting to taxi across an active runway. Examples of delay in the air include holding or speed restrictions while merging aircraft into a common flight path such as the final approach. In general, any conflict that causes delay requires controller action. Delay, therefore, indicates controller workload as well as the economic effects of extra flight time.

Because SIMMOD uses random variables, its output changes with each run. Establishment of statistically significant tendencies require several iterations of the model using a single data set. The results reported for each scenario of this study represent five iterations of that data set. For runs of several iterations, the Reporter program produces aggregate values and, where appropriate, averages and standard deviations.

SIMMOD INPUT DATA

INVENTORY DATA

Data gathering for the analysis began with a visit to the airport to observe of airfield operations. The inventory field trip was conducted during the week of June 12-16, 2000, at Albuquerque International Sunport. The visit included interviews with airport staff and air traffic control (ATC) personnel. Arrangements were made to observe operations from the air traffic control tower during this period.

Taxi paths for arriving and departing aircraft were observed and noted on maps of the airfield. Observations began on the afternoon of Monday, June 12. The airport was operating in a west flow primarily using Runways 26 and 21. On Tuesday, the first full day of observation, the airport remained in west flow, arriving and departing on Runway 26 and departing on Runway 21. Wednesday began with an east flow. Runway 8 was used for arrivals and departures coupled with Runway 3 for arrivals. About 2 p.m., the airport shifted back to a west flow. Cargo operations were observed early Thursday morning. During the day on Thursday, the winds were light and variable and the airport operated in an east flow in the morning and a west flow in the afternoon. On Friday morning, the airport continued in a west flow.

The data gathering trip provided 405 tracks for analysis. Of these, 254 were air carrier tracks, 82 were general aviation tracks, and 69 were military tracks. There were 215 arrival tracks and 190 departure tracks.

For the commercial air carrier jet operations in east flow, ATC generally directed the aircraft to land on either Runway 8 or Runway 3 and to depart on Runway 8. Approximately 42 percent of the observed arrival operations on Runway 8 used Taxiway A8 to exit the runway, then followed Taxiway A to the gate. The remaining arrival observations were fairly equally divided between Taxiways A5, A6, A7, A9, and A10. When using Runway 3 for arrivals, about 43 percent rolled out to Taxiway C and proceeded directly to the gate. The rest used either Runway 35 or Taxiway D to connect with Taxiway A and the gate. All but one of the observed east flow departures used Taxiway A on the outside of the apron to Taxiway A1 to the end of Runway 8. One departure used Taxiway A2 to the runway.

When the commercial jet operations were in west flow, ATC directed the landing traffic to Runway 26 and the departing traffic to either Runway 26 or Runway 21. Approximately 38 percent of the observed arrivals used Taxiway A5 to exit the runway and followed Taxiway A to the gate area. Taxiway D was used by 18 percent of the arrivals and Taxiway C was used by 24 percent. The remaining observations were widely spread, with no discernable preference for exit taxiway. One exited as early as Taxiway A6 and one stayed on the runway to Taxiway A2. Aircraft departing in west flow generally used Taxiway B to Taxiway A (or stayed on Taxiway A for the entire distance) to Taxiway A12 to Runway 26. Most aircraft departing on Runway 21 used Taxiway C from the gate area to Taxiway E to the runway end.

For the commuter flights in east flow, there was no observed preferential taxiway exit from Runway 8. All observed operations exited at either A5, A6, A7, or A8 and followed Taxiway A to the gate area. When the operations were on Runway 3, all but one exited on Taxiway C and followed it to the terminal. One arrival operation was observed on Runway 17 with the aircraft landing and holding short of Runway 26 and able to exit at Taxiway A. The commuter departures were similar to the jet departures – outside of the apron to Taxiway A1 to the end of Runway 8.

In west flow, the commuter arrivals were equally divided between Taxiway A6, A5, or Taxiway C for their choice of exits. Commuter flights were also observed arriving on Runway 30. These flights used Taxiway C to get to the gate. In west flow, departures on Runway 21 were favored over departures on Runway 26. Seventy percent of the observed departure operations followed Taxiway C to Taxiway E to the end of Runway 21. Of those using Runway 26, intersection takeoffs from Taxiway A7 or A9 were observed.

When in east flow, the military operations were entirely on Runway 8. The aircraft exited at either Taxiway A7, A8, or A9 and followed Taxiway A to the ramp. When in west flow, the arrivals to Runway 26 exited at either Taxiway A5, A6, or A7 and followed Taxiway A to the ramp. For departures in east flow, the aircraft taxied the entire length of Taxiway A to Taxiway A1 to the end of Runway 8. For west departures, the route was from the ramp to Taxiway A12 to the end of Runway 26. Various itinerant military aircraft operations were observed as well. These operations, in either east or west flow, were generally able to exit the runway at Taxiway A5 or A6 and access the large ramp at mid field. There were also a substantial number of helicopter operations. However, the helicopters did not use or conflict with use of any of the runways. Air Traffic Control directed helicopter operations to hold in deference to fixed-wing operations. SIMMOD does not have provisions for modeling helicopter operations outside the normal runway system. Since the helicopters do not contribute to delay in operations of fixed-wing aircraft at the airport, helicopter operations were not modeled for this study.

The general aviation operations were much more diverse. In east flow, general aviation aircraft arriving on Runway 8 usually exited the runway at Taxiway C, but some had to roll to Taxiway E5. They followed Taxiway E back to Taxiway E3, then to the GA area. Arrivals on Runway 3 usually exited at Taxiway C. East flow departures from the north side of the GA area usually used Taxiway K to Taxiway E1 to the end of either Runway 12 or Runway 8. From the south side, it was Taxiway F to G, to E1, to the runway end.

In west flow, there was no preferential taxi path observed. Aircraft arriving on Runway 26 exited at C, E3, E5, or E6. Aircraft arriving on Runway 30 exited primarily at Taxiway C and connected with either Taxiway G or Taxiway F to the ramp area. Four arrival operations to Runway 21 were observed. Runway 21 was the preferred departure runway when the airport was in west flow. Some used the full length and some used the intersection of Taxiway C. Not enough observations were made to determine a clear preference.

Early morning cargo operations were observed on Thursday. Most cargo departure operations were on Runway 3. All jet aircraft began their turn before reaching Runway 26 and followed Runway 26 out. Many of the cargo turboprop departures followed the same procedure. Some turned to follow Runway 35 and others continued turning out westerly over the terminal area.

Exhibit B-1 shows the consolidated taxi paths based on the field observations.

In addition to field observation of airport operations SIMMOD requires a wide variety of user-supplied input data. A simulation requires three basic categories of data: airspace, airfield, and events. The airspace and airfield networks define the physical layout, aircraft characteristics, and control policies for the simulation. The event schedule – arrivals and departures – defines the external events which generate action or changes during the simulation. To facilitate the orderly input of this data, SIMMOD includes a program called Network Builder. As shown in **Table B-1**, the Network Builder offers options for entry of data into 26 groups with 183 sub-groups.

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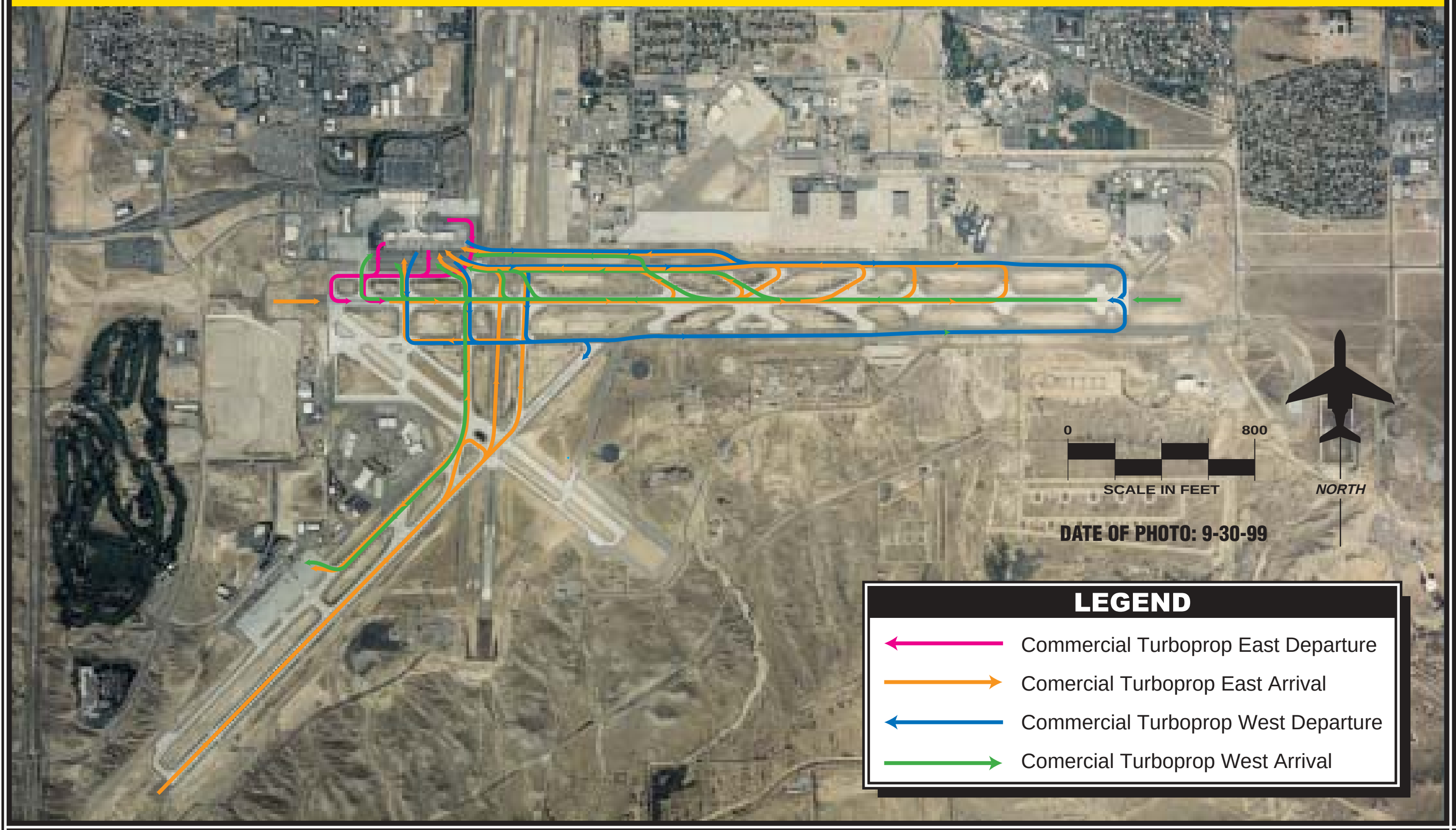
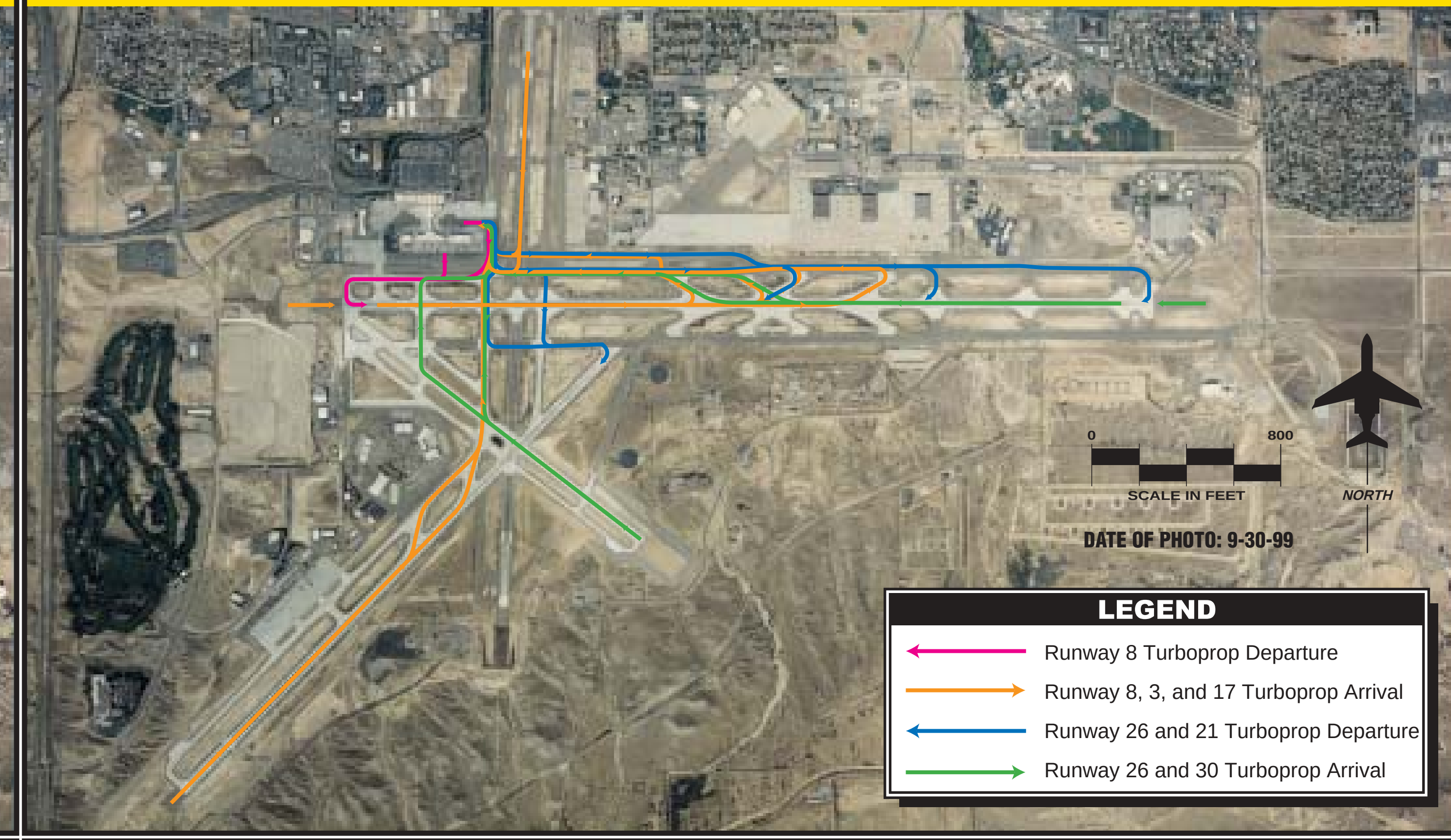
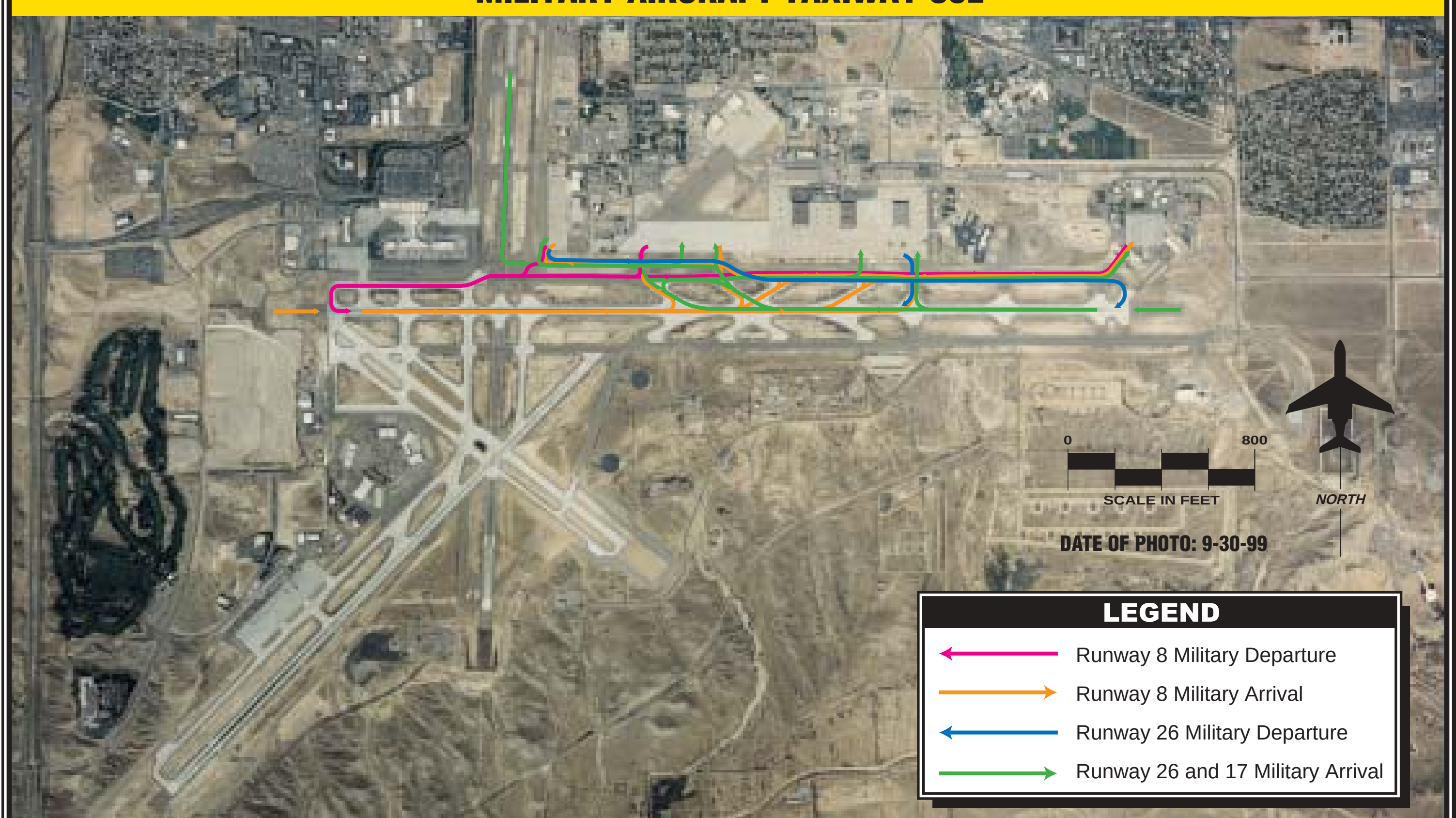
COMMERCIAL JET AIRCRAFT TAXIWAY USE



COMMERCIAL TURBOPROP TAXIWAY USE



MILITARY AIRCRAFT TAXIWAY USE



GENERAL AVIATION TAXIWAY USE

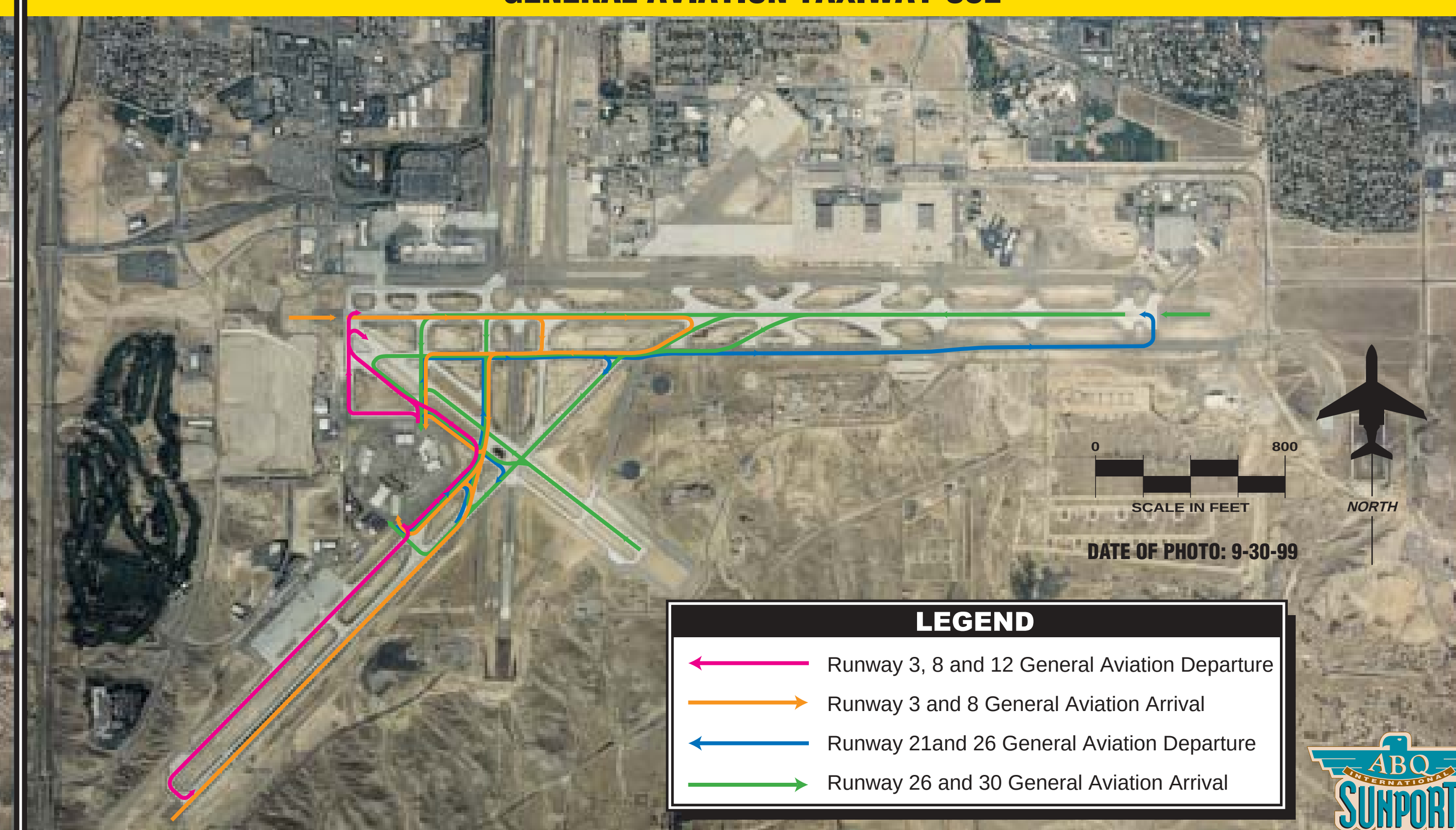


Exhibit B-1
TAXIWAY USE

TABLE B-1 NETWORK BUILDER EDIT/EDIT TABLES	
AVAILABLE GROUPINGS	*AVAILABLE TABLES*
ASD data	3
Aircraft Model	4
Airfield Link	9
Airfield Node	6
Airline	2
Airport	2
Airspace Link	9
Airspace Node	6
Banks	2
Choice Tables	22
Deicing	5
Departure Congestion	3
Departure Q	7
Events—Affected Events	10
Events—Control Events	4
Events—Flights	5
Events—Set Events	17
Gate	19
Global	6
Group	5
Interface Node	2
Plan	3
Procedure	3
Route	17
Runway	10
TAMPS	2

AIRSPACE

The airspace category includes files covering the interrelated network of routes, links, and nodes used by the simulation to move aircraft in the air. This category consists of six required data records, nine optional data records, and three control data records.

Nodes, Links, and Routes

In SIMMOD, all arrivals must begin in the airspace and all departures must enter the airspace before exiting the simulation. The simulations must include a minimally defined airspace structure even in the airfield operations form the basis of the study. The Nodes record creates airspace nodes and defines their characteristics. These characteristics include control strategies, holding strategies, separation distances, and maximum aircraft per airspace node. Each node has a Level I control strategy, QFIFO (first in, first out). A link represents the minimum distance that an aircraft can travel between two nodes. The Links record creates airspace links and defines movement on them. User defined attributes include passing, sequencing, and number aircraft per link. Nodes and links combine to make routes. The Routes record creates routes, describes their attributes, and sets the sequence of flight path nodes through which the aircraft travel. The initial airspace for the series of models used in this simulation study consisted of 38 nodes connected by 36 links of approximately three nautical miles each which made up 18 routes.

Procedures

The Procedures record defines steps an aircraft follows for arrival or departure. It includes runway occupancy times for the landing or takeoff roll. The simulation uses related procedures to resolve conflicts. For example, in this study, arrivals block departures when within two nautical miles of the runway threshold. Departures block other departures using the same procedure for a varying period of time, ranging from 30 seconds to two minutes, depending on the aircraft group. Standard air traffic procedures within the model were utilized. These were verified through the field observations and through discussions with ATC.

Aircraft

The Aircraft record of the airspace category defines the characteristics of air traffic by groupings of aircraft models, link speeds and types, and intrail separation distances for airplanes of one aircraft group following airplanes of other aircraft groups.

Current SIMMOD default data divides the aircraft into four groups: GA, Small, Large, and Heavy. For this study, the GA group includes the smaller, light singles and twins normally associated with general aviation operations. The Small group includes the general aviation business jets and turboprops as well as the airline commuter turboprops. The Large group includes the typical airline passenger jet. The Heavy group includes large airplanes like the 757 and the A310. **Table B-2** shows the aircraft intrail separation distances used in this study. This study uses six link types, three for departures and three for arrivals. In SIMMOD, the user must define aircraft speeds for these links. This study uses the default data from an earlier version of SIMMOD for link speeds. **Table B-3** shows that data.

TABLE B-2
AIRCRAFT CHARACTERISTICS
INTRAIL SEPARATION (NAUTICAL MILES)

	TRAILING AIRCRAFT			
LEADING AIRCRAFT	GA	Small	Large	Heavy
GA	2.4	2.4	2.4	2.4
Small	2.4	2.4	2.4	2.4
Large	3.2	3.2	2.4	2.4
Heavy	4.8	4.8	4.0	3.2

TABLE B-3
AIRSPACE LINK TYPES

			AIRCRAFT SPEEDS			
SIMMOD Link Type	Airspace Activity		GA	Small	Large	Heavy
1	Departure	Max	140	160	170	180
	Takeoff to	Nom	120	140	150	160
	5,000 ft.	Min	100	120	130	140
3	Climbout	Max	180	200	230	240
	5,000 to	Nom	160	180	210	220
	8,000 ft.	Min	140	160	190	200
4	Climbout	Max	200	240	290	300
	8,000 to	Nom	180	220	270	280
	28,000 ft.	Min	160	200	250	260
5	Arrival	Max	200	220	260	270
	10,000 to	Nom	180	200	240	250
	4,000 ft.	Min	160	180	220	230
6	Arrival	Max	160	180	200	210
	4,000 to	Nom	140	160	180	190
	1,000 ft.	Min	120	140	160	170
2	Short	Max	130	140	150	160
	Final	Nom	110	120	130	140
	1,000 ft.	Min	100	110	120	130
	and below					

Airport

The airport record of the airspace category defines the characteristics of the airport from the airspace point of view. This data includes airport/airspace interface nodes and procedures relating to landing and takeoff. The Interface Nodes handle transition: a departing aircraft moves from the airfield to the airspace at an interface node, and, similarly, an arriving aircraft moves from the airspace to the airfield at an interface node. The interface nodes also carry the assignment of the arrival and departure procedures. This study has eight interface nodes, one at each end of the four runways.

AIRFIELD

The airfield category describes the study airport and defines its requirements. This category includes nine required data records, 27 optional data records and three control records.

Links and Nodes

As in the airspace, the method of constructing the airfield uses a system of interconnected links and nodes to describe the airport. These building blocks define the main structural elements of the SIMMOD airfield. Airfield nodes represent runway exits, runway crossings, taxi path intersections, gates, and departure queues. Airfield links represent runways, taxiways, and gate apron areas. The node and link structure forms the basis for the logic used in the simulation airfield. At each node, the program makes decisions such as whether to enter the next taxi path link, when to cross a runway, whether to leave a gate or not, how long to wait in a departure queue, or where to exit a runway after a landing roll. On each link, the program makes decisions about average taxi speed, maximum aircraft allowed, or restrictions on direction of travel or passing or aircraft size.

Earlier versions of SIMMOD required data input from a digitizer. The version of SIMMOD used in this study allows the importing of an AutoCad file which serves as a base map for drawing the link and node structure. The program allows direct input to the screen from the mouse and an array of editing tools. The simulation airfield contains 117 nodes and 182 links.

Runways

The runways record of the airfield category defines the runways by a series of links. 14 links form Runway 8-26, 11 links form Runway 17-35, 8 links form Runway 12-30, and 9 links form Runway 3-21. The program's selection of an exit for an arrival event depends on user-supplied aircraft landing roll and probability data. Input data for landing roll distances and the most frequently used runway exit was based on the field observations. The model uses a taxi speed of 15 mph and an expected runway crossing delay of 5 seconds as standard values.

Departure Queues

The Departure Queue record of the airfield category allows input data which describes sites on the airfield where aircraft wait for departure clearance. Modeled aircraft hold until next in line for takeoff with a clear runway. The model for this study uses the end nodes of each runway for the departure queues. The technician in the field observed intersection takeoffs on Runway 26 and on Runway 21, and found that the ATCT personnel permit intersection takeoffs as requested and depending on destination. Nothing from the field observations indicated that intersection takeoffs occurred as regular events or at regular locations so this simulation dies not use special departure queues and does not model intersection takeoffs.

Gates

The model assigns every aircraft entering the airfield to a gate. The model associates gates with airfield nodes. The Gate record includes data which describes loading and unloading times, gate capacity, airlines(user of the gate), and links to apron areas. A detailed modeling of the terminal area was beyond the scope of this study. Gates were modeled in a generalized fashion. A single node, representing all activity at the terminal area was designated for the commercial gate. A single node for cargo was designated on the southwest side. Two nodes were used for gates in the general aviation area. A single node for the based military aircraft was assigned at the far east end of the airfield.

Taxi Paths

SIMMOD has an aggressive optimization feature which computes the optimal taxi path for an aircraft. The model will optimize the path unless otherwise directed. Field observations indicated that when the airport is in west flow, aircraft leaving the terminal area taxied out on Taxiway B until it joined with Taxiway A. Incoming aircraft taxied in all the way on Taxiway A. A taxi path was specified in the model to force departing aircraft to use Taxiway B. No other specific taxi path emerged from the field observations.

Tamps

The Tamps record defines the landing and takeoff characteristics of aircraft groups. The groups are the same as mentioned in the airspace section: GA, Small, Large, and Heavy. Field observations noted the range of most often used runway exits. The distance from the threshold to the exit was measured on a map of the airport and this landing roll distance was entered in the Tamps record with a probability factor.

Airlines

The Airlines record contains data concerning the airlines operating at the airport. The model requires gate assignments for all airlines. Although several airlines operate at Albuquerque, the input data models them in general for this study. The data designates four airlines: GA(General Aviation), COM(Commercial), CAR(Cargo), and MIL(Military).

EVENTS

The Events category contains the data that determine the actions of the aircraft in the simulation. This group of data includes four fields for entering aircraft arrivals and departures, 18 fields for entering network adjustment records, and seven fields for entering simulation control records.

Arrivals and Departures

A SIMMOD arrival always starts in the airspace. The basic arrival consists of a flight that: traverses an airspace route, lands on a runway, taxis to a gate, occupies the gate, and then exits the simulation. A SIMMOD departure always starts at an airport. The basic departure consists of a flight, created at a gate, that: occupies the gate, taxis to a runway, takes off on a runway, traverses an airspace route, and exits the simulation.

For the scenarios in this study, all flight data was entered using the Multi-arrive and Multi-depart feature of the events editor. SIMMOD can create flights randomly over a specified time period. The input data determines the number of flights and the type of aircraft as well as the runway, the route, and the gate. Start times and end times were based on the consolidated airline schedule which was supplied by the airport management staff. Current year operations were taken from FAA Tower counts. Forecast operations from the Forecast Chapter were used for the future conditions. **Table B-4** summarizes the operations data used in this simulation study.

Simulation Control Records

The Events category also contains data entry fields for control records. Each simulation requires an entry in the SetPlan record. Each simulation requires an entry in the End.Sim and the Trace records. End.Sim tells the simulation when to quit. Due to late arrivals or departures, the simulation often runs longer than the 24-hour period. This input provides time for all aircraft to get in and out of the airport. The Trace record provides information for the simulation log and the post-processors like the Reporter as well as error messages which assist in debugging the program. All simulations require some entry in the Trace file. The analyst may choose which trace records to turn on or off, but the output depends on certain records.

TABLE B-4 Aviation Forecast Summary	1999	2005	2010	2025
ANNUAL OPERATIONS				
Major Airlines	77,056	91,000	104,800	143,600
Regionals	22,694	22,600	22,800	23,200
Charters	112	100	200	300
All-Cargo Majors	5,958	7,200	8,600	13,800
All-Cargo Regionals	5,496	6,400	7,200	9,200
Other Air Taxi	1,164	1,300	1,500	1,900
General Aviation	72,692	84,300	91,400	109,400
Military	43,761	44,000	44,000	44,000
TOTAL	228,933	256,900	280,500	345,400

SIMMOD OUTPUT DATA

SIMMOD consists of three major programs: the Network Builder, the Animator, and the Reporter. As shown in the discussions of the previous paragraphs, the Network Builder provides the matrix for data entry. The Network Builder also holds the simulation engine. The data in the airspace, airfield, and event categories establish the sequence of principal simulation actions. The simulation functions by moving from one scheduled event to the next. The initiation of each event directs the simulation clock; the simulation engine processes simultaneous events sequentially with no time change on the clock. Each scheduled event initiates a sequence of internal SIMMOD events.

The simulation first creates the network that the user has defined in the airspace and airfield categories then uses the data in the events category to initiate the aircraft traffic. Based on an internal simulation timing routine, the simulation module creates an extensive transaction file representing the progress of the model through time. Each flight consists of a series of events. The simulation engine records data for each event for subsequent analysis by the post-processor. Through post-processing, SIMMOD provides data for the Animator and the Reporter.

SCENARIO #1 – BASELINE CONDITIONS

The airport operates in east flow approximately 70 percent of the time according to the Air Traffic Controllers. When in east flow, air traffic controllers generally direct air carrier aircraft to arrive on Runway 8 and Runway 3with an occasional arrival on Runway 35. General Aviation aircraft arrive primarily on Runway 8 and Runway 3, with occasional arrivals on Runway 12 and Runway 35. Departures in east flow for air carriers are almost entirely on Runway 8. General Aviation departures are usually on either Runway 8 or Runway 12 with a very small percentage on Runway 3 and Runway 35. Early morning cargo departures are on Runway 3. All military operations are on Runway 8.

In west flow, almost all commercial aircraft arrive on Runway 26 with an occasional arrival on Runway 17. General Aviation aircraft and some commercial commuters also use Runway 30 for arrivals in west flow. Air carrier departures are split between Runway 26 and Runway 21. General Aviation departs primarily on Runway 21. All military operations are on Runway 26.

The Runway Utilization table from the March, 1999, FAR Part 150 Study Update was used as the basis for assigning aircraft events to a runway in this study. That table is reproduced here as **Table B-5**.

TABLE B-5
RUNWAY UTILIZATION – BASELINE

	Percentage Utilization for each Runway							
	08	26	03	21	17	35	12	30
Departures								
Air Carrier	69%	13%	1%	14%	1%	2%	0%	0%
Military Jet	70%	25%	1%	1%	1%	2%	0%	0%
General Aviation	55%	1%	1%	19%	1%	2%	13%	6%
Arrivals								
Air Carrier	28%	25%	42%	1%	2%	2%	0%	0%
Military Jet	69%	25%	1%	1%	2%	2%	0%	0%
General Aviation	14%	13%	55%	1%	2%	2%	0%	13%

Source: Albuquerque International Sunport FAR Part 150 Study Update/March 1999, Table C5

Four simulation models representing the current year and three forecast years in east flow were prepared using the data entry procedures described earlier in this report. Each model was run five times. The Standard Report (SIMU10) was used to obtain the average ground and air arrival and departure delay for each modeled condition. Similarly, four models representing the current year and the three forecast years in west flow were prepared as well. They were also run five times each and the Standard Report was used as the source of the delay information. **Table B-6** summarizes the arrive and depart delay from the Standard Report. This delay represents 100 percent operation in these conditions.

TABLE B-6
AIRCRAFT DELAY

	Daily Delay (minutes) Average of 5 iterations		
	Arrive Delay	**Depart Delay**	**Annual Delay (hours)***
1999 OPERATIONS			
East Flow	70	6	462
West Flow	74	31	633
SHORT TERM OPERATIONS			
East Flow	89	8	590
West Flow	95	43	840
INTERMEDIATE OPERATIONS			
East Flow	117	14	797
West Flow	133	45	1,077
LONG RANGE OPERATIONS			
East Flow	201	22	1,357
West Flow	221	156	2,293

* Assumes 100% operation in this condition

Table B-6 indicates that the airport experiences slight delays at present. The simulations indicate that the forecast increase in operations caries with it an increase in delays at the airport.

The airport operates in an east flow approximately 70 percent of the time and in west flow the remaining 30 percent of the time. For current (1999) conditions, using the numbers from **Table B-6**, the simulations indicate that the average annual delay in the short term would be (462 x .70 + 633 x .30) = 513 hours.

SCENARIO # 2 – INCREASED USAGE OF RUNWAY 17-35

The baseline condition reflects airfield usage based upon compliance with the airport's informal noise abatement procedures. This program limits the use of Runway 17-35 by jet aircraft to strong crosswind conditions.

This minimal use of Runway 17-35 may not justify the costs associated with maintaining it long term. A second scenario was considered that involves increasing the usage of this runway. **Table B-7** outlines the revised runway use percentages.

TABLE B-7
RUNWAY UTILIZATION INCREASED RUNWAY 17-35

	Percentage Utilization for each Runway							
	08	26	03	21	17	35	12	30
Departures								
Air Carrier	67%	13%	1%	11%	5%	3%	0%	0%
Military Jet	68%	25%	1%	1%	3%	2%	0%	0%
General Aviation	54%	1%	1%	19%	2%	6%	13%	4%
Arrivals								
Air Carrier	26%	24%	40%	1%	3%	6%	0%	0%
Military Jet	67%	24%	1%	1%	3%	4%	0%	0%
General Aviation	12%	12%	55%	1%	4%	5%	0%	11%

Table B-8 summarizes the arrival and departure delays over the planning horizons for this scenario. The results of this scenario indicate that if Runway 17-35 is utilized more than it currently is, delays would increase.

TABLE B-8
AIRCRAFT DELAY WITH INCREASED USAGE OF RUNWAY 17-35

	Daily Delay (minutes) Average of 5 iterations		
	Arrive Delay	**Depart Delay**	**Annual Delay (hours)***
1999 OPERATIONS			
East Flow	72	8	487
West Flow	63	67	785
2005 OPERATIONS			
East Flow	88	12	608
West Flow	84	99	1,113
2010 OPERATIONS			
East Flow	101	12	687
West Flow	87	158	1,484
2025 OPERATIONS			
East Flow	157	35	1,168
West Flow	151	493	3,918

* Assumes 100% operation in this condition

SCENARIO # 3 – WITHOUT RUNWAY 17-35

The analysis continued with the simulation of airport operations without the use of Runway 17-35. This change required new entries in the procedures field as well as changes in the events data. Runway use percentages changed slightly to account for the loss of Runway 17-35, but were still based on **Table B-5.** Four models each were prepared for east flow and west flow: current year and three forecast years. Each model was run through five iterations to get a measure of the arrive and depart delay which might be experienced if Runway 17-35 were not available for use. **Table B-9** shows the results of this alternative simulation.

TABLE B-9
AIRCRAFT DELAY WITHOUT RUNWAY 17-35

	Daily Delay (minutes) Average of Five Iterations		
	Arrive Delay	**Depart Delay**	**Annual Delay (hours)***
1999 OPERATIONS			
East Flow	71	4	456
West Flow	66	28	572
2005 OPERATIONS			
East Flow	96	6	621
West Flow	112	42	931
2010 OPERATIONS			
East Flow	115	5	736
West Flow	143	71	1,296
2025 OPERATIONS			
East Flow	285	32	1,928
West Flow	256	214	2,865

* Assumes 100% operations in this condition

Table B-10 compares the average annual delay for these three scenarios. The analysis indicates that the more Runway 17-35 is used, the more it increases delays. Closing Runway 17-35 and maintaining the current runway use scenario reduces delays in the short term. As operations increase, however, this advantage is lost.

Considering that these three scenarios are based on existing runway use, they may not maximize the capacity capabilities of the runway system. With increased operations, more attention will need to be given to maximizing airfield efficiency. This was examined in the following scenarios.

TABLE B-10
TOTAL ANNUAL DELAY (HOURS)

	Current Airfield	Increase Runway 17-35 Use	Without Runway 17-35
1999	513	576	490
2005	665	760	714
2010	881	926	904
2025	1,638	1,993	2,209

SCENARIO # 4 – INCREASED USAGE OF RUNWAY 17-35 FOR CAPACITY

The runway use percentages in the previous scenarios were based upon the current use of the airfield in compliance with the airport's informal noise abatement procedures. To examine how the runway could affect capacity conditions, a scenario was developed that more closely takes into account the prevailing winds. **Table B-11** presents the runway use percentages based upon wind data.

TABLE B-11
RUNWAY USE PERCENTAGES FOR CAPACITY
EXISTING AIRFIELD

	Runway Use Percentage For Each Runway							
	08	26	03	21	17	35	12	30
Departures								
Air Carrier	77%	2%	1%	11%	6%	3%	0%	0%
Military Jet	77%	2%	1%	11%	6%	3%	0%	0%
General Aviation	35%	1%	1%	14%	4%	4%	41%	4%
Arrivals								
Air Carrier	27%	15%	51%	1%	3%	3%	0%	0%
Military Jet	27%	15%	51%	1%	3%	3%	0%	0%
General Aviation	15%	2%	62%	1%	4%	4%	1%	11%

As before, models were prepared for the current and three forecast years in both east and west flow. Each scenario was run five times and the standard report was used as the source of the delay information. **Table B-12** summarizes the arrival and departure delays for this alternative consideration.

TABLE B-12 AIRCRAFT DELAY WITH INCREASED USAGE OF RUNWAY 17-35 FOR CAPACITY			
	Daily Delay (minutes) Average of Five Iterations		
	Arrive Delay	Depart Delay	Annual Delay (hours)*
1999 OPERATIONS			
East Flow	79	8	529
West Flow	59	91	919
2005 OPERATIONS			
East Flow	98	13	675
West Flow	80	185	1,612
2010 OPERATIONS			
East Flow	113	20	809
West Flow	94	247	2,068
2025 OPERATIONS			
East Flow	177	89	1,618
West Flow	145	512	3,997
*Assumes 100% operations in this condition			

Under this scenario, the airport operates in east flow 78 percent of the time and in west flow the remaining 22 percent of the time, these simulations indicate that for the current year operations using the hypothetical wind-directed airport operations, the total annual delay would calculate to be (529 x .78 + 919 x .22) = 615 hours.

SCENARIO # 5 – CLOSE RUNWAY 17-35 FOR CAPACITY

The final scenario considers maximizing airfield efficiency if Runway 17-35 is closed. This would shift the Runway 17-35 usage to the other runways as dictated by winds. During calm winds, east flow would be preferred to maximize airfield capacity. **Table B-13** summarizes the arrival and departure delays for this scenario.

TABLE B-13 AIRCRAFT DELAY WITHOUT RUNWAY 17-35 FOR CAPACITY			
	Daily Delay (minutes) Average of Five Iterations		
	Arrive Delay	**Depart Delay**	**Annual Delay (hours)***
1999 OPERATIONS			
East Flow West Flow	68 64	6 25	450 541
2005 OPERATIONS			
East Flow West Flow	86 109	6 37	560 888
2010 OPERATIONS			
East Flow West Flow	105 171	8 99	694 1,642
2025 OPERATIONS			
East Flow West Flow	206 259	54 76	1,582 2,038
* Assumes 100% operations in this condition			

CONCLUSIONS

For ease of comparison, **Table B-14** compares the average annual delay for all five scenarios.

The simulations indicate that the airport does experience some delay now and will experience increasing delays in the future with increasing traffic. The first three simulation scenarios were based upon current runway usage. They indicate that closing Runway 17-35 could increase delays in the long range. These scenarios also indicate that if use of Runway 17-35 is increased, delay is also increased.

When the operational scenario is revised to attempt to maximize capacity, closing Runway 17-35 reduces delay except in the long range, where minimal use of Runway 17-35 can provide a slight improvement.

If Runway 17-35 was truly improving capacity of the airfield, increased use would be expected to reduce delays.

TABLE B-14
Total Annual Delays (Hours)

	Current Operational Conditions			Maximize Capacity	
Year	**#1 Baseline**	**#2 Increase Runway 17-35 Use**	**#3 Close Runway 17-35**	**#4 Increase Runway 17-35 Use**	**#5 Close Runway 17-35**
1999	513	576	490	615	470
2005	665	760	714	881	632
2010	881	926	904	1,086	903
2025	1,638	1,993	2,209	2,141	1,682

Appendix C

Airline Flight Schedules

TABLE C-1
Scheduled Arrivals
Albuquerque International Sunport

Majors	Airline	Flight #	Time	Aircraft	Seats	Gate #	Origin
1	AA	681	1946	MD80	139	B1	DFW
2	AA	1233	2136	MD80	139	B1	DFW
3	AA	2029	2302	MD80	139	B3	DFW
4	AA	1885	1146	MD80	139	B1	DFW
5	AA	537	1458	MD80	139	B1	DFW
6	AA	1221	**1702**	MD80	139	B1	DFW
7	AA	1383	2110	MD80	139	B3	ORD
8	AA	471	**1046**	MD80	139	B3	ORD
9	AW	2210	2242	B733	131	B4	PHX
10	AW	200	837	B733	131	B4	PHX
11	AW	2202	1119	B733	131	B4	PHX
12	AW	2204	1417	B733	131	B4	PHX
13	AW	2206	**1708**	B733	131	B4	PHX
14	AW	2208	1951	B757	190	B4	PHX
15	CO	1697	1851	MD80	141	B6	IAH
16	CO	1693	2150	B733	128	B6	IAH
17	CO	1781	**1058**	MD80	141	B6	IAH
18	CO	1699	**1305**	B73G	124	B6	IAH
19	CO	1775	**1658**	B733	128	B6	IAH
20	DL	1433	2144	B72S	149	B10	DFW
21	DL	2173	48	B72S	149	B10	ATL
22	DL	2238	**1033**	B72S	149	B10	DFW
23	DL	1125	1157	B738	154	B10	ATL
24	DL	270	**1356**	B72S	149	B10	CVG
25	DL	905	**1640**	B72S	149	B10	DFW
26	DL	1143	1828	B72S	149	B10	ELP
27	DL	1642	2207	B733	128	B10	SLC
28	DL	1589	2058	B72S	149	B10	ATL
29	DL	899	2220	B72S	149	B9	CVG
30	FL	330	720	B73S	119	B2	ELP
31	FL	331	**1325**	B73S	119	B2	DEN
32	FL	332	**1625**	B73S	119	B2	ELP
33	FL	335	2040	B73S	119	B2	DEN
34	NW	625	2206	B72S	149	A12	MSP
35	NW	627	**1258**	B72S	149	A12	MSP

TABLE C-1 (Continued)
Scheduled Arrivals
Albuquerque International Sunport

Majors	Airline	Flight #	Time	Aircraft	Seats	Gate #	Origin
36	SW	964	2100	B733	137	A11	OAK
37	SW	2130	835	B733	137	A11	MCI
38	SW	675	955	B73G	137	A11	HOU
39	SW	535	1100	B733	137	A11	LAX
40	SW	846	1425	B733	137	A11	MCI
41	SW	1646	**1630**	B733	137	A11	SAN
42	SW	1373	1815	B733	137	A11	SEA
43	SW	2176	1925	B735	122	A11	PHX
44	SW	978	2220	B735	122	A4	LAS
45	SW	664	745	B733	137	A5	PHX
46	SW	806	830	B733	137	A4	PHX
47	SW	1048	**1015**	B73G	137	A4	LAS
48	SW	968	1135	B733	137	A4	PHX
49	SW	2196	1405	B733	137	A4	AMA
50	SW	2001	1550	B733	137	A4	LAS
51	SW	1143	**1715**	B733	137	A4	MCI
52	SW	432	1820	B733	137	A4	MAF
53	SW	1265	1910	B733	137	A4	SAN
54	SW	670	2120	B733	137	A4	LAS
55	SW	1251	2350	B733	137	A4	LAS
56	SW	4	855	B733	137	A5	DAL
57	SW	1523	**1035**	B733	137	A5	PHX
58	SW	1890	1235	B733	137	A5	PHX
59	SW	890	1440	B733	137	A5	LAX
60	SW	148	**1710**	B733	137	A5	DAL
61	SW	837	1815	B735	122	A5	LBB
62	SW	417	1905	B733	137	A5	AMA
63	SW	725	2145	B733	137	A6	PHX
64	SW	2038	910	B73G	137	A6	TPA
65	SW	343	1115	B733	137	A6	STL
66	SW	2205	**1300**	B733	137	A6	ELP
67	SW	128	1445	B735	122	A6	PHX
68	SW	1491	1615	B733	137	A6	LBB
69	SW	2122	**1720**	B733	137	A6	LAS
70	SW	1311	1840	B73G	137	A6	MCO
71	SW	539	2035	B73G	137	A6	LAX

TABLE C-1 (Continued)
Scheduled Arrivals
Albuquerque International Sunport

Majors	Airline	Flight #	Time	Aircraft	Seats	Gate #	Origin
72	SW	2197	2235	B733	137	A7	PHX
73	SW	934	815	B733	137	A7	DAL
74	SW	755	**1000**	B733	137	A7	ELP
75	SW	137	1140	B733	137	A7	DAL
76	SW	1610	**1320**	B733	137	A7	DAL
77	SW	30	1525	B733	137	A7	DAL
78	SW	1067	**1635**	B733	137	A7	PHX
79	SW	226	1810	B733	137	A7	PHX
80	SW	269	2000	B733	137	A7	DAL
81	SW	230	2320	B735	122	A8	LAX
82	SW	722	825	B733	137	A8	ELP
83	SW	2157	940	B733	137	A8	PHX
84	SW	12	**1045**	B73S	122	A8	DAL
85	SW	249	1140	B733	137	A8	SAN
86	SW	962	**1330**	B73G	137	A8	OAK
87	SW	2000	1540	B735	122	A8	PHX
88	SW	282	**1655**	B733	137	A8	LAX
89	SW	1595	1800	B733	137	A8	HOU
90	SW	2002	1900	B733	137	A8	STL
91	SW	2128	940	B73G	137	A9	LAX
92	SW	577	**1045**	B733	137	A9	MAF
93	SW	2182	1210	B733	137	A9	SLC
94	SW	2044	**1635**	B733	137	A9	TUS
95	SW	902	1830	B735	122	A9	ELP
96	TW	287	1857	MD80	140	B7	STL
97	TW	91	2208	MD80	140	B7	STL
98	TW	297	**1030**	MD80	140	B7	STL
99	TW	123	**1300**	MD80	140	B7	STL
100	TW	649	1600	MD80	140	B7	STL
101	UA	1407	2106	B72S	141	A1	DEN
102	UA	425	916	B72S	141	A1	DEN
103	UA	371	1234	B72S	141	A1	DEN
104	UA	1965	1545	B733	120	A1	DEN
105	UA	1773	1902	B733	120	A1	DEN
106	UA	1609	2305	B733	120	A3	DEN
107	UA	549	**1350**	B757	182	A3	DEN
108	UA	332	1725	B735	104	A3	DEN
TOTAL SEATS					14,736		

TABLE C-2
Scheduled Departures
Albuquerque International Sunport

Majors	Airline	Flight #	Time	Aircraft	Seats	Gate #	Origin
1	AA	594	550	MD80	139	B1	DFW
2	AA	1636	**707**	MD80	139	B1	DFW
3	AA	536	905	MD80	139	B3	DFW
4	AA	1306	**1340**	MD80	139	B1	DFW
5	AA	558	1640	MD80	139	B1	DFW
6	AA	1400	1805	MD80	139	B1	DFW
7	AA	1724	821	MD80	139	B3	ORD
8	AA	1104	**1131**	MD80	139	B3	ORD
9	AW	2831	**630**	B733	131	B4	PHX
10	AW	2434	923	B733	131	B4	PHX
11	AW	2436	1205	B733	131	B4	PHX
12	AW	586	1458	B733	131	B4	PHX
13	AW	2528	**1744**	B733	131	B4	PHX
14	AW	211	2043	B757	190	B4	PHX
15	CO	1522	**705**	MD80	141	B6	IAH
16	CO	1882	922	B733	128	B6	IAH
17	CO	1696	**1145**	MD80	141	B6	IAH
18	CO	1694	**1345**	B73G	124	B6	IAH
19	CO	1528	1750	B733	128	B6	IAH
20	DL	2292	25	B72S	149	B10	ATL
21	DL	2098	730	B72S	149	B10	ATL
22	DL	1896	**1125**	B72S	149	B10	ATL
23	DL	1214	**1305**	B738	154	B10	CVG
24	DL	930	1540	B72S	149	B10	DFW
25	DL	947	**1740**	B72S	149	B10	SLC
26	DL	1143	1915	B72S	149	B10	SLC
27	DL	1642	2240	B733	128	B10	ELP
28	DL	1730	900	B72S	149	B8	CVG
29	DL	622	925	B72S	149	B9	DFW
30	FL	330	740	B73S	119	B2	ELP
31	FL	331	**1350**	B73S	119	B2	DEN
32	FL	332	**1650**	B73S	119	B2	ELP
33	FL	335	2110	B73S	119	B2	DEN
34	NW	624	845	B72S	149	A12	MSP
35	NW	628	1405	B72S	149	A12	MSP

TABLE C-2 (Continued)
Scheduled Departures
Albuquerque International Sunport

Majors	Airline	Flight #	Time	Aircraft	Seats	Gate #	Origin
36	SW	1052	**640**	B733	137	A11	LAS
37	SW	2130	905	B733	137	A11	SAN
38	SW	675	1020	B73G	137	A11	SEA
39	SW	535	**1120**	B733	137	A11	STL
40	SW	846	1450	B733	137	A11	SAN
41	SW	1646	**1650**	B733	137	A11	STL
42	SW	1373	1840	B733	137	A11	HOU
43	SW	334	1950	B735	122	A11	LAS
44	SW	572	**635**	B735	122	A4	PHX
45	SW	478	805	B733	137	A4	PHX
46	SW	1737	850	B733	137	A4	PHX
47	SW	1118	1035	B73G	137	A4	PHX
48	SW	968	**1155**	B733	137	A4	AMA
49	SW	2196	1430	B733	137	A4	PHX
50	SW	2070	1620	B733	137	A4	PHX
51	SW	1143	**1740**	B733	137	A4	TUS
52	SW	432	1840	B733	137	A4	ELP
53	SW	1265	1930	B733	137	A4	MCI
54	SW	525	2140	B733	137	A4	PHX
55	SW	1609	**700**	B733	137	A5	PHX
56	SW	1547	920	B733	137	A5	LAS
57	SW	2059	**1100**	B733	137	A5	LAS
58	SW	1779	**1300**	B733	137	A5	PHX
59	SW	2124	1505	B733	137	A5	PHX
60	SW	1297	**1735**	B733	137	A5	PHX
61	SW	837	1835	B735	122	A5	PHX
62	SW	417	1930	B733	137	A5	PHX
63	SW	559	**705**	B733	137	A6	ELP
64	SW	2038	940	B73G	137	A6	LAX
65	SW	343	**1140**	B733	137	A6	LAX
66	SW	2205	**1325**	B733	137	A6	LAX
67	SW	2123	1510	B735	122	A6	LAX
68	SW	1491	1640	B733	137	A6	LAX
69	SW	2122	**1740**	B733	137	A6	ELP
70	SW	1311	1910	B73G	137	A6	LAX
71	SW	590	2055	B73G	137	A6	LAX

TABLE C-2 (Continued)
Scheduled Departures
Albuquerque International Sunport

Majors	Airline	Flight #	Time	Aircraft	Seats	Gate #	Origin
72	SW	1163	**645**	B733	137	A7	DAL
73	SW	21	835	B733	137	A7	DAL
74	SW	755	1020	B733	137	A7	DAL
75	SW	147	1210	B733	137	A7	DAL
76	SW	89	**1350**	B733	137	A7	DAL
77	SW	51	1555	B733	137	A7	DAL
78	SW	1067	**1655**	B733	137	A7	AMA
79	SW	971	1835	B733	137	A7	OAK
80	SW	375	2025	B733	137	A7	DAL
81	SW	530	**635**	B735	122	A8	LAX
82	SW	722	845	B733	137	A8	OAK
83	SW	2157	1000	B733	137	A8	LBB
84	SW	803	**1105**	B73S	122	A8	ELP
85	SW	249	1210	B733	137	A8	MCI
86	SW	962	**1350**	B73G	137	A8	MAF
87	SW	2000	1600	B735	122	A8	LBB
88	SW	282	**1725**	B733	137	A8	TPA
89	SW	1595	1825	B733	137	A8	SLC
90	SW	2002	1930	B733	137	A8	SAN
91	SW	2128	1010	B73G	137	A9	MCO
92	SW	577	**1105**	B733	137	A9	PHX
93	SW	2182	1235	B733	137	A9	HOU
94	SW	2044	**1700**	B733	137	A9	MCI
95	SW	902	1850	B735	122	A9	LAS
96	TW	402	600	MD80	140	B7	STL
97	TW	700	840	MD80	140	B7	STL
98	TW	160	**1125**	MD80	140	B7	STL
99	TW	80	1415	MD80	140	B7	STL
100	TW	650	**1720**	MD80	140	B7	STL
101	UA	759	**715**	B72S	141	A1	DEN
102	UA	300	1028	B72S	141	A1	DEN
103	UA	448	**1319**	B72S	141	A1	DEN
104	UA	1450	1640	B733	120	A1	DEN
105	UA	1715	1949	B733	120	A1	DEN
106	UA	1128	605	B733	120	A3	DEN
107	UA	358	1443	B757	182	A3	DEN
108	UA	1982	1802	B735	104	A3	DEN
TOTAL SEATS					14,736		

Appendix D

Public Coordination

Appendix D
PUBLIC COORDINATION

As indicated in the Introduction, public coordination was an integral part of the master planning process. Two committees, a Technical Committee and an Advisory Committee, were formed to review the working papers as they were developed. A list of members of each committee are included in this Appendix, as well as written comments they may have provided.

The general public was invited to participate and keep informed through a series of public information workshops. The sign-in sheets, as well as written comments received, are included in this Appendix.

Finally, the draft working papers were made available to the public on the web site of the consultant at www.coffmanassociates.com. Persons could also provide their input and comments online at this web site.

The following pages include:

- Role of Committee
- Technical Committee membership
- Advisory Committee membership
- Meeting sign-in sheets
- Written and e-mail comments submitted.

Note: Submittals consisting of page mark-ups of typos were considered but are not included for the sake of brevity.

ALBUQUERQUE INTERNATIONAL SUNPORT

Master Plan Update
Role of the Advisory Committee

- The **purpose** of the Advisory Committee (AC) is to provide the planning consultant (Coffman Associates) with input into the Airport Master Plan Update.

- The **members** of the AC are intended to represent a variety of groups and individuals with interest in the use and development of the Airport. These include area business interests, homeowners and community groups and aviation interests (airport tenants and users).

- The **role** of the AC is to advise the Consultant regarding the current and future use of the airport. The AC will review elements of the Airport Master Plan while they are in draft form and comment on the accuracy of the assumptions and relevance of the information used to develop the report.

- The AC is advisory. While all comments made by the AC members will be seriously considered in developing the draft and final version of the report, the AC will not vote to approve or disapprove elements of the study.

- Individual AC members are considered to **represent** their designated group or organization. It is the responsibility of AC members to communicate with their respective organizations and report any comments/concerns regarding the development of the Airport Master Plan from their organization back to the AC, and the Consultant throughout the process.

- **AC meetings** will be held periodically throughout the preparation of the Airport Master Plan. Seven meetings are expected to occur throughout the study. Because of the advisory nature of the committee, a quorum is preferred, but will not be required.

- **Attendance** at the meetings is strongly encouraged. Each member of the AC represents a unique or significant group. If you are unable to attend any given meeting, please send a representative who is able to speak for you or your organization.

- For your convenience, **comment forms** will be provided for AC members to submit written comments for consideration in preparing the final report. It would be greatly appreciated if comments were submitted by the due date indicated on the form (approximately two weeks following the meeting). If this is not possible, contact Coffman Associates and let them know when you plan to submit your comments. A comment form is also available at www.coffmanassociates.com for submitting comments using the internet.

- **Comments or questions** regarding the AC, AC meetings, or working papers should be directed to Coffman Associates at 1-800-892-7772.

- **Public Information Workshops** will also be held periodically throughout the preparation of the Airport Master Plan. The primary purpose of these workshops is to allow the public to obtain information regarding the Master Plan, ask questions, and provide input. Each AC member is invited to attend these meetings and to encourage members of their group or organization to attend.

ALBUQUERQUE INTERNATIONAL SUNPORT
AIRPORT MASTER PLAN UPDATE
TECHNICAL COMMITTEE (AC)

Mr. Fred Gurule
FAA - Southwest Region
Albuquerque Airport District Office

Mr. Tom Lintner
FAA - Albuquerque Airport Traffic Control Tower

Ms. Naomi Saunders
Division Manager
FAA - Southwest Region

Mr. Mike Rice
Division Director
New Mexico Aviation Division

Mr. Jeff Gilley
Manager of Airports and Ground Infrastructure
National Business Aircraft Association (NBAA)

Mr. Phil Boyer
President
Aircraft Owners & Pilots Association (AOPA)

Mr. Duane E. Woerth
President
Airline Pilots Association (ALPA)

Mr. Lowell Whitten
Vice President
Cutter Flying Services

Mr. Richard Cox
Deputy Regional Director
Air Transport Association (ATA) - Western Regional Office

Mr. Billy Self
Flight Operations Specialist
Southwest Airlines Co.

Mr. Uttam Barua
Director of Operations
Fresquez Concessions

Mr. Bo Bohannon
Kirtland Air Force Base

Mr. Victor Chavez
Director
City of Albuquerque Planning Department

Mr. Richard McPherson
Bernalillo County Zoning, Building, Planning Department

Mr. Ted Asbury
Director
City of Albuquerque Public Works Department

Mr. Gregory Gillis
Manager - Properties
Southwest Airlines - HDQ 4PF

Mr. David W. Scott
Chairman
Airport Advisory Board

Mr. Israel Tavarez
City of Albuquerque Environmental Health Department

Ms. Loretta Tollefson
Middle Rio Grande Council of Governments

Mr. Tim Callahan
State Land Office

Mr. Mark Sanchez
Director
City of Albuquerque Council Services
Department

Ms. Joyce M. Porter
Program Manager
LA/NM Airports Development Office -
FAA Southwest Region

ALBUQUERQUE INTERNATIONAL SUNPORT
AIRPORT MASTER PLAN UPDATE
ADVISORY COMMITTEE (AC)

Mr. Mark Sanchez
Director
City of Albuquerque Council
Services Department

Mr. David W. Scott
Chairman
Airport Advisory Board

Mr. James B. Lewis
Chief Operating Officer
City of Albuquerque –
Office of the Mayor

Councilor Eric Griego
Albuquerque City Council,
District #3

Councilor Hess Yntema
Albuquerque City Council,
District #6

Councilor Tina Cummins
President
Albuquerque City Council,
District #9

Ms. Terri Cole
President
Greater Albuquerque
Chamber of Commerce

Mr. Gary Tonjes
President
Albuquerque Economic Development

Ms. Mary Kay Cline
President and CEO
Albuquerque Convention &
Visitors Bureau

Ms. Janet L. Green
Cabinet Secretary
New Mexico Department of Tourism

Mr. Ralph Francis
Director of Public Affairs
Kirtland Air Force Base,
Office of Public Affairs

Mr. Bob Hoffman
Executive Director
Albuquerque Economic Forum

Mr. Charles Thomas
Chairman
Kirtland Partnership Committee

Ms. Helen R. Wright
Airport Neighbors Alliance

Ms. Loretta Armenta
President
Hispano Chamber of Commerce

Ms. Terry Eisenbart
Area Marketing Manager
Southwest Airlines

The Honorable Alvino Lucero
Governor
Isleta Pueblo

Mr. Alan Marks
Mountain View Neighborhood
Association

Mr. Alan Reed
Interim Director
1000 Friends of New Mexico

Mr. Tom Baca

ALBUQUERQUE INTERNATIONAL SUNPORT
AIRPORT MASTER PLAN
MEETING ATTENDANCE RECORD

Meeting: Advisory Committee

Date: June 12, 2000 Time: 3:30 p.m.

Place: Conference Room

Aviation Department

Please print neatly

	NAME	REPRESENTING	PHONE NUMBER
1.	[illegible]	Southwest Airlines	842-4022
2.	[illegible]	377 ABW/PA Kirtland	846-5991
3.	Mary Kay Cline	Alb. Convention/Visitors Bureau	848 1165
4.	Janet Green	NM Department of Tourism	enchantment@newmexico.org 827-7449
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AIRPORT MASTER PLAN
ADVISORY COMMITTEE
MEETING ATTENDANCE RECORD

ABQ INTERNATIONAL SUNPORT

Meeting Meeting #3

Date: April 18, 2001 Time: 3:00 p.m.

Place: Airport Conference Room

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. HELEN WRIGHT	Airport Neigbors' Alliance	262-4799
2. RANDY ROMERO	Councilor Handley	768-2181
3. Bob Hoffman	C.F.	883-2505
4. Jerry Eisenbart	Southwest Airlines	842.4022
5. [illegible]	AIRPORT ADVISORY BOARD	345-4647
6. JAY CZAR	Aviation Department	244-7700
7. Mike McCan	Gr. Alb. Chamber of Comm	764.3754
8. Connie Beimer	City of Albuquerque	768-3087
9. CHARLIE THOMAS	KIRTLAND PARTNERSHIP	845-3506
10. Steve Coffman	Coffman Associates	800.892.7772
11. MIKE PROVINE	MOLZEN CORBIN & ASSOC.	242-5700
12. Chris Hugunin	Coffman Associates	800. 892. 7772
13. Jim Suehiro	NBBJ	206.223.5231
14. JOEL McLEOD	NBBJ	206-621-2429
15. Janet Green	Secretary, New Mexico Dept. of Tourism	505 827-7449
16. MARY KAY CLINE	ALB. CONVENTION/VISITORS BUREAU	848-1165
17. Gary Romero	New Mexico Dept. of Tourism	827-7307
18. JIM HARRIS	COFFMAN ASSOCIATES	602-493-6999
19. Ahnee Holder	NBBJ	206 223 5021
20.		

AIRPORT MASTER PLAN ADVISORY COMMITTEE MEETING ATTENDANCE RECORD

Meeting: Meeting #4

Date: July 25, 2001 Time: 1:30 p.m.

Place: Airport Conference Room

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. Jim Harris	Coffman Associates	602-993-6999
2. Ralph Franck	Kirtland AFB	846-5991
3. Helen Wright	Airport Neighbors Alliance	262-4799
4. Gary Tonjes	Abq. Economic Development, Inc	246-6200
5. Jay Czar	ABQ Sunport	244-7700
6. Connie Beimer	Mayor's Office	768-3087
7. Dennis Parker	Aviation Department	244-7802
8. Mike McCan	Greater Alb. Chamber of Com.	764.3754
9. Mike Pravine	Molzen-Corbin & Assoc	242-5700
10. Maggie Santiago	Aviation Dept	244-7780
11. Jessica Ciddio	1000 Friends of NM	848-8232 ext 107
12. Phil Tsosie	Pueblo of Isleta	(505)869-3111
13. Joel P. McLeod	NBBJ	206-621-2429
14. Steve Benson	Coffman Associates	1-800-892-7772
15. Steve Coffman	" "	"
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AIRPORT MASTER PLAN
ADVISORY COMMITTEE
MEETING ATTENDANCE RECORD

ABQ SUNPORT

Meeting Meeting #5 Date: May 30, 2002 Time: 1:30 p.m.

Place: Airport Conference Room

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. HELEN WRIGHT	Airport Neighborhoods Alliance	262-4799
2. MARY KAY CLINE	ACB CONVENTION/VISITORS BUREAU	8481165
3. Gary Tonjes	AED	246-6200
4. TERRY EISENBART	Southwest Airlines	842.4022
5. STEVE BENSON	COFFMAN ASSOCIATES	1-800-892-7772
6. Chris Hugunin	" "	"
7. Lee McPheters	COFFMAN ASSOC/ASU	480-965-5462
8. Jim Suehiro	NBBJ	206.223.5231
9. Joel McLeod	NBBJ	206.223.5555
10. Warren Adams	Leigh Fisher Associates	650-571-7722
11. Amanda Thomas	Leigh Fisher Associates	650-571-7722
12. Mike Provine	Molzen-Corbin	505 242 5700
13. Steve Coffman	Coffman Associates	800-892-7772
14. Jeanette V. Coffman	Coffman Associates	816-524-3500
15. [illegible signature]	Sunport	505-244-7725
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ALBUQUERQUE INTERNATIONAL SUNPORT
AIRPORT MASTER PLAN
MEETING ATTENDANCE RECORD

ABQ SUNPORT

Meeting: Technical Committee

Date: June 13, 2000 Time: 1:30 p.m.

Place: Conference Room

Aviation Department

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. UTTAM BARUA	FRESQUEZ CONC.	842-4280 Ph 842-4282 FAX
2. Tim Callahan	State Land Office	841 8705 841-8703 FAX
3. BO BOHANNON	KIRTLAND AFB	846-7885 846-7902 FAX
4. Bob SANCHEZ	KIRTLAND AFB	846 8121 846-7931 FAX
5. FRED GURULE'	FAA ABQ-ADO	Fred.gurule@FAA.GOV (505) 764-1230 764-1239 FAX
6. Loretta Tollefson	Middle Rio Grande Council of Govts	247-1750 (phone) 247-1753 (Fax)
7. Isreal Tavarez	City of Albuquerque Env. Health Dept	768-1965 (phone) 768-1977 (fax)
8. Billy SeLf	SOUTHWEST AIRLINES	214-792-4136 214-792-4102 FAX
9. RICHARD MACPHERSON	BERNALILLO COUNTY PLANNING	924-3708 phone 924-3758 FAX
10. TOM LINTNER	FAA AIRTRAFFIC CONTROL TOWER	505-856-4900 PHONE 505 856-4914 FAX
11. Rick Henson	ABQ FAA TWR	505-856-4930 Rick.C.Henson@FAA.GOV
12. Lowell Whitten	Cutter Aviation	505-842-4184 505-842-4405
13. LARRY BLAIR	COA PWD	768-3627 lblair@cabq.gov FAX 768-3630
14. BOB McCABE	COA PLANNING	924-3978 bmccabe@cabq.gov FAX: 924-3337
15. JIM HARRIS	COFFMAN ASSOCIATES	602-993-6999 602-993-7196 (fax)
16. STEVE BENSON	COFFMAN ASSOCIATES	1-800-892-7772 816-524-2575 fax
17. Chris Auguin	Coffman Associates	1-800-892-7772 816-524-2575 FAX
18. [illegible]	[illegible]	[illegible]
19. [illegible]	[illegible]	[illegible]
20. MIKE PROVINE	MOLZEN-CORBIN & ASSOC.	505 242 5700 505 242 0673

ALBUQUERQUE INTERNATIONAL SUNPORT
AIRPORT MASTER PLAN
MEETING ATTENDANCE RECORD

Meeting: Technical Committee

Date: June 13, 2000 Time: 1:30 p.m.

Place: Conference Room

Aviation Department

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. Jim Hinde	City of Albuquerque - Aviation	505-244-7805
2. Dennis Parker	Aviation	505-244-7800
3. Wayne Hanzich	Aviation	505 244-7858
4. Maggie Santiago	" "	(505) 244-7780 (505) 842-4379 FAX #
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AIRPORT MASTER PLAN
TECHNICAL COMMITTEE
MEETING ATTENDANCE RECORD

ABQ SUNPORT

Meeting: Meeting #2

Date: Sept. 15, 2000 Time: 9:00 a.m.

Place: Conference Room

Aviation Department

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. Jim Harris	Coffman Associates	602-993-6999
2. Michael Copeland	MRGCOG	505.247.1750
3. Jon P Messier	City of Albuquerque/Planning Dept	(505) 924-3888
4. Will Gleason	NM State Land Office	505 841-8706
5. Bob Sanchez	377 CEG Kirtland A.F.B	505 846-2454
6. Fred Gurulé	FAA ABQ-ADO	505-764-1230
7. Mike Rice	Aviation Division, State of NM.	505-827-1525
8. Dennis Parker	Aviation	505-244-7800
9. Tom Lintner	FAA Air Traffic	505 856 4900
10. Chuck Leonard	Cutter Aviation	505 842-4184
11. Joel P. McLeod	NBBJ	206-621-2429
12. Mike Provine	Molzen-Corbin	505 242 5700
13. Wayne Hanzich	Aviation	505 244-7858
14. Jay Czar	"	244-7700
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AIRPORT MASTER PLAN
ADVISORY COMMITTEE
MEETING ATTENDANCE RECORD

ABQ SUNPORT

Meeting: Meeting #2 Date: Sept. 14, 2000 Time: 2:00 p.m.

Place: Conference Room

Please print neatly Aviation Department

NAME	REPRESENTING	PHONE NUMBER
1. MARY KAY CLINE	ALB. CON/VIS BUREAU	848 1165
2. Gary Tonjes	AED	246-6200
3. CHARLIE THOMAS	KPC	845-3506
4. BOB HOFFMAN	ECONOMIC FORUM	883-2505
5. David Harlunyi	City Council	768-3115
6. JAY CZAR	Sunport Admin	244-7700
7. JOEL P. McLEOD	NBBJ	(206) 621-2429
8. Denise Grey	Aviation Dept.	244-7700
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AIRPORT MASTER PLAN
TECHNICAL COMMITTEE
MEETING ATTENDANCE RECORD

Meeting: Meeting #3 — Date: April 19, 2001 — Time: 10:00 a.m.

Place: Airport Conference Room

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. Greg Gillis	SWA	214/792-4909
2. AHNA HOLDER	NBBJ	206 223 5021
3. Jim Suchiro	NBBJ	206.223.5231
4. Joel McLeod	NBBJ	206.223.5555
5. MICHAEL COPELAND	MRGCOG	505.247.1750
6. Lowell Whitten	Cutter Aviation	505-842-4184
7. JIM HARRIS	COFFMAN ASSOCIATES	602-993-6999
8. Tim Callahan	State Land Office	505 841-8705
9. JON P. MESSIER	CITY PLANNING DEPARTMENT	(505) 724-3621 (505) 924-3888
10. LANCE McKINNEY	AVIATION DEPT.	(505) 244-7859
11. FRED GURULE'	FAA ABQ-ADO	505-764-1230
12. JAY CZAR	Aviation Dept	244-7777
13. TOM LINTNER	FAA ABQ ATCT	856-4900
14. D. PARKER	Aviation	244-7800
15. Chris Huguenin	Coffman Associates	1-800-892-7772
16. Steve Coffman	Coffman Associates	800-892-7772
17. [illegible]	[illegible]	[illegible]
18. Richard Macpherson	Bernalillo County Planning	924-3708
19. STEVE BENSON	COFFMAN ASSOCIATES	800-892-7772
20.		

AIRPORT MASTER PLAN
TECHNICAL COMMITTEE
MEETING ATTENDANCE RECORD

ABQ SUNPORT

Meeting: Meeting #4 | Date: July 26, 2001 | Time: 1:30 a.m.

Place: Airport Conference Room

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. Tim Callahan	NMSLO	841-8705
2. WILL GLEASON	NMSLO	841-8705
3. JOY PORTER	F.A.A. FORT WORTH, TX	817-222-5640
4. Billy Self	SOUTHWEST AIRLINES	972-497-9225
5. Greg Gillis	Southwest Airlines	214/792-4909
6. WILFRED GALLEGOS	CITY of ALB. PUBLIC WORKS	768-2577
7. Terry Simcoe	NM Aviation Division	476-0941
8. Rick Henson	ABQ Tower FAA	856-4900
9. Lowell Whitten	Cutter Aviation	842-4184
10. ~~Joel~~ P. McLeod	NBBJ	(206)-621-2429
11. STEVE BENSON	COFFMAN ASSOCIATES	1-800-892-7772
12. JIM HARRIS	COFFMAN ASSOCIATES	602-993-6999
13. LANCE MCKINNEY	AVIATION	244-7859
14. FRED GURULÉ	FAA - ABQ-ADO	(505) 764-1230
15. JAY CZAR	ABQ Sunport	244-7700
16. David Hudwiger	Council	768-3115
17. MIKE PROUNE	MOLZEN-CORBIN	242-5700
18. WAYNE HANTIEN	AVIATION	244-7353
19. DENNIS PACKER	AVIATION	244-7800
20. STEVE COFFMAN	COFFMAN ASSOCIATES	

AIRPORT MASTER PLAN
TECHNICAL COMMITTEE
MEETING ATTENDANCE RECORD

Meeting: Meeting #4

Date: July 26, 2001 Time: 1:30 a.m.

Place: Airport Conference Room

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. Steve Benson	Coffman Assoc.	
2. Jim Harris	Coffman Assoc	
3. Chris Huggins	Coffman Assoc	
4. Steven Picou	Aviation	
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ALBUQUERQUE INTERNATIONAL SUNPORT

MPU Technical Cont. Mtg. 5/31/02

Meeting Date

NAME and E-Mail Address	ORGANIZATION	CELL #	OFFICE #
Mike Rice	NM Aviation Div	660-0498	884-8090
Don Schroeder	ABQ ATCT	259-9178	856-4900
Lowell Whitley	Cutter		842-4184
FRED GURULE'	FAA ABQ-ADO		764-1230
John Hartmann for John Castillo	City PWD		768-2680
Warren Adams	LFA	650-218-8538	650-571-7722
Loretta Tollefson	MRGCOG		247-1750
Bob Sanchez	KAFB 377 SPTG/CEE	–	846-2454

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING ATTENDANCE RECORD

Meeting Public Information Workshop #1 Date: June 13, 2000 Time: 6:00-8:00 p.m.

Place: Cesar Chavez Community Center

Please print neatly

NAME	ADDRESS	PHONE NUMBER
1. Tom Lintner	ABQ ATCT	
2. Jaker Peggy Sandoval	1816 Cornell Dr SE	242 5149
3. Kim Corwin	2441 Zena Lona NE	275-5438
4. Richard W Peterson	2967 PLAZA BLANCA SANTA FE	438-8817 TTY
5. Linda Randolph	727 B Viento Cil, S.FE	820-6605
6. RANDY BURTON	1728 DIETZ PL NW ABQ 87107	344-4251
7. Charles Eckert	1806 Cardenas NE 87110	260-1210
8. Martin Eckert	1511 Georgia NE 87110	265-2723
9. Gary William	2416 Madre Dr NE	293-6221
10. Claude L. Lewis	465 Jefferson N.E.	266-1597
11. Jimmy Tolson	1009 Espanola NE	232-0522
12. [illegible]	915 Calle Coronado SE	293-1564
13. PAUL KARAS	9637 SAN BERNARDINO NE	858-1541
14. Chris Smith	605 Cardenas SE	256-0821
15. Blair Brown	2226 B Wyoming NE #272 ABQ 87112	259-7190
16. SUSAN GOEMAN	2226 B WYOMING NE #272 ABQ 87112	259-7190
17. STEPHEN MILLS	212 RICHMOND S.E. ABQ 87106	268-4109
18. Ivan Alderete	710 Sol DE Sandia SW	873-8999
* 19. John Hooper	NM Comm for the Deaf & HH NM. 2440 Calle Contessa, S.F. 87501	827-7584
20. W. Golden	PO 40582 ALBUQ NM	242-5181

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING ATTENDANCE RECORD

ABQ SUNPORT

Meeting: Public Information Workshop #1 Date: June 13, 2000 Time: 6:00-8:00 p.m.

Place: Cesar Chavez Community Center

Please print neatly

NAME	ADDRESS	PHONE NUMBER
1. Robert Sharp	1901 Quail Run NE	797-4771
2. MITCHELL F. BARKER	11600 ACADEMY RD, NE # 3915	239-6899
3. Dennis Schaefer	4601 MONTANO RD NW #26	890-0934
4. Roger Flegel	605 Valencia N.E.	255-4704
5. Daniel Flegel	" —— "	" —— "
6. Steven Kells	4913 Kathryn Av. S.E.	——
7. Stephanie Chavez	1815 TIWAK PL SW	842-4075
8. Kathy Rodriguez	625 Silver Ave SW Ste 340	346-6781
9. Ursula Richards	2415 Tompiro Dr NW	352-9447
10. Catherine Hogan	2415 Tompiro Dr NW	352-9447
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AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING ATTENDANCE RECORD

Meeting Public Information Workshop #2 Date: Sept. 14, 2000 Time: 6:00-8:00 p.m.

Place: Bandelier Elementary School Cafeteria

Please print neatly

NAME	ADDRESS	PHONE NUMBER
1. DAN Bibeau	66 Sundance Kid Edgewood	281-6567
2. Cheri Bibeau	" "	" "
3. Anne Tyler	PO Box 4623, Alb 87196	265-5761
4. Susan Gant	1001 Richmond DR SE	232-9813
5. MIKE SCHULZ	5301 CENTRAL AVE NE SUITE 700	262-8752
6. DAVID SCOTT	13301 PRINCESS JEANNE NE AIRPORT ADVISORY BOARD	292-0223
7. WAYNE HANZICH	ABQ	244-7858
8. Robert Sharp	1901 Quail Run NE ABQ	797-4771
9. Fred Feirtag	501 Eugene Ct. SE 87123	323-7701
10. LANCE McKINNEY	ABQ/OPS	244-7859
11. Sallie + Craig Wong	3608 Silver Ave SE ABQ 87108	254-8697
12. Kim Corwin	2441 Zena Lona NE 87112	275-5433
13. JAMES FITZGERALD	AVIATION DEPT	
14. Marianne Dickinson	ANA	268-4757
15. HEROLD BRITO	3209 ALCAZAR NE.	884-4875
16. Jim Hinde	ABQ	244-7805
17. Carlos Ramirez	3901 INDIAN School	255-2474
18. REID E. ZWICKEL	1501 SILVER SE	246-0281
19. Patricia Willson	505 Dartmouth SE	266-8944
20. JAY CZAR	ABQ Admin	244-7700

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING ATTENDANCE RECORD

ABQ SUNPORT

Meeting: Public Information Workshop #2 Date: Sept. 14, 2000 Time: 6:00-8:00 p.m.

Place: Bandelier Elementary School Cafeteria

Please print neatly

NAME	ADDRESS	PHONE NUMBER
1. Joel Craig Mount	613 Adams St. SE	266-9161
2. Calvin Fox	719 Trading Post SE	294-6137
3. Stephen Mills	212 Richmond SE	268-4109
4. Norm Gagne	1007 Ridgecrest Dr SE	884-0777
5. Barry Kamhoot	13304 Tierra Montanosa Dr	293-3287
6. Gary Williams	2416 Madre Dr NE	293-6221
7. Richard Pearson	2967 Plaza Blanca Santa Fe 87505	438-8817 TTY
8. Kenneth Ingham	1601 Rita Dr NE 87106	2620602
9. Sally Hebert	632 Amherst Dr SE	266-3130
10. Jacob N Sánchez	Po. Box 25562 87108	7669667
11. Stephen Verchinski	2200 Espanola NE 87110	888-1370
12. Richard Willson	505 Dartmouth Dr SE 87106	266-8944
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AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING ATTENDANCE RECORD

ABQ SUNPORT

Meeting: Public Information Workshop #3 Date: April 19, 2001 Time: 6:00-8:00 p.m.

Place: Loma Linda Community Center

Please print neatly

NAME	ADDRESS	PHONE NUMBER
1. JEFF ARMIJO	4937 MarnaLynn Ave NW ~~[illegible]~~ ABQ nm 87114	4505279.
2. W. Golden	4715 Crest AlBuQ NM	242-5181
3. Mardo Martinez	2801 Kathryn SE Albuq. nm.	266-8260
4. Daryle Caton	11327 Campo del Oso NE	332-1122
5. Steve Frazier	9807 Lovette Dr. NW 87114	897-0840
6. Marg Ellisten	Dept Family & Com Services	768-2934
7. JACOB O'NEIL	U. OF NEW MEXICO CIVIL ENGR.	872-3287
8. KAREN K. Schmiege	2928 Hyder Ave SE	~~877~~ 268.5808
9. Perry Denker	2503 Clark Carr Loop SE	245-7555
10. John Piggy Sandoval	1816 Cornell SE	unlisted
11. STEPHEN MILLS	212 RICHMOND S.E.	268-4109
12. RICH WEINER	715 TRUMAN SE	265-7489
13. Jennie Jaramillo	2800 Vail SE 87106	842-0420
14. Martin Eckert	1511 Georgia NE 87110	265-2723
15. Charles Ecker	1806 Cardenas NE 87110	254-1611
16. Elizabeth Chestnutt	305 Bryn Mawr SE 87106	2665252
17. Barry K Jenkins	LGT 2201 San Pedro NE 87110	8725710
18. Gary Williams	2416 Madre Dr NE 87112	293-6221
19. STEPHEN VERCHINSKI	2700 ESPANOLA NE 87110	888-1320
20. Marianne Dickinson	POB 4875 87196	268-4757

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING ATTENDANCE RECORD

ABQ INTERNATIONAL SUNPORT

Meeting: Public Information Workshop #3 Date: April 19, 2001 Time: 6:00-8:00 p.m.

Place: Loma Linda Community Center

Please print neatly

NAME	ADDRESS	PHONE NUMBER
1. Picou, Steven	Aviation	244-7700
2. Tom McConnell	913 Pampas Dr. SE	
3. Alan Marks	240 Valley High SW 87105	877-3156
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AIRPORT MASTER PLAN
TECHNICAL COMMITTEE
MEETING ATTENDANCE RECORD

Meeting Meeting #3

Date: April 19, 2001 Time: 10:00 a.m.

Place: Airport Conference Room

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. Greg Gillis	SWA	214/792-4909
2. AHNA HOLDER	NBBJ	206 223 5021
3. Jim Suehiro	NBBJ	206.223.5231
4. Joel McLeod	NBBJ	206.223.5555
5. MICHAEL COPELAND	MRGCOG	505.247.1750
6. Lowell Whitten	Cutter Aviation	505-842-4184
7. JIM HARRIS	COFFMAN ASSOCIATES	602-993-6999
8. Tim Callahan	State Land Office	505-841-8705
9. JON P MESSIER	CITY/PLANNING DEPARTMENT	(505) 724-3621 (505) 924-3888
10. LANCE McKINNEY	AVIATION DEPT.	(505) 244-7859
11. FRED GURULE'	FAA ABQ-ADO	505-764-1230
12. JAY CZAR	Aviation Dept	244-7777
13. TOM LINTNER	FAA ABQ ATCT	856-4900
14. D. PARKER	Aviation	244-7800
15. Chris Hugunin	Coffman Associates	1-800-892-7772
16. Steve Coffman	Coffman Associates	800-892-7772
17. MIKE PROVINE	MOLZEN-CORBIN	242-5700
18. Richard Macpherson	Bernalillo County Planning	924-3708
19. STEVE BENSON	COFFMAN ASSOCIATES	800-892-7772
20.		

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING ATTENDANCE RECORD

ABQ SUNPORT

Meeting: Public Information Workshop #~~6~~ 5 Date: May 30, 2002 Time: 6:00-7:30 p.m.

Place: Cesar Chavez Community Center

Please print neatly

NAME	ADDRESS	PHONE NUMBER
1. DAVID W. SCOTT	13301 PRINCESS JEANNE NE	292-0223
2. Bob Henning	3884 Tammy Ct. Los Lunas NM 87031	865 0007
3. DAN HOGAN	1718 Morningrise Pl. SE Alb NM 87108	
4. Robert HAWK	1005 Washington SE 87108	255-7752
5. Dewey V. Cave	ABQ Sunport	244-7725
6. Warren Adams	LFA	650-591-7772
7. JACK SCHERER	SUNPORT	244-7712
8. Theresa BROOKS	4808 Ridgecrest Cir SE	255-2730
9. Bernard Stevens	1025 Arizona, SE	262-0527
10. David M. Hassard	115 [illegible] Drive SE 87106	255-8668
11. NANCY MUSINSKI	Southern / Monroe	924-3988
12. Konrad Werner	1601 Ridgecrest Dr. SE	265-9136
13. Mel Towner	4050 Smith Ave SE.	255-7504
14. Rick Tietgens	6511 Americas Parkway	855-7100
15. Ted Ritschard	6501 Americas Parkway #900	855-7500
16. Jack W. Reed	1128 Monroe SE	255-9991
17. Martin & Frances Eckert	1511 Georgia NE 87110	265-2723
18. David Noyes	5623 Vulcan Vista 87111	269-7604
19. Eloise Rogers	1312 Alcazar NE	256-0066
20. Calvin Rogers	1312 Alcazar NE	256-0066

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING ATTENDANCE RECORD

ABQ INTERNATIONAL SUNPORT

Meeting: Public Information Workshop #~~6~~ 5 Date: May 30, 2002 Time: 6:00-7:30 p.m.

Place: Cesar Chavez Community Center

Please print neatly

NAME	ADDRESS	PHONE NUMBER
1. James B. Lewis	City / Mayors Office	768-3000
2. George Gibbs	4 Hills Village H.O.A.	275-9182
3. [illegible]	100 Camino Barranca PLACITAS NM	867-6070
4. Marianne Dickinson	POB 4875 ABQ 87196	
5. Miguel Negrete	2017 Circulo Del Monte NE 87112	8564403
6. Al Tyson	1216 Zena Lona NE 87112	8564749
7. Tom Brown	P.O. Box 91090 87199	821-2166
8. Sharon O'Connor	613 Adams St SE	266-9161
9. J. Craig Mount	"	"
10. Elizabeth Chestnut	305 Bryn Mawr SE	266 5252
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AIRLINE - MASTER PLAN 12-13-01

Meeting **Date**

NAME	ORGANIZATION	TELEPHONE NO.
MARK BUCHHOLZ	United Airlines	847/700-4549
Alan Wilson	UPS	(505)842-4073
Tracy Hettzin	UPS	(502) 329-3992
Dan Rish	DL	842-4464
DAVID JARVIS	FRONTIER	842-4042
Mike Hedrington	Continental Airlines	842 4084
Terence Johnson	UAL	842 4378
DANNY GREEN	AMERICA WEST	766-7810

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ALBUQUERQUE INTERNATIONAL SUNPORT
AIRPORT MASTER PLAN
MEETING ATTENDANCE RECORD

Meeting: General Aviation Pilots

Date: April 23, 2002 Time: 5:30 p.m.

Place: Press Room
Albuquerque Int'l Sunport

Please print neatly

NAME	REPRESENTING	PHONE NUMBER
1. Tim Baca	Self & Advisory Board	345-4647
2. Dan Wegman	Self	237-9586
3. Chris Baca	Self	573 1815
4. Lu Baca	Self	856-0990
5. James May	Skyrunners	299-5548
6. Merlin D. Peay	Six "T"	344-4656
7. Ed Heimann	Steve Benoit	298-0300
8. Cindy Paulsen	Self	272-0493
9. John Bode	Bode Aviation	884-4530
10. Robert Sharp	Self	797-4771
11. Vicki Husbands	Seven Bar Aviation	842-4990
12. Jim Thorsen	Bode Aviation	255-8611
13. Fr. Bob Kirsch	San Martín Flying Mission	842-8916
14. Gerrit Paulsen	SW Aviator Magazine	256-6877
15. Tim Lanigan	Bode Aviation	266-0991
16. Michael Callihan	Bode Aviation	280-6974
17. Edwina Tabares	St Jude Express	585123170
18. David Hassard	SMPC Architects	255-8668
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Committee Comments

U.S. Department
of Transportation
**Federal Aviation
Administration**

RECEIVED
SEP 26 2000

AIRPORTS DISTRICT OFFICE
1601 Randolph, SE Suite 130 S
Albuquerque, NM 87106

September 19, 2000

Mr. James M. Harris, P.E.
Coffman Associates, Inc.
11022 N 28th Drive, Suite 240
Phoenix, AZ 85029

Dear Mr. Harris:

Albuquerque International Sunport, Albuquerque, NM

AIP Project No. 3-35-0003-23 & 24 (Master Plan Update)

We have reviewed a draft of Chapter Two - Aviation Demand Forecasts and we find that the selected annual enplanements and operational forecasts compare favorably with the FAA's Terminal Area Forecasts (TAF). The selected forecasts are therefore approved for use in this Master Plan Update

In addition to the submittals provided me please provide copies of submittals to Joy Porter in our Regional Office at:

DOT/FAA
ASW-640
FTW, TX 76193-0640

Sincerely,

Frederick O. Gurule'

Frederick O. Gurule'.
Program Manager

CC: Jay Czar, Director of Aviation

ADVISORY COMMITTEE COMMENT SHEET

Albuquerque International Sunport
Master Plan Update

Enclosed is the second working paper for the master plan update. This paper will be reviewed with the Advisory Committee at the meeting on Thursday, September 14, 2000. The meeting will be held at 2:00 p.m. in the Large Conference Room at the Aviation Department business offices.

Please use this response sheet to note any written comments you might have on the following draft working paper:

Chapter Two – Aviation Demand Forecasts

☐ *I have read the "Draft" Working Papers and have no comments.*

☑ *I have read the "Draft" Working Papers and have the following comments. (Attach separate sheets, as necessary.)*

Just minor editing suggestions:
II-5 2nd graph - third line - delete "to"
II-16 1st graph - fifth line from bottom - delete "]"
2nd column/2nd graph - second line "and" - delete
II-19 1st graph · Transposition on "Salt"
2nd graph - third line from bott. - "Alamogordo"
II-31 2nd column - confusion re enplane/deplane
This is my editing experience coming out!

Please Mail or FAX written comments to:

COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
FAX: (816) 524-2575

Name: MaryKay Cline
Representing: Alb. Convention & Visitors Bureau
Phone: 505 948 1165

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by September 29, 2000.

TECHNICAL COMMITTEE COMMENT SHEET

Albuquerque International Sunport
Master Plan Update

Enclosed is the second working paper for the master plan update. This paper will be reviewed with the Technical Committee at the meeting on Friday, September 15, 2000. The meeting will be held at 9:00 a.m. in the Large Conference Room at the Aviation Department business offices.

Please use this response sheet to note any written comments you might have on the following draft working paper:

Chapter Two – Aviation Demand Forecasts

☒ *I have read the "Draft" Working Papers and have no comments.*

☐ *I have read the "Draft" Working Papers and have the following comments. (Attach separate sheets, as necessary.)*

Please Mail or FAX written comments to:

COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
FAX: (816) 524-2575

Name: Chuck Leonard
Representing: Cutter Aviation
Phone: 842-4184

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by September 29, 2000.

COMMENT SHEET

Albuquerque International Sunport
Master Plan Update

Please use this response sheet to note any written comments you might have on the following "Draft" working papers:

Chapter One - Introduction
Chapter Three - Airfield Facilities, Section One - Inventory
Chapter Four - Passenger Terminal Facilities, Section One - Inventory
Chapter Five - Air Cargo Facilities, Section One - Inventory
Chapter Six - General Aviation Facilities, Section One - Inventory
Chapter Seven - Parking, Access and Support Facilities, Section One - Inventory

[XX] *I have read the "Draft" Working Papers and have no comments.*

[ ] *I have read the "Draft" Working Papers and have the following comments:*
(Attach separate sheets, as necessary)

The draft, at this point, appears to be mostly factual information; therefore, I have no comments on the draft.

I would, however, suggest that you consider extending the planning horizon to 2025, to make it consistant with the 2025 Metropolitan Transportation Plan (MRGCOG) which is now in preparation.

Please Mail or Fax written comments to:

COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
Fax: (816) 524-2575

Name: Larry A. Blair
Representing: City of Albuquerque
Phone: 505-768-3627

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by June 30, 2000

TECHNICAL COMMITTEE COMMENT SHEET
Albuquerque International Sunport
Master Plan Update

Enclosed are the latest working papers for the master plan update. These papers will be reviewed with the Technical Committee at the meeting on Thursday, April 19, 2001. The meeting will be held at 10:00 a.m. in the Large Conference Room at the Aviation Department business offices.

Please use this response sheet to note any written comments you might have on the following draft working papers:

CHAPTER THREE – Airfield Facilities
Section Two – Demand/Capacity
Section Three – Requirements

CHAPTER FOUR – Passenger Terminal Facilities
Section Two – Demand/Capacity
Section Three – Requirements

CHAPTER FIVE – Air Cargo Facilities
Section Two – Requirements

CHAPTER SIX – General Aviation Facilities
Section Two – Requirements

CHAPTER SEVEN – Parking, Access, And Support Facilities
Section Two – Demand/Capacity
Section Three – Requirements

APPENDIX B – Airfield Simulation Analysis
APPENDIX C – Airline Flight Schedules

☑ *I have read the "Draft" Working Papers and have no comments.*

☐ *I have read the "Draft" Working Papers and have the following comments. (Attach separate sheets, as necessary.)*

Please Mail or FAX written comments to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
FAX: (816) 524-2575

Name: Lowell Whitten
Representing: Cutter Aviation
Phone: 505 842 4184

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by May 4, 2001.

ADVISORY COMMITTEE COMMENT SHEET
Albuquerque International Sunport
Master Plan Update

Enclosed are the latest working papers for the master plan update. These papers will be reviewed with the Advisory Committee at the meeting on Wednesday, April 18, 2001. The meeting will be held at 3:00 p.m. in the Large Conference Room at the Aviation Department business offices.

Please use this response sheet to note any written comments you might have on the following draft working papers:

CHAPTER THREE – Airfield Facilities
Section Two – Demand/Capacity
Section Three – Requirements

CHAPTER FOUR – Passenger Terminal Facilities
Section Two – Demand/Capacity
Section Three – Requirements

CHAPTER FIVE – Air Cargo Facilities
Section Two – Requirements

CHAPTER SIX – General Aviation Facilities
Section Two – Requirements

CHAPTER SEVEN – Parking, Access, And Support Facilities
Section Two – Demand/Capacity
Section Three – Requirements

APPENDIX B – Airfield Simulation Analysis
APPENDIX C – Airline Flight Schedules

☒ *I have read the "Draft" Working Papers and have no comments.*

☐ *I have read the "Draft" Working Papers and have the following comments. (Attach separate sheets, as necessary.)*

Please Mail or FAX written comments to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
FAX: (816) 524-2575

Name: Mary Kay Cline
Representing: Albuquerque CVB
Phone: 505-848 1165

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by May 4, 2001.

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APR 16 2001

TECHNICAL COMMITTEE COMMENT SHEET
Albuquerque International Sunport
Master Plan Update

Enclosed are the latest working papers for the master plan update. These papers will be reviewed with the Technical Committee at the meeting on Thursday, April 19, 2001. The meeting will be held at 10:00 a.m. in the Large Conference Room at the Aviation Department business offices.

Please use this response sheet to note any written comments you might have on the following draft working papers:

CHAPTER THREE – Airfield Facilities
Section Two – Demand/Capacity
Section Three – Requirements

CHAPTER FOUR – Passenger Terminal Facilities
Section Two – Demand/Capacity
Section Three – Requirements

CHAPTER FIVE – Air Cargo Facilities
Section Two – Requirements

CHAPTER SIX – General Aviation Facilities
Section Two – Requirements

CHAPTER SEVEN – Parking, Access, And Support Facilities
Section Two – Demand/Capacity
Section Three – Requirements

APPENDIX B – Airfield Simulation Analysis
APPENDIX C – Airline Flight Schedules

☒ *I have read the "Draft" Working Papers and have no comments.*

☑ *I have read the "Draft" Working Papers and have the following comments. (Attach separate sheets, as necessary.)* ON BACK

Please Mail or FAX written comments to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
FAX: (816) 524-2575

Name: MICHAEL W. COPELAND
Representing: MRGCOG
Phone: 247.1750

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by May 4, 2001.

I didn't hear anything about transit access to/from the airport. There is existing bus transit service and in the future, there could be rail transit access. Please continue to coordinate with MRGCOG and the Albuquerque transit department regarding long-term transit planning. Look at landside access from a variety of perspectives such as access, circulation, and connections between the terminal facilities and the rental car facility.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Public Works Department

Jim Baca, Mayor

August 1, 2001

Steven G. Benson
Principal
Coffman Associates, Inc.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063

SUBJECT: Albuquerque International Sunport Master Plan Update

Dear Mr. Benson:

The Public Works Department has received and reviewed the draft working papers regarding the above referenced project and offer the following comments. It appears that the planning effort to date has been of a global scale and is intended to generate viable options. As the process continues and certain candidates are selected for further refinement, the Public Works Department would encourage your efforts to include criteria related to utilities, drainage and transportation access issues. At this time, the criteria may be of a preliminary cost type with identification of fatal flaws. As you further refine and narrow candidates, we would encourage you to explore these issues further.

I wish you continued success in addressing issues and solving problems that arise as you move forward with the project. Thank you for the opportunity to review the master plan draft working papers.

Sincerely,

Larry A. Blair
Director

c: Jay Czar, Aviation Director
John Castillo, Assistant Director, PWD
Ed Adams, Manager, Transportation Development
Wilfred Gallegos, Transportation Development

ADVISORY COMMITTEE COMMENT SHEET
Albuquerque International Sunport
Master Plan Update

Enclosed are the latest working papers for the master plan update. These papers will be reviewed with the Advisory Committee at the meeting on Wednesday, July 25, 2001. The meeting will be held at 1:30 p.m. in the Large Conference Room at the Aviation Department business offices.

Please use this response sheet to note any written comments you might have on the following draft working papers:

CHAPTER THREE - Airfield Facilities
Section Four - Alternatives

CHAPTER FOUR - Passenger Terminal Facilities
Section Four - Alternatives

CHAPTER FIVE - Air Cargo Facilities
Section Three - Alternatives

CHAPTER SIX - General Aviation Facilities
Section Three - Alternatives

☑ *I have read the "Draft" Working Papers and have no comments.*

☐ *I have read the "Draft" Working Papers and have the following comments. (Attach separate sheets, as necessary.)*

<u>Please Mail or FAX written comments to:</u>

COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
FAX: (816) 524-2575

Name: Mary Kay Cline
Representing: Alb Convention/Visitors Bureau
Phone: 505 8481165

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by August 10, 2001.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION

FAX

TO: Coffman Associates **FAX:** 816-524-2575

FROM: Keith Holt **PHONE:** 301-695-2204

PAGES 4

SUBJECT: Albuquerque Master Plan Update Comments

IF NOT RECEIVED PROPERLY, PLEASE CALL NUMBER ABOVE.

JUL 23

TECHNICAL COMMITTEE COMMENT SHEET
Albuquerque International Sunport
Master Plan Update

Enclosed are the latest working papers for the master plan update. These papers will be reviewed with the Technical Committee at the meeting on Thursday, July 26, 2001. The meeting will be held at 1:30 p.m. in the Large Conference Room at the Aviation Department business offices.

Please use this response sheet to note any written comments you might have on the following draft working papers:

CHAPTER THREE – Airfield Facilities
Section Four – Alternatives

CHAPTER FOUR – Passenger Terminal Facilities
Section Four – Alternatives

CHAPTER FIVE – Air Cargo Facilities
Section Three – Alternatives

CHAPTER SIX – General Aviation Facilities
Section Three – Alternatives

☐ *I have read the "Draft" Working Papers and have no comments.*

☒ *I have read the "Draft" Working Papers and have the following comments. (Attach separate sheets, as necessary.)*

Please Mail or FAX written comments to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
FAX: (816) 524-2575

Name: KEITH HOLT
Representing: AOPA
Phone: 301-695-2204

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by August 10, 2001.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION
AOPA
421 Aviation Way • Frederick, MD 21701-4798
Telephone (301) 695-2000 • FAX (301) 695-2375
www.aopa.org

August 8, 2001

Coffman Associates, Inc.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063

Re: Albuquerque International Sunport Master Plan Update

To Whom It May Concern:

The Aircraft Owners and Pilots Association (AOPA) is a nonprofit membership association consisting of over 370,000 pilots and aircraft owners nationwide, 2,800 of whom reside in the state of New Mexico. AOPA is committed to ensuring the continued viability, growth, and development of aviation and airports in New Mexico and the United States.

This serves as the Association's comments to the draft working papers for the update to the Albuquerque International Sunport Master Plan.

AOPA has significant concerns about the impact of possible closure of runway 17/35 and relocation of general aviation facilities. The Association's concerns are the negative impact these actions will have on general aviation operations at and access to Albuquerque International (ABQ).

We recognize the airport has grown and will continue to do so. The airport is effectively providing adequate air carrier and air cargo services to accommodate the over six million passengers and over 190 million pounds of cargo. However, we do not feel that general aviation interferes with air carrier or cargo operations. <u>We believe that as the airport continues to grow, general aviation must also be accommodated and not forced out.</u>

General aviation is responsible for over 72,000 operations at ABQ. There are 120 single engine aircraft and 90 multi-engine aircraft based at ABQ. General aviation can hardly be ignored, but rather should be considered as an important component of the airport and the community.

Closure of Runway 17/35
Recently, there has been much national and local media concerning airport and airline delays and the very real need to improve existing airports and build new runways to increase system capacity. The utility of a runway that can contribute to the current and future needs of airport users, as well as minimize delay and increase efficiency is of utmost importance in the aviation planning process and to the Federal Aviation Administration (FAA).

Closing runway 17/35 will impact all airport operators and especially operators of general aviation aircraft. Light general aviation aircraft are limited by crosswinds more so then heavier jet aircraft. During the strong wind season, this runway provides for the safe landing and takeoff of light general aviation aircraft with 2.9 percent coverage for light aircraft as compared to 1.46 percent coverage for larger general aviation aircraft. The closure of this runway will affect the safety and utility of light general aviation activities at ABQ.

Runway 17/35 provides easy access both for general aviation and air carrier aircraft. Alternatives such as those presented in exhibits III-4-F and III-4-G while at a shorter runway length, would allow the utilization for general aviation when the winds favored that runway and maintain access to general aviation facilities. However, further examination on how those alternatives would impact the overall capacity of the airport should be explored. The best alternative would be maintaining the full runway so that it could be utilized in a larger capacity.

There may also be environmental consequences to closing runway 17/35 and moving operations to the other primary runways, especially in regards to noise. Noise is an important factor that cannot be ignored. The closure of runway 17/35 will impact current noise contours. Limiting the amount of runways available will also affect how air traffic control (ATC) separates and sequences traffic, which will affect the size and shape of the noise contours.

General Aviation Facilities

Chapter 6, Section Three offers alternatives to existing General Aviation Facilities. AOPA believes it is vital to maintain or enhance the general aviation services and facilities at the airport.

Consideration has been given to an alternative location for passenger terminal facilities that would cause the displacement of the existing general aviation area. AOPA stresses the importance of preserving general aviation facilities and services at any new location. These new facilities must be equal to or better than the current facilities at comparable and reasonable costs.

Alternative facility locations should have equal, if not greater space then what is currently available at the present facility. This should also include similar hangar and tie-down facilities to accommodate current general aviation tenants. Care should be taken to make certain that no tenants are displaced prior to providing the new facility if this alternative is implemented.

We urge you to take the appropriate steps to ensure that general aviation continues to be properly accommodated at ABQ.

We appreciate your considerations of our views and comments. Should you require any additional information on this or any other related issue, please feel free to contact me at (301) 695-2204.

Sincerely,

Keith Holt

Keith W. Holt
Manager
Airport Policy

ADVISORY COMMITTEE COMMENT SHEET
Albuquerque International Sunport
Master Plan Update

Enclosed are the latest working papers for the master plan update. These papers will be reviewed with the Advisory Committee at the meeting on Wednesday, July 25, 2001. The meeting will be held at 1:30 p.m. in the Large Conference Room at the Aviation Department business offices.

Please use this response sheet to note any written comments you might have on the following draft working papers:

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Section Four – Alternatives

CHAPTER FOUR – Passenger Terminal Facilities
Section Four – Alternatives

CHAPTER FIVE – Air Cargo Facilities
Section Three – Alternatives

CHAPTER SIX – General Aviation Facilities
Section Three – Alternatives

☐ *I have read the "Draft" Working Papers and have no comments.*

☒ *I have read the "Draft" Working Papers and have the following comments. (Attach separate sheets, as necessary.)*

The Airport Master Plan Update must include plans for environmental and noise mitigation measures or it will not meet acceptance by neighborhoods near the airport.

Please Mail or FAX written comments to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
FAX: (816) 524-2575

Name: Helen Wright
Representing: Airport Neighbors Alliance
Phone: 505-262-4799

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by August 10, 2001.

COMMENT SHEET

Albuquerque International Sunport
Master Plan Update

Please use this response sheet to note any written comments you might have on the following "Draft" working papers:

Chapter Three - Airfield Facilities, Section Five - Recommended Program
Chapter Four - Passenger Terminal Facilities, Section Five - Alternatives Refinement
Chapter Four - Passenger Terminal Facilities, Section Six - Recommended Program
Chapter Five - Air Cargo Facilities, Section Four - Recommended Program
Chapter Six - General Aviation Facilities, Section Four - Recommended Program
Chapter Seven - Parking, Access and Support Facilities, Section Four - Recommended Program
Chapter Eight - Financial Plan
Chapter Nine - Airport Plans

Please note that these materials will not fit into your existing study workbook.
A new study workbook will provided at the upcoming committee meeting.

☐ *I have read the "Draft" Working Papers and have no comments.*

☒ *I have read the "Draft" Working Papers and have the following comments:*
(Attach separate sheets, as necessary)

AIS should coordinate closely with City Transit staff as Transit develops the High Capacity Corridor Study to assure that Transit plans and the light rail facility at the airport are coordinated.

Please Mail or Fax written comments to:

COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
Fax: (816) 524-2575

Name: Loretta Tollefson
Representing: MRGCOG
Phone: 247-1750

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by June 21, 2002.

COMMENT SHEET

Albuquerque International Sunport
Master Plan Update

Please use this response sheet to note any written comments you might have on the following "Draft" working papers:

Chapter Three - Airfield Facilities, Section Five - Recommended Program
Chapter Four - Passenger Terminal Facilities, Section Five - Alternatives Refinement
Chapter Four - Passenger Terminal Facilities, Section Six - Recommended Program
Chapter Five - Air Cargo Facilities, Section Four - Recommended Program
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Chapter Seven - Parking, Access and Support Facilities, Section Four - Recommended Program
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Please note that these materials will not fit into your existing study workbook.
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☐ *I have read the "Draft" Working Papers and have no comments.*

☒ *I have read the "Draft" Working Papers and have the following comments:*
(Attach separate sheets, as necessary)

Please Mail or Fax written comments to:

COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, Missouri 64063
Phone: (816) 524-3500
Fax: (816) 524-2575

Name: HELEN WRIGHT
Representing: AIRPORT NEIGHBORHOOD ALLIANCE
Phone: 505-262-4799

Submit your comments electronically at www.coffmanassociates.com.
Select the link at the bottom of the home page.

Please submit comments by June 21, 2002.

June 18, 2002

I have read the draft Albuquerque International Sunport Master Plan Update and have the following comments:

This Master Plan Update lacks sufficient environmental goals and mitigation measures. When compared with the LAX Master Plan Update (see attached table), the ABQ plan looks decidedly anemic.

ABQ should phase out older and noisier aircraft. It should institute an active Community Roundtable on Noise, with ample opportunity for public participation, to identify noise concerns and develop solutions.

The ABQ Master Plan Update includes the goal of developing active and productive public involvement through the planning process. As an Advisory Committee member, I believe that this goal was not met. The Master Plan Update Advisory Committee meetings were informational in nature, with no opportunity for dialogue or discussion. The same concern applies to the public meetings at which the plans were displayed.

I request that well-publicized public meetings be scheduled at which community members can engage in dialogue about the Update, particularly about environmental and noise abatement concerns.

Helen Wright
605 Solano Dr. SE
Albuquerque, NM 87108

Comparison of Selected Portions of LAX and ABQ Master Plan Update Drafts

The LAX plan has a "Master Plan Mission Statement" comprised of 7 goals, and 8 "Guiding Principles of the LAX Master Plan."

The ABQ plan has 9 "Master Plan Objectives."

	LAX	ABQ
Safety	LAX facilities and operations ensure safety of both general public and airport users. MS (Mission Statement) Safety is an essential consideration in planning development at the airport. As the Master Plan evolves, LAWA is committed to maintaining the highest levels of safety for LAX's employees, passengers, and surrounding communities. GP (Guiding Principle)	To evaluate future airport facility development alternatives which will promote safety and optimize airport capacity.
Environment/ Noise	Operation of LAX in an environmentally sensitive and responsible manner. MS Optimized operations at LAX are based on continued measurement and balance of the environmental, social, land use, ground access, economic effects, and air commerce impacts. MS Protection and preservation of the local environment are essential concerns in the master planning process. Any improvements called for in the Master Plan will be mindful of environmental requirements, such as those for air quality, noise and the protection of sensitive species' habitats. GP	
Community Participation	To ensure that the master planning process reflects the concerns of the public and their representatives, LAWA will continue to inform and consult communities, residents and businesses throughout the region about the master planning process. We encourage public participation, particularly after the Environmental Impact Statement and Report are released, so legitimate concerns can be addressed. GP	To develop active and productive public involvement through the planning process.

Both plans have sections under the heading of "Facts" that describe the status quo in various elements of airport operation.

<table>
<tr><th></th><th>LAX</th><th>ABQ</th></tr>
<tr><td>Environment/ Noise</td><td><u>Air Quality (selected sections)</u>
Clean Fuels Program-Shuttles: As a condition of doing business at the airport, LAWA requires all door-to-door passenger shuttle vans serving LAX to be natural gas-powered.

Clean Airfield Technology: At LAX an innovative test project for a cleaner and quieter "push-back" tug to handle up to 767-size aircraft is being conducted. In addition, LAX provides special aircraft electrical power at almost all of its 134 passenger air carrier operation gates so that it is no longer necessary to idle jet engines for auxiliary power, reducing ;tons of aircraft emissions per year.

<u>Noise Reduction Today</u>
Phase-Out of Older, Noisier Aircraft: Advances in aircraft and engine design, coupled with restrictions on older, noisier aircraft, have resulted in significant decreases in noise levels associated with LAX in recent years. State I aircraft were banned from operation in 1991 and commercial State II aircraft were completely phased out as of January 1, 2000. The newer State III aircraft are significantly quieter than their predecessors.

Residential Soundprofoing Program: Los Angeles World Airports is funding the Airport Residential Soundproofing Program in order to significantly reduce aircraft noise levels in homes near the airport. The $225 million program will provide soundproofing for approximately 6,500 residential units in Playa del Rey, Westchester and areas of South Central Los Angeles during the next five to seven years.</td><td><u>Noise Abatement</u>
In cooperation with the Airport Traffic Control Tower (ATCT) and airport users, an informal noise abatement program has been established for Albuquerque International Sunport by the City of Albuquerque Aviation Department. The following summarizes the program:

• Unless the crosswind (wind flowing perpendicular to the rtavel of the aircraft) for other runways exceeds 15 knots, exceeds aircraft operating limits, or unsafe conditions preclude the use of other runways, Runway 35 is not used for turbojet or turboprop departures.

• Unless otherwise directed by the ATCT, nonturbo-type aircraft making a left turn from Runway 8 are requested to delay their turn until the east field boundary.

• Between 9 p.m. and 7 a.m., all aircraft departing Runway 8 are issued a right turn, weather permitting.

• From 7 a.m. to 9 p.m. crews of jet aircraft departing Runway 8, turning left, should delay starting the turn until 13.5 DME from the Albuquerque VORTAC. This procedure is only used when the cloud ceiling is 5,000 feet MSL and visibility is greater than seven miles.</td></tr>
</table>

	Additional Neighborhood Noise Mitigation: Los Angeles World Airports has also allocated airport revenues for grants to local jurisdictions so they can acquire and recycle incompatible residential property into more compatible uses and conduct further residential soundproofing. For example, $49.5 million in grants have been dedicated to the neighboring City of Inglewood under this noise mitigation program. Other jurisdictions that have received funds include unincorporated areas of Los Angeles County adjacent to LAX. **Noise Hotline:** LAWA has a 24-hour noise incident reporting hotline staffed by operations personnel who respond quickly to calls and seek solutions to curb noise levels.	
Community Participation	**Community Roundtable on Noise.** The Southern California Community Roundtable on noise was established in 1998 through a partnership with the Federal Aviation Administration to address community noise concerns. The Community Roundtable includes FAA officials, airport officials, members of the community, elected officials and aviation user groups who meet to identify noise concerns and develop solutions. An accomplishment of the Roundtable has been the reduction of commercial aircraft flights over the Palos Verdes Peninsula and other communities.	

Public Comments

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

ABQ SUNPORT

Name: Robert Sharp
1901 Quail Run Rd. NE
Albuquerque NM 87122
PH: 505-797-4771
Please print neatly

Date: June 13, 2000 Time: 6:00-8:00 p.m.

Place: Cesar Chavez Community Center

First; Thanks for the opportunity to pass on my comments to the airport development plan. I have listed several comments by section on this form and the attached sheets.

A. North-South Runway: Presently this runway is only used during some wind and weather conditions and for some light/commuter aircraft operations to expedite traffic handling. It was formerly used more extensively, and would be currently except for noise protests by a very small group of residents living on the airport near north side.

During summer months, thunderstorms are frequent in the ABQ area which can result in strong wind shear and low ceiling-visibility conditions in sections of the airport and nearby traffic areas. Closures of the W & SW

Mail to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063 FAX: (816) 524-2575

ends of the airport have occurred during which takeoffs were made on RWY 17 and Landings made on RWY 26. Storms on The east end can also occur resulting in only the west areas being open. On rare occasions, strong N-S winds occur which render all runways except 17-35 unuseable.

On this June 4 in The afternoon, strong NW winds with wind shear conditions existed. The Tower directed most Traffic To land on RWY 3. RWY 35 would have been a safer and more prudent choice, except possibly for The ILS and landing light aids available on RWY 3. I requested and utilized RWY 30 in my Bonanza, however This runway is Too short for the larger aircraft.

B. Airport Terminal: In your 1994 development plan, several options for terminal building expansion were presented. I would reccommend expanding This building To The west or northwest. This would allow RWY 17 and The adjacent taxiways To remain open and useable. This enhances the safety of nearby residents and aircraft experiencing emergencies in the nearby north airport area.

Also ABQ is located in The only nearby flat-Level area which is close to city transportation and other facilities. Do not undertake any construction projects which reduce or block access to this unique and valuable public domain. Remember the flaming DC-10 crash at Iowa City, IA. Keep This airport as open, as available, and as safe as possible.

C. Long Term Planning: I forsee Two major aspects needed for Long Term growth and planning for ABQ. One is The addition of a parallel E-W runway. The other is a zoning and land purchase project north of the present N-S runway area.

Presently takeoff and landing traffic gets crowded during the busy morning and afternoon-evening hours. Use of RWY 17 could relieve some of this crowding for Takeoffs as it formerly did prior to it's present restricted usage. However most airline traffic now lines up for RW 8 takeoff due to the terminal building proximity, the short taxi distance, and reduced taxi fuel useage. Most takeoffs and landings use RWY 8 and with some wind conditions RWY 26. Takeoff waiting times currently can run for 10 minutes or longer, even in good weather conditions.

An additional parallel E-W runway would be useful now and will be neccessary in about 10 years. It would be preferable to have about 2500 ft spacing between these runways, however due to terrain dropoffs south of the airport and possibly Kirtland AFB facilities this does not appear to be practical.

A 11,500 runway (incl. overruns) could be constructed approximately 1200 FT. south of the present runway on mostly level ground and requiring only removal of pad 1&2 and relocating the gun butts at Kirtland. The west end of this runway could be located approximately 1500' west of the present RWY 8-26 overrun. This runway location would be about 500' south of Taxiway E. This would not allow parallel approach IFR separation standards. However visual and sidestep approaches could be conducted. The east end would be near Taxiway E9. Further eastward extension would require a lot of landfill. Fortunately ABQ has enough good weather to make this runway location a useful and viable future plan.

The second long term planning action required is to extend a safety and airport noise area north of the runway 17 approach area. Currently a golf course which is approximately 1/4 mi. wide and 1/2 mi long does this to a significant extent.

Louisville, KY has tackled this problem by buying a residential area which was subject to noise as I understand it. Albuquerque could do something similar to save and enhance safety for a valuable public airport facility.

The city of Albuquerque could purchase areas of affected housing just north of the golf course. The present 17-35 runway would cost roughly $60 million to build anew. This money could buy roughly 400 homes in the affected noise area while greatly enhancing airport utility and slightly improving safety.

A more cost effective solution would be to buy property in a roughly half square mile area near the north end of the golf course. By offering about 10% over appraised value, property could be obtained and then resold below appraised value with a covenant stipulation stating that this is an airport noise area and that noise is an acceptable condition for utilizing this property. I would estimate that this would solve the great majority of noise problems at a total cost of $10 to 12 million dollars.

D. Taxiway Confusion: Presently a large area of concrete exists at the intersections of taxiways C, F and G. This is coupled with signs and hold short lines for the three nearby intersecting runways, and the taxiway ID signs. Airliners are probably less bothered in this area since they don't enter/exit the general aviation area and their cockpits are high above ground level to provide better visibility. It is a different and confusing cluttered area for general aviation pilots. At night the area is tripley confusing.

I don't have a suggested solution for this area, but it does need some careful thought.

E. Summary: The airport is a valuable and rare flat land facility serving the Albuquerque area. This area needs to be preserved. It is in danger from noise complaints made be a few homeowners living on the near north side. These people have been very vocal, but they have little or no interest in airport safety, utility or the public need served by the airport.

Terminal building expansion can be done to the west or Northwest using options outlined in the 1993/4 plan or other more distant locations not proposed. Terminals can be built almost anywhere. Runways need flat surfaces. Keep the N-S runway intact and take appropriate zoning actions to get people out from under the north approach/departure path area.

Use of the N-S runway would relieve much of the crowding which exists at present and which was created by closing this runway to most operations. There are some weather conditions where N-S runway use is absolutly essential for safety and keeping the airport open. It could also be a significant factor in keeping Kirtland AFB open in the future.

Future airport growth will require another E-W runway for which planning should be started now. The cost in todays dollars is estimated to be approximately $70 million for a 11,500 ft runway including overruns. Again, noise zoning and property purchase north of the N-S runway area could restore traffic handling capacity and flexibility for many years at a fraction of this cost.

Prepared by
Robert L. Sharp
B.S. Aero Engr. Purdue Univ.
ATP, CFII, Retired USAF Pilot
Former McDonnell Douglas Test Pilot
Former Corporate Pilot, Current
General Aviation Pilot & Test Pilot
Ph (505) 797-4771

Date: Wed, 14 Jun 2000 22:14:24 -0500
To: comments@coffmanassociates.com
From: flegel@att.net (Roger Flegel)
Subject: Study Comments

Below is the result of your feedback form. It was submitted by
Roger Flegel (flegel@att.net) on Wednesday, June 14, 2000 at 22:14:24

---

http_referrer: http://www.coffmanassociates.com/newspress/articlelist.cgi?sec=m_NM&subsec=Albuquerque&sort=seq&showarticle=all&template=study.html&header=h

ip_address: 12.74.1.161

organization: Retired

address: 605 Valencia NE

city: Albuquerque

state: New Mexico

date: 14 June 2000

zip: 87108

studyname: Albuquerque International Sunport

comment: The airport is an "international airport and as such we are optomistic that someday their will be a regular flight to Mexico. What is lacking in the present airport is passanger information signs in Spanish. We call it "international" but we don't make it feel "international" and a few signs would do that. Such signs would also make the airport more attractive and set a better example to prospective airlines from Mexico; here we are trying to get them to travel to our city and we don't even give them directions at our airport in their language. I would also suggest that informational signs around the airport and even on the interstate include distances in kilometers.

Date: Tue, 27 Jun 2000 22:14:53 -0500
To: comments@coffmanassociates.com
From: flegel@att.net (Roger Flegel)
Subject: Study Comments

Below is the result of your feedback form. It was submitted by
Roger Flegel (flegel@att.net) on Tuesday, June 27, 2000 at 22:14:53

---

http_referrer: http://www.coffmanassociates.com/main.html

ip_address: 12.74.1.132

organization: Retired

address: 605 Valencai NE

city: Albuquerque

state: NM

date: 28 June 2000

zip: 87108

studyname: Albuquerque Airport Master Plan

comment: Presently the "Arrivals" lane exits into Yale and Girard but the "Departures" lane exits only into Yale. It would help the traffic ventilation if both lanes could exit into Girard as well as Yale.

At present the arrival and departure areas are a mess with people loading and unloading 4 and 5 cars abreast. I was recently in Albany NY where they offer one half hour free parking for that purpose. It seems to work.

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

ABQ SUNPORT

Name: Blair Brown

Date: June 13, 2000 Time: 6:00-8:00 p.m.

Place: Cesar Chavez Community Center

Please print neatly

- It seems that alot of emphasis is placed on providing more + more parking. A better plan would be to implement systems like Park + Ride from other locations, better mass transit to the airport etc to encourage people not to drive + park.
- In planning for ~~new~~ enlarged or possibly new terminals, I would not like to see any plans to move the airport to another location. I would also be against moving Air Cargo to Double Eagle.
- Growth should not be based on 'generally accepted' amounts for population growth. Many believe that the constraints of water ~~[illegible]~~ availability will cause growth to be a good bit less.
- Is there a constraint on operations caused by only using small planes. If so, steps to include larger aircraft (767's + the like) could be looked at.

B

Mail to:

COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063 FAX: (816) 524-2575

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

Name: Susan Gorman

Date: June 13, 2000 Time: 6:00-8:00 p.m.

Place: Cesar Chavez Community Center

Please print neatly

- There must be less emphasis on building endless car parking facilities and more on providing transit alternatives.
- Keep the great art works!

Mail to:

COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063 FAX: (816) 524-2575

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

Name: Kenneth Ingham Date: Sept. 14, 2000 Time: 6:00-8:00 p.m.

1601 Rita Dr. NE, Albuquerque NM 87106 Place: Bandelier Elementary School Cafeteria

Please print neatly

For Safety reasons, Runway 17 needs to not be closed. I am a pilot and there are a few days a year when it is the only runway where I could make a safe landing.

It is also important to me that general aviation remain viable and affordable at International. The future of Coronado is unsure, and limiting Albuquerque to only Double Eagle and International would make life difficult for many pilots.

Mail to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063 FAX: (816) 524-2575

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

ABQ SUNPORT

22

Name: STEPHEN VERCHINSKI
2700 ESPANOLA NE
ALBUQUERQUE, N.M. 87110
Please print neatly

Date: June ~~13~~, 2000 Time: ~~6:00-8:00~~ p.m.
Place: Cesar Chavez Community Center

NEW MEXICO ECONOMIC DEVELOPMENT DEPARTMENT NOTED THAT QUALITY OF LIFE FOR NEW MEXICANS INVOLVE A QUALITY PHYSICAL INFRASTRUCTURE AND ENHANCEMENT OF QUALITY OF LIFE FOR ALL NEW MEXICANS OR BUSINESS WILL GO ELSEWHERE.

- THE METRO AREA IS FAST APPROACHING AIR QUALITY LIMITS. MOVEMENT OF PEOPLE IN + OUT OF THE METRO AREA DAILY IS A CONCERN. IT IS ESTIMATED THAT IF THE SUNPORT → ALBUQ. DOWNTOWN → SANTA FE COMMUTER RAIL LINE IS BUILT IT WOULD BE ONE OF THE MOST COST EFFECTIVE IN THE U.S.

  SUNPORT MASTER PLAN MUST BRING THE TRAIN INTO THE MAIN TERMINAL OR WITHIN WALKING DISTANCE. PREFERABLY ANY FUTURE TRANSPORT MUST INCLUDE SEAMLESS AUTOMATIC TRANSFER OF BAGGAGE AND AIR FREIGHT TO RAIL. (IF U.P.S. CAN DO IT —)

- DEEMPHASIZE AUTO RENTALS IN CONJUNCTION WITH THE ABOVE

- ANY FUTURE PLAN SHOULD CONSIDER A PEOPLE MOVER LOOP (RAYTHEON P.R.T 2000 OR SIMILAR) w/ KAFB/LOVELACE — SUNPORT — MESA DEL SOL. w LINK TO COMMUTER RAIL + CITY BUS SYSTEM — INTEGRATED TRANSIT

- FINALLY COORDINATE w/ CITY BIKE ~~[illegible]~~ LANES + TRAILS IN + OUT OF THE AIRPORT BIKE LOCKERS FOR AIRPORT PERSONNEL 10% + SHOWERS + CHANGING LOCKERS

- STILL ADD A PLACE TO DROP OFF + REUSE BIKE SHIPPING BOXES

Mail to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063 FAX: (816) 524-2575

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

ABQ INTERNATIONAL SUNPORT

Name: RICHARD WILLSON   Date: Sept. 14, 2000   Time: 6:00-8:00 p.m.

WILLSON + WILLSON ARCHITECTS. Place: Bandelier Elementary School Cafeteria

Please print neatly 266-8944.

SEVERAL AIRPLANE VIEWING AREAS SHOULD BE INCORPORATED INTO THE PLAN. THE ~~A~~VIEWING AREA AT THE OLD AIRPORT POST OFFICE WAS USED BY HUNDREDS OF PEOPLE. PARENTS & CHILDREN SPENT MANY HOURS AT THAT FACILITY. I THINK THE CITY IS MISSING OUT ON A GREAT WAY ~~PROMOTIONAL~~ TO PROMOTE THE AIRPORT.

Mail to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063   FAX: (816) 524-2575

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

ABQ INTERNATIONAL SUNPORT

Name: Robert Sharp

Date: Sept. 14, 2000 Time: 6:00-8:00 p.m.

Place: Bandelier Elementary School Cafeteria

Please print neatly

Airport is becoming crowded now at busy times of the day with aircraft lined up for landings and takeoffs. It will continue to get worse with future increasing traffic.

Keep the N-S runway open & build any terminal building expansion to the west or in other areas. The rental car area is in a poor area which could be used for a a 2nd E-W runway in the future.

The N-S runway could be used now (as it has been in the past) to facilitate traffic handling and reduce delays.

Mail to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063 FAX: (816) 524-2575

Date: Thu, 14 Dec 2000 11:42:55 -0600
To: comments@coffmanassociates.com
From: sverch@uswest.net (Stephen Verchinski)
Subject: Study Comments

Below is the result of your feedback form. It was submitted by
Stephen Verchinski (sverch@uswest.net) on Thursday, December 14, 2000 at 11:42:54

----

http_referrer: http://www.coffmanassociates.com/newspress/articlelist.cgi?sec=m_NM&subsec=Albuquerque&sort=seq&showarticle=all&template=study.html&header=h

ip_address: 216.161.47.128

organization: Sierra Club Land Use and Planning Committee

address: 2700 Espanola NE

city: Albuquerque

state: NM

date: 12/2000

zip: 87110-3521

studyname: Albuquerque Master Plan

comment: This study does not move the issue of future airport rail connections to downtown Albuquerque and on to Santa Fe.

The need for doing this is to secure in this portion of planning the ROW needed to make the connection as well as
logical integration into the design of the airport facilities for seamless transfers.

Every major city worth it's salt is now making these connections after the fact. This connection was recommended
during the rail studies done in this state by NMSHTD. Mr.
Friedman of the rail section. Please see to it that this study brings in this feature both for securing the access
ROW from the Burlington Northern Main Line and facility design. Thank YOU!

PS would also like to see parking eliminated off the upper deck of the parking structure and elimination of out of scale foreground items that keep people from seeing an 180 degree view from the building northward.
Also there is little discussion of the need for long term secured bike parking for workerstravelers coming from different areas of the city and designed safe routes in and out of the terminals. Also need area for storage of bike boxes for transport and recycling.

To: sverch@uswest.net
From: Coffman Associates <coffman@kcnet.com>
Subject: Study Comments
Cc:
Bcc:
Attached:

Dear Mr. Verchinski:

We are in receipt of your comments regarding the Albuquerque Master Plan study. Thank you for taking the time to comment. We appreciate your thoughts. We will take your comments under advisement for the study.

Thank you very much.

Happy Holidays to you.

Coffman Associates
si

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

Name: Alan Marks
740 Valley High SW

Date: April 19, 2001 Time: 6:00-8:00 p.m.

Place: Loma Linda Community Center

Please print neatly

1) The huge increase in demand really makes me think we should be considering a regional airport somewhere

2) The fact that air cargo is so offensive in terms of

a) the way they fly

b) the planes they fly

c) the hours they fly

suggest that we look for an alternative airport for them.

3) The fact that there is open space south suggests we consider the expensive option of expanding 17-35 south into the arroyo.

Alan Marks

Mail to:

COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063 FAX: (816) 524-2575
www.coffmanassociates.com

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

ABQ SUNPORT

Name: Stefan A. Verchinski
2700 Espanola St. NE
Albuquerque, NM 87110-3521

Date: April 19, 2001 Time: 6:00-8:00 p.m.

Place: Loma Linda Community Center

Please print neatly

I FIND IT PROBLEMATIC THAT SUNPORT DID NOT WORK ACTIVLY TO RESERVE AND PRESERVE A RAIL CORRIDOR FOR COMMUTER RAIL FROM SUNPORT TO DOWNTOWN ALBUQUERQUE. CONSIDERING NEW PREDICTIONS ON OIL SUPPLIES AND DEMAND FOR 2010 AND BEYOND (CALL ME FOR REPORTS) I FEEL SUNPORT IS PLACING TOO MUCH STOCK IN AN LRT EXTENSION FROM CENTRAL. CONSIDERING HOW OTHER MID SIZED AIRPORTS ARE MAKING DIRECT RAIL CONNECTIONS THROUGHOUT THE U.S., SUNPORT NEEDS TO PLAN FOR THIS. OUR TOURISM ~~ECONONOMY~~ ECONOMY DEPENDS ON IT, SO – 1 PRESERVE A COMMUTER RAIL CORRIDOR TO SUNPORT AS PART OF THE MASTER PLAN TO BE INTEGRAL TO THE BUILDING.

2 GET TOGETHER WITH THE GREATER ALBUQ TRAILS ADVISORY COMMITTEE AND GREATER ALBUQ. BIKE ADVISORY TO PLAN: 2A BIKE LANES AND TRAILS TO SUNPORT FROM ALL MAJOR COMPASS DIRECTIONS (S, SW, W, NW, N, NE, E)

2B PLAN FOR 10% BIKE STORAGE PARKING AND EMPLOYEE SHOWER/CHANGING FACILITIES 2C PLAN FOR BIKE BOX STORAGE FOR PASSENGERS ARRIVING AND DEPARTING – INCLUDE AN AREA FOR BIKE DISASSEMBLY/ASSEMBLY

Mail to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063 FAX: (816) 524-2575
www.coffmanassociates.com

Date: Fri, 27 Jul 2001 08:16:03 -0500
From: Coffman Associates <coffman@kcnet.com>
Subject: Fwd: Study Comments
X-Sender: coffman@mail.kcnet.com
To: stevebenson@coffmanassociates.com
Cc: chrish@coffmanassociates.com, sdc@coffmanassociates.com
X-Mailer: QUALCOMM Windows Eudora Pro Version 4.2.0.58

> Date: Thu, 26 Jul 2001 14:53:10 -0500
> To: comments@coffmanassociates.com
> From: n1714dog@earthlink.net (Ed Tilgner)
> Subject: Study Comments
>
> Below is the result of your feedback form. It was submitted by
> Ed Tilgner (n1714dog@earthlink.net) on Thursday, July 26, 2001 at 14:53:10
> ---
>
> http_referrer: http://www.coffmanassociates.com/main.html
>
> ip_address: 63.20.119.130
>
> organization: self
>
> address: 2827Prenda De Oro NW
>
> city: Albuquerque
>
> state: NM
>
> date: 07/26/01
>
> zip: 87120
>
> studyname: ABQ master plan
>
> comment: I attened you informational meeting last evening in ABQ. It was most interesting. I liked some of your diagrams and asked the people doing the presentation how to get them. I was told to go to you site. The problem is I'm not computer savy enough to find or get the diagrams I'm interested in.
> HELP, HELP, PLEASE Ed Tilgner
>
> ---

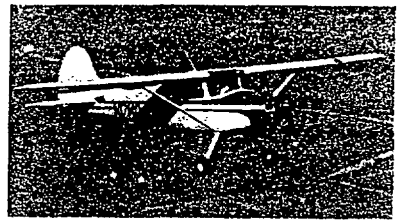
| --

Reply-To: "Ed Tilgner" <n1714dog@earthlink.net>
From: "Ed Tilgner" <n1714dog@earthlink.net>
To: "Coffman Associates" <coffman@kcnet.com>
Subject: Re: ABQ Study Comments
Date: Fri, 27 Jul 2001 11:08:40 -0600
X-Mailer: Microsoft Outlook Express 5.00.2314.1300
X-MimeOLE: Produced By Microsoft MimeOLE V5.00.2314.1300

I would very much like to have the graphics for the 17 / 35 runway issue, and the new terminal proposals. If you'd mail them to the Prenda De Oro address I'd be most indebted.
Thanks
Ed.T.

----- Original Message -----
From: Coffman Associates <coffman@kcnet.com>
To: <n1714dog@earthlink.net>
Cc: <dparker@cabq.gov>; <msantiago@cabq.gov>
Sent: Friday, July 27, 2001 8:46 AM
Subject: ABQ Study Comments

> Dear Mr. Tilgner:
> We are in receipt of your Study Comments from our web site. We are
> pleased that you enjoyed the meeting in Albuquerque. We would be happy to
> send you through regular mail the graphics that you would like. Please
> email us back and tell us which graphics you would like to receive and we
> will mail them to you at the address you listed: 2827 Prenda De Oro NW,
> Albuquerque, NM 87120.
> Thank you.
> Coffman Associates, Inc.
> si



Ed Tilgner Airman Certificate # 357656
2827 Prenda De Oro NW-Albuquerque, NM 87120-1365
Phone (505) 833-1181 E-Mail N1714dog@earthlink.net

August 5, 2001

Mr. Christopher M. Hugunin, C.M.
Senior Planner
Coffman Associates
237 N.W. Blue Parkway,
Suite 100
Lee's Summit, MO 64063

Dear Mr. Hugunin,
I received your packet yesterday August 3. I thank you much for the graphics of the new terminal proposals.

I can fly a ILS approach in a hail storm, however I must confess I can't for the life of me make the computer retrieve the 17 / 35 graphics per your instructions. I would muchly appreciate it if you would simply mail the graphics, like you did the terminal plans.

I'm enclosing $5.00 to cover your mailing costs.

Best Regards,

Ed Tilgner

Coffman Associates
Airport Consultants
www.coffmanassociates.com

August 10, 2001

Mr. Ed Tilgner
2827 Prenda De Oro, NW
Albuquerque, New Mexico 87120-1365

Dear Mr. Tilgner:

Enclosed please find printed copies of the Runway 17-35 alternatives for Albuquerque International Sunport. I apologize for any problems you may be having with retrieving these from our web site.

As always, please call if we can be of assistance. I am returning the $5.00 you sent.

Sincerely,

Christopher M. Hugunin, C.M.
Senior Planner

C. Steve Benson
Dennis Parker
Maggie Santiago

Kansas City • Phoenix
237 N.W. Blue Parkway, Suite 100, Lee's Summit, MO 64063
816-524-3500 • FAX 524-2575

Reply-To: "Ed Tilgner" <n1714dog@earthlink.net>
From: "Ed Tilgner" <n1714dog@earthlink.net>
To: "Coffman Associates" <coffman@kcnet.com>
Subject: Terminal and 17-35 Graphics
Date: Mon, 13 Aug 2001 11:00:21 -0600
X-Mailer: Microsoft Outlook Express 5.00.2314.1300
X-MimeOLE: Produced By Microsoft MimeOLE V5.00.2314.1300

Atten; Christopher M. Hugunin,

I Recieved the 17-35 graphics this morning, I want to thank you for being so understanding of a computer illiterate.
Again thank you.

Ed Tilgner, ABQ

Date: Fri, 27 Jul 2001 10:21:32 -0500
To: comments@coffmanassociates.com
From: dhadwiger@cabq.gov (David Hadwiger)
Subject: Study Comments

Below is the result of your feedback form. It was submitted by
David Hadwiger (dhadwiger@cabq.gov) on Friday, July 27, 2001 at 10:21:32

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http_referrer: http://www.coffmanassociates.com/main.html

ip_address: 143.120.119.107

organization: Council Services

address: City Hall

city: Albuquerque

state: NM

date: 7/27/01

zip: 87103

studyname: Albuquerque International Sunport Master Plan Upda

comment: I just wanted to share two comments and request one piece of information.

First is a technical comment. Exhibits III-4-C and III-4-D are switched, I think. The text on page III-4-9 indicates that III-4-C should depict an alternative runway with 4,300 feet separation, but the exhibit shows 1,200 feet.

Second, in Chapter Four, the text repeatedly refers to "the planned Regional Light Rail Transit", which appears to come to the Sunport from Central on Girard. This text does not accurately reflect the current status of planning on high capacity transit. First, the current "plan" is in a preliminary draft stage and has not yet been made public or adopted by the Council and Mayor. So it should not be referred to as "planned" but rather "possible". Second, this plan, Middle Rio Grande Connections, does not assume that light rail will be the alternative selected. The Transit Department director indicates that the leading alternative at this time is a rapid bus technology. Third, the plan does not recommend a route to the Sunport, but includes this only as a secondary option. Fourth, the route that is recommended in the study would run on Yale and University. If this is going to be a factor in the Master Plan, you might want to incorporate a map or other discussion of the o!
ption. This is really just for the sake of accuracy. If you look at the Middle Rio Grande recommendation and find that their plan does not integrate well into your ultimate recommendation, this might also be a finding of the Master Plan. (I don't think anyone is wed to the current route structures.)

Finally, could you provide me the following information on the closure of runway 17-35. What are the specific concerns from Southwest Airlines and the general aviation contractor regarding this runway? It is my understanding that Jay Czar and you will continue to work with these groups to address their concerns within the context of the recommended alternative(s). Please keep me posted on how the plan addresses these concerns over time.

Date: Thu, 26 Jul 2001 16:57:04 -0500
To: comments@coffmanassociates.com
From: bblairb2@aol.com (Blair Brown)
Subject: Study Comments

Below is the result of your feedback form. It was submitted by
Blair Brown (bblairb2@aol.com) on Thursday, July 26, 2001 at 16:57:04

----

http_referrer:
http://www.coffmanassociates.com/newspress/articlelist.cgi?sec=m_NM&subsec=Albuquerque&sort=seq&showarticle=all&template=study.html&header=head.html&footer=foot.html

ip_address: 204.134.5.71

organization: Interested Citizen

address: 2226B Wyoming NE #272

city: Albuquerque

state: NM

date: 7/26/01

zip: 87112

studyname: Albuquerque Sunport

comment: Your links to Appendix B and C don't work.

To: bblairb2@aol.com (Blair Brown)
From: Coffman Associates <coffman@kcnet.com>
Subject: Re: Study Comments
Cc: dparker@cabq.gov, msantiago@cabq.gov
Bcc: stevebenson@coffmanassociates.com, chrish@coffmanassociates.com, sdc@coffmanassociates.com
Attached:

Dear Blair Brown:
Just a note to let you know that we are putting three graphics in the mail to you today that you requested and that we hope you will find useful.
Thank you for your time.
Coffman Associates, Inc.
si

At 04:51 PM 7/26/01 -0500, you wrote:
Below is the result of your feedback form. It was submitted by
Blair Brown (bblairb2@aol.com) on Thursday, July 26, 2001 at 16:51:30
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http_referrer:
http://www.coffmanassociates.com/newspress/articlelist.cgi?sec=m_NM&subsec=Albuquerque&sort=seq&showarticle=all&template=study.html&header=head.html&footer=foot.html

ip_address: 204.134.5.71

organization: Interested Citizen

address: 2226B Wyoming NE #272

city: Albuquerque

state: NM

date: 7/26/01

zip: 87112

studyname: Albuquerque Sunport

comment: I attended the meeting in ABQ last night. You had boards with: 1. the reasons to close runway 17-35, 2. the alternative actions that can take place (especially the short term ones), 3. Projections of airport activities (enplanements).
In which of the chapters can I view this info, hopefully with more detail and support for the Projections. I didn't want to start downloading the huge .pdf files if they weren't going to get me the info I needed.
Thanks

PS-presenting this kind of info in huge .pdf files is not a very user friendly way to get the info out

----

Coffman Associates
Airport Consultants
www.coffmanassociates.com

July 30, 2001

Blair Brown
2226B Wyoming NE, #272
Albuquerque, NM 87112

Enclosed please find copies of the Albuquerque International Sunport graphics you requested through our web page on July 26, 2001. Please note that information concerning the closure of Runway 17-35 can be found in Chapter Three - Airfield, Section Four - Alternatives. The alternative actions that can take place are found in Chapter Three, Section Four; Chapter Four, Section Four; Chapter Five, Section Three; and Chapter Six, Section Three. Airport activity projections are in Chapter Two. These chapters can be found at www.coffmanassociates.com.

Thank you.

Sincerely,

Steven G. Benson
Principal

cmh:sgb:si

Enclosures

Kansas City • Phoenix
237 N.W. Blue Parkway, Suite 100, Lee's Summit, MO 64063
816-524-3500 • FAX 524-2575

B. Blair Brown

2226B Wyoming NE, Suite 272
Albuquerque, NM 87112 USA

Tel: 505-259-7190
E-mail: bblairb2@aol.com

August 6, 2001

Coffman Associates, Inc.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063

Greetings,

Following are my comments on the Airport Master Plan for the Albuquerque Sunport.

1. I am very concerned about what I perceived as a rush to close runway 17-35 and would urge you and all the planners to consider this VERY CAREFULLY. My observations are the following:
   - First and foremost is the safety issue. In times of stiff winds from the North or South, which are not infrequent, I am not convinced that 3-21 is always a viable alternative and not comfortable knowing that there is no 17-35, even if used only occasionally.
   - In talking with a number of your associates, I came away with the feeling that the decision to close 17-35 had already been made and these meetings were just a forum to sell it. The 'I've already made up my mind; don't bother me with the facts' attitude was quite evident.
   - Most of the items under 'Considerations for Closing Runway 17-35 may be true to some degree, but by your own numbers, they would only apply for limited periods of time, and again their existence would, in my view, be acceptable
   - In addition, the items under 'Considerations for Closing Runway 17-35', Increased Safey and AirField Capacity' aren't valid reasons because they aren't alternatives that can happen at the same time. If 17-35 is needed because of wind conditions, you won't be operating on the other runways and the results are due to the winds and not the existence of 17-35.
   - Cost is not a reason to close 17-35. If it costs $27 Million to rehabilitate 17-35 to maintain safe operations, I say it's worth it.
   - The statement suggesting a threat of 'Likely increase in airport fees....' was not justified anywhere and without justification is just cheap scare tactics.
   - Under 'Limited Wind Coverage' planning to divert planes to Double Eagle is unacceptable. (see my comments in #3 below).
   - I realize there is some pressure from residents who live North of the airport to close 17-35, mostly for noise reasons. I feel their views are should be given little or no weight, as most knew there was an airport there when they moved.

2. I would oppose any plan to consider a new location for the airport.
   - Your own estimates anticipate that the current location will be adequate well into the future.
   - The alternative locations to the West, East and South aren't really valid alternatives, due to Native American concerns, proximity to cultural resources (Petroglyph National Monument and the volcanoes) and access constraints (snow and auto accidents close Tijeras Canyon at frequent intervals)

3. I would oppose any plan that would anticipate any increases in operations at Double Eagle Airport, due to proximity to cultural resources (Petroglyph National Monument and the volcanoes).

4. You have indicated (properly) that any expansion decisions will be based on levels of operations and not on calendar dates and that any dates presented are only your 'best guess' as to when the events might occur.

5. I question the forecasts of operations used in the study and feel they anticipate more growth in population than will occur. From what I could learn at the meeting, you have used population growth figures from University of New Mexico, the Middle Rio Grande Council of Governments and other such organizations, which are based on extrapolations of past growth and don't adequately recognize the realities that the Albuquerque area faces in the future, most notably the shortage of water. Not recognizing these realities may cause expansion plans to be undertaken earlier or of greater size than turn out to be needed.

I appreciate the opportunity to comment on this project. Please let me know when upcoming events will occur.

Sincerely,

Blair

B. Blair Brown

To: stevebenson@coffmanassociates.com
X-Mailer: Lotus Notes Release 5.0.1 July 16, 1999
From: DParker@cabq.gov
Date: Tue, 14 Aug 2001 11:44:27 -0600
Subject: FYI Copy of Letter to Jay
X-MIMETrack: Serialize by Router on mariposa/CABQ(Release 5.0.6a |January 17, 2001)
at
08/14/2001 11:44:30 AM

----- Forwarded by Dennis A. Parker/AVIATION/CABQ on 08/14/01 11:44 -----

James D. Hinde
08/10/01 09:49

To: Dennis A. Parker/AVIATION/CABQ@COA
cc:
Subject: FYI Copy of Letter to Jay

Thought you'd want to see this.
(Embedded image moved to file: pic19507.pcx)
----- Forwarded by James D. Hinde/AVIATION/CABQ on 08/10/01 10:00 AM -----

"Scott Atchison" <aerowest@spinn.net>
08/08/01 05:35 PM

To: "Don Taylor" <dont@eclipseaviation.com>, "Jack Harrington" <jackh@eclipseaviation.com>, "Mike Medley" <mmedley@cabq.gov>, "Jim Hinde" <jhinde@cabq.gov>
cc:
Subject: FYI Copy of Letter to Jay

Mr. Jay Czar
Director of Aviation
City of Albuquerque Aviation Dept.
P.O. Box 9022
Albuquerque, NM 87119

Tuesday, August 07, 2001

Dear Jay,

The enclosed document is a position paper related to the safety of the

flying
public, developed by the New Mexico Aviation Users Collation. Our
organization was created to
address all aviation issues concerning New Mexico pilots and New Mexico
businesses
that use our aviation facilities.

Before going forward with this safety issue to the national aviation
community, I would like to speak with you directly on the City's position
on
closing R 17/35. It is important that we consider all issues prior to any
public announcement. I would hope that you would make time in your
schedule
to meet with me, I can be reached at Aerowest 352-0292
to make arrangements.
Sincerely,
Scott Atchison
President
New Mexico Aviation Users Collation
(See attached file: NMAUC-1 (2).doc)

pic19507.pcx

NMAUC-1 (2).doc

New Mexico Aviation Users Coalition

Issue: Runway 17-35 closure at KABQ

NMAUC has become aware of an issue that is of great importance to the safety of the aviation community at large. NMAUC has learned of the impending closure of Runway 17-35, at the Albuquerque International Sunport. This action, proposed by the City of Albuquerque, is purportedly due to the high cost of runway repair, and the belief by the staff at the City of Albuquerque Aviation Department that the runway is no longer needed.

The New Mexico aviation community does not agree. The continued operation and availability of the runway is crucial to the safety of the flying public. Operators of all sizes of aircraft, from airlines to those in the General Aviation category, will state that to close the runway will create unsafe operating conditions at Albuquerque International Airport, in effect, reducing it's capability to ever become a truly international facility.

History tells us, as do the personal experiences of our flying members, there are numerous times when the winds blow directly from North or South. These winds are often in excess of 40 kts. Early in the development of the Albuquerque airport, it was apparent that the strongest prevailing winds were from the East or West with the next highest prevalence being north or south. Hence, runway 8-26 and runway 17-35 were built and became the most utilized runways at the airport. Over the years, largely because of noise complaints by a few homeowners in the Southeast Heights, runway 17-35 has become less and less utilized. In fact, the tower controllers have done such a good job of averting possible noise problems that many homeowners in the area are unaware of the runway's existence until its use is mandated by strong winds.

The City of Albuquerque directors of Aviation Department have realized several facts over the years.

1) The noise issues at the airport will not get better, they will only get worse.

2) The airport needs another independent air carrier qualified runway. Because runways 8-26 and runway 17-35 intersect, if one is closed because of a problem or accident, it could result in the closure of both runways, effectively closing the airport.

3) There will come a time when the terminal and the number of gates will have to be expanded to accommodate the growth of the city.

In an attempt to plan for these eventual needs, the Aviation Department has taken the following steps. They have developed a master plan through an outside contracted source. They update that plan to meet changing needs and they have taken steps to implement some of the requirements of the plan. Most notably they have totally rebuilt runway 3-21. It has been extended, widened and had an ILS installed. It is now a fully qualified air carrier runway. They have rebuilt every other runway at the airport with the exception of runway 17-35. They relocated the airport rental car return, off- site, to provide more available space in the immediate terminal area. They have held meetings to advise the public of their plan. They are currently in the process of updating the master plan, and the issue of the closure of runway 17-35 has again surfaced.

NMAUC feels very little has been done to solicit input from the actual users of the airport. General Aviation, Air Carrier and Military users should be notified and meetings should be held to gain from their knowledge and experience. We believe that the Aviation Department has decided on a plan and is working toward that end with little regard to the concerns of those who pilot the aircraft and use the airport.

We are of the opinion that the Aviation Department has purposely left runway 17-35 in a state of disrepair, in an attempt to make it appear more practical to close, than to repair. Perhaps there are political implications, which would benefit those in city government, should they be able to claim responsibility for an end to some of the noise issues. Closure of the runway would certainly earn votes in the Southeast Heights. The Aviation Department has decided the only logical room for expansion of the terminal complex necessitates the closure of runway 17-35. Due to the apparent political benefits, they see the expense of runway renovation repairs, coupled with the need for room, as a win, win situation.

The issue is **safety.** There are times when the wind blows straight down runway 17-35 at speeds from 40 to 60 kts. If landing on 17-35 is not allowed, the only viable alternative is 3-21. This creates a crosswind component, which exceeds the manufacturer's limits of almost all aircraft; these limits are imposed for safe operation of the aircraft. We have heard the statement, "aircraft which cannot land under these conditions should go to Double Eagle Airport." At times, the wind will exceed the limitations of the large air carriers. Can we deplane airline passengers at Double Eagle? Should lighter aircraft, which carry the leaders of our community, be forced to land at another airport, where they have no way of housing their aircraft or securing ground transportation? We all pay taxes and the use of federal funds requires that everyone be allowed to use the airport. Do we really want to close an International airport because of wind? Yes, there are severe weather problems and such conditions do at times close airports. However, we have a solution in place for this particular problem, and we can control it, but the Aviation Department proposes that we give it up.

There are those who would revel at the victory of eliminating excess noise from their neighborhoods. There are those who would stand with pride admiring the accomplishment of a new addition to the airport. But, none of them would want to be aboard an aircraft that dragged a wing tip on landing and cartwheeled into disaster due to excessive crosswind. Nor would they want to be held responsible for a decision that was made in poor judgement, and for all the wrong reasons.

We feel the city owes the public not only an efficient airport facility, but also the safest possible environment for all who use the airport. There must be alternatives to the current plan. Surely there is room for discussion and compromise. Runway 17-35 is needed to ensure the safety of everyone landing, taking off, and on the ground at the Albuquerque International Sunport.

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

ABQ INTERNATIONAL SUNPORT

Name: Mel Towner
4050 Smith Ave SE
Albuquerque, NM 87108
Please print neatly

Date: May 30, 2002 Time: 6:00-7:30 p.m.

Place: Cesar Chavez Community Center

No comments about noise (surprize?)

I do wonder where your projections for GA Hangar requirements were derived. You obviously are taking a no-growth position for individual GA hangar space. Please reconsider your position. With the recent closure of Coronado, demand is there.

Thank you.

[signature]

Mail to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063 FAX: (816) 524-2575
www.coffmanassociates.com

AIRPORT MASTER PLAN
PUBLIC INFORMATION WORKSHOP
MEETING COMMENT FORM

ABQ INTERNATIONAL SUNPORT

Name: Robert G. Henning   Date: May 30, 2002   Time: 6:00-7:30 p.m.

Sec/Treas Sky Runners T Hangars   Place: Cesar Chavez Community Center

Please print neatly

I see that the present proposal is to expand the freight terminal to the north thus requiring movement of the city maintenance facilities and both of the T Hangars. I cannot see where this is more economical than expanding the freight terminal to the south where there is nothing but vacant land. This part of the plan needs some rethinking. I was told that the move would be at no expence to the T hangars. The last time we had to move our T hangar it was at our expence. We spent $50,000.00 on the concrete pad and another $50,000.00 to move the hangar. Now it would probably total $200,000.00. I am also consorned about the safety of having the maintenance facility on the east side of 3-21. The vehicles would either have to cross 3-21 or go arround the south end of 3-21. I am an engineer. This part of the plan does not sound engineeringly sound. Please give some thought to modifying this part of the plan. Thank you,

Robert G. Henning

Mail to:
COFFMAN ASSOCIATES, INC.
237 N.W. Blue Parkway, Suite 100
Lee's Summit, MO 64063   FAX: (816) 524-2575
www.coffmanassociates.com

CONSULTANT RESPONSE TO MS. HELEN WRIGHT'S COMMENTS OF JUNE 18, 2002

Comments submitted by Ms. Wright, a member of the Advisory Committee are in bold. The Consultant response follows each comment.

This Master Plan Update lacks sufficient environmental goals and mitigation measures. When compared with the LAX Master Plan Update (see attached table), the ABQ plan looks decidedly anemic.

On page I-2 of the ABQ Master Plan, under the heading titled *Master Plan Objectives*, it reads: "The primary objective of the Albuquerque International Sunport Master Plan is to develop and maintain a financially feasible long-term development program which will satisfy aviation demand and be compatible with community development, other transportation modes, and the environment."

Perhaps a few comparisons of ABQ to LAX are necessary in order to understand the differences between the two airports and the Master Plans:

Passengers:
LAX handled 31.0 million enplaned passengers in 2001, down from 33.8 million in 2000.
ABQ handled 3.1 million passengers in 2001(down just slightly from 2000), a ten-fold difference.

The long term planning horizon anticipates up to 7.1 million annual enplaned passengers at ABQ. If this level of activity is achieved over the next twenty years, it will still be less than one quarter of the enplanements currently handled at LAX.

Operations:
LAX handled 738,679 aircraft operations in 2001.
ABQ handled 241,673 aircraft operations in 2001 for a three-fold difference.

In addition, over 720,000 of the LAX operations were by commercial airlines and air taxis, while just 122,000 of the ABQ operations were by commercial airlines and air taxis, a six-fold difference. The long term planning horizon at ABQ anticipates 345,400 annual operations, which would still be less than half the current activity at LAX. Commercial service activity is anticipated to 192,000 over the long term at ABQ. This is still nearly four-fold less than the existing operations at LAX.

Master Plan:

The LAX Master Plan began in October, 1994. This coincides with the completion of the previous Master Plan for ABQ. Since that time, most of the short term projects in the ABQ Master Plan were completed. After eight years, the LAX Master Plan is still ongoing with study costs now in excess of $23.0 million, more than ten times the total cost of the current and previous ABQ Master Plans combined.

ABQ should phase out older and noisier aircraft. It should institute and active Community Roundtable on Noise, with ample opportunity for public participation, to identify noise concerns and develop solutions.

Older and noisier commercial aircraft weighing over 75,000 pounds have already been phased out at ABQ and other U.S. Airports as of January 1, 2000 in accordance with federal law. While the Master Plan has evaluated the noise impacts of proposed development included in the Master Plan, it is not the purview of the Master Plan to recommend and establish airport noise policies. That is the purview of the airport's F.A.R. Part 150 Noise Compatibility Study.

The ABQ Master Plan Update includes the goal of developing active and productive involvement through the planning process. As an Advisory Committee member, I believe this goal was not met. The Master Plan Update Advisory Committee were informational in nature, with no opportunity for dialogue and discussion. The same concern applies to the public meetings at which plans were displayed.

Opinion noted. The Technical and Advisory Committees met five times during the course of the project, affording members the opportunity to provide input at each step along the way in the preparation of the Master Plan. Each meeting included a review of the working papers completed by the consultants, and allowed for discussion and comment from the committees. The same was available to the general public through public information workshops where citizens could talk one-on-one to the consultants and Aviation Department staff. The working papers were available for public review on the internet as well. As is evidenced by this Appendix, several written comments were received from the committee and the public as well.

I request that well-publicized public meetings be scheduled at which community members can engage in dialogue about the Update, particularly about environmental and noise abatement concerns.

The five public meetings were publicized and held in various public locations in the neighborhoods around the airport. The public had the opportunity at each meeting to discuss issues and concerns with not only the consultants but Aviation Department staff as well. In addition, the public will still be afforded additional opportunity to comment during the City approval process.

CONSULTANT RESPONSE TO AOPA LETTER OF AUGUST 8, 2001

RE: The proposed closure of Runway 17-35 at Albuquerque International Sunport.

Comments by Mr. Keith W. Holt, Manager of Aviation Policy, AOPA are in bold. The Consultant response follows each comment.:

However, we do not feel that general aviation interferes with air carrier or air cargo operations. We believe that as the airport continues to grow, general aviation must also be accommodated and not forced out.

The Master Plan is being developed to provide the most efficient and effective facilities for all types of aviation users, including general aviation. There is no plan of forcing any users out. The Aviation Department, however, will continue to strive to improve Double Eagle II as an attractive airport for general aviation.

Closing runway 17/35 will impact all airport operators and especially operators of general aviation aircraft. Light general aviation aircraft are limited by crosswinds more so than heavier jet aircraft. During the strong wind season, this runway provides for the safe takeoff and landing of light general aviation aircraft with 2.9 percent coverage for light aircraft as compared to 1.46 percent coverage for larger general aviation aircraft. The closure of this runway will affect the safety and utility of light general aviation activities at ABQ.

It is important to understand that the 1.18 percent additional coverage at 10.5 knots crosswinds and the 0.42 percent additional coverage at 13 knots provided by Runway 17-35 would assist no more than 800 general aviation operations each year. This does not even account for the fact that all the remaining runways are 150 feet wide. Since general aviation aircraft crosswind runway design is based upon 75-foot and 100-foot wide runways, the wider runways could assist in many of these operations. Alternatives for maintaining Runway 17-35 beyond the next few years would cost between $18 and $27 million in today's dollars. A maximum of 800 operations a year is far from adequate to justify this expense.

The FAA indicates that airports should be designed to provide 95 percent wind coverage. In fact, most airports around the country have lower wind coverages than ABQ would still have with its remaining three runway orientations. Therefore, ABQ would still provide a higher level of service than most airports.

AOPA members would never takeoff or land when crosswind conditions are unsafe. In fact, during those few times that crosswind conditions may be unsafe at ABQ, a north-south runway at Double Eagle II is available for use by enroute general aviation aircraft.

AOPA promotes airfield safety and the elimination of conditions that increase the potential for runway incursions. Having a north-south runway that intersects all three of the other runways, including two of them at a single point, is a condition that does not enhance safety at ABQ.

Runway 17/35 provides easy access both for general aviation and air carrier aircraft. Alternatives such as those presented in exhibits III-4-F and III-4-G while at a shorter runway length, would allow the utilization for general aviation when the winds favored that runway and maintain access to general aviation facilities. However, further examination on how those alternatives would impact the overall capacity of the airport should be explored. The best alternative would be maintaining the full runway so that it could be utilized in a larger capacity.

The Master Plan has examined runway length options for Runway 17-35, and has provided the analysis that points out that such options are not feasible, nor are they a solution to the problems associated with maintaining the runway.

There are presently noise abatement procedures in place that limit the use of Runway 17-35. The capacity of the airfield was extensively examined in the Master Plan. This analysis revealed that the more Runway 17-35 is used the more it negatively affects capacity. The least expensive alternatives for Runway 17-35 will cost between $18 million (GA only-Exhibit III-4-G) and $27 million (maintains the entire length). To maintain a north-south runway, in a manner that does not reduce capacity, would cost over $400 million dollars. This is simply not economically feasible.

There may also be environmental consequences to closing runway 17-35 and moving operations to the other primary runways, especially in regard to noise. Noise is an important factor that cannot be ignored. The closure of runway 17/35 will impact current noise contours. Limiting the amount of runways available will also affect how air traffic control (ATC) separates and sequences traffic, which will affect the size and shape of the noise contours.

Noise exposure levels included in all previous analyses have shown that the impacts are reduced by closure of the runway. With three other runways available, the loss of Runway 17-35 will not significantly increase the noise contours over noise sensitive areas. Since most noise complaints come from landing from and departures to the north on Runway 17-35, we expect that noise complaints will be reduced. This has been shown in both the 1993 Master Plan as well as in the FAR Part 150 Study. Increased use of Runway 17-35 would, however, decrease airfield capacity and increase the potential for runway incursions.

Chapter 6, Section Three offers alternatives to existing General Aviation Facilities. AOPA believes it is vital to maintain or enhance the general aviation services and facilities at the airport.

Consideration has been given to an alternative location for passenger terminal facilities that would cause the displacement of the existing general aviation area. AOPA stresses the importance of preserving general aviation facilities and services at any new location. These new facilities must be equal to or better than the current facilities at comparable and reasonable costs.

Alternative facility locations should have equal, if not greater space then what is currently available at the present facility. This should also include similar hangar and tie-down facilities to accommodate current general aviation tenants. Care should be taken to make certain that <u>no tenants are displaced</u> prior to providing the new facility if this alternative is implemented.
We urge you to take the appropriate steps to ensure that general aviation continues to be properly accommodated at ABQ.

All alternatives considered ensured that general aviation landside facilities will be maintained to at least the level they are available today. AOPA's interest in ABQ and this Master Plan is appreciated. The proposed plan was developed with the best interests of all parties in mind, so that ABQ can continue to serve its wide range of aviation users in a safe, convenient, and cost efficient manner, while respecting the environmental concerns of its neighbors.

RESPONSES TO COMMENTS BY THE NEW MEXICO AVIATION USERS COALITION E-MAIL OF AUGUST 7, 2001

RE: The proposed closure of Runway 17-35 at Albuquerque International Sunport.

New Mexico Aviation Users Coalition (NMUAC) comments in bold. The Consultant response follows each comment.

The continued operation and availability of the runway is crucial to the safety of the flying public.

The New Mexico Aviation Users Coalition (NMUAC) puts safety first. So does the Albuquerque International Sunport and its consultants. All should be proud of ABQ's stellar safety record. The recommendations to close Runway 17-35 are also interested in maintaining safety first.

One of the most important safety issues facing the nation's airports today is runway incursions. It is in the best interests of safety to eliminate runway and taxiway configurations that increase the potential for runway incursions. Intersections of multiple runways and taxiways is one of these configurations. At ABQ, Runway 17-35 intersects with Runways 12-30 and 3-21 at a single intersection. In addition, Runway 17-35 intersects with Runway 8-26. Anyone using Runway 17-35 must cross each of the other three runways at ABQ. This is the only such situation on the airfield. In fact, without Runway 17-35, the only runway intersection would be Runway3-21 with Runway 12-30, significantly reducing the potential for a runway incursion.

Given the diverse mix of aircraft at ABQ, as traffic continues to increase, the potential for incursions will increase. No one wishes to see a general aviation (GA) plane taking off on Runway 17-35 meet with a airline jet on Runway 8-26.

Operators of all sizes aircraft, from airlines to those in the General Aviation category, will state that to close the runway will create unsafe operating conditions at Albuquerque International Airport, in effect, reducing it's capability to ever become a truly international facility.

In the interest of safety, it is even more imperative that an international airport not be confusing to international pilots that use the airport. If ABQ is to see more international traffic in the future, three runway orientations will be less confusing than four. Likewise, it becomes even more imperative to minimize the potential for runway incursion.

History tells us, as do the personal experiences of our flying members, there are numerous times when the winds blow directly from the North to South. These winds are often in excess of 40 kts.

It is interesting to note that the statistical weather data collected by NOAA at its ABQ station over the last 10 years does not support the NMAUC members' experiences. There were 87,573 hourly wind speed/direction observations taken over the course of the ten years (1989-1998) and just ONE (1.0) observation was over 40 knots. That one observation was more along Runway 8-26 than Runway 17-35. In other words, the wind during that observation would have supported the use of every other runway at ABQ *EXCEPT* Runway 17-35.

At the next lower level of 34-40 knots, there were just 58 observations out of 87,573. That is 0.06 percent of the time. Even at that level, there were no observations that would favor the use of Runway 17-35 over one of the other runways.

Early in the development of the Albuquerque airport, it was apparent that the strongest prevailing winds were from the East or the West with the next highest prevalence being north or south. Hence runway 8-26 and runway 17-35 were built and became the most utilized runways at the airport. Over the years, largely because of noise complaints by a few homeowners in the Southeast Heights, runway 17-35 has become less and less utilized. In fact, the tower controllers have done such a good job of averting possible noise problems that many homeowners in the area are unaware of the runway's existence until its use is mandated by strong winds.

If wind was the only consideration, then Runways 8-26 and 17-35 do provide the best two-runway wind coverage. Unfortunately, Runway 17-35 intersects Runway 8-26, and the airport has over 230,000 operations a year. Runway 3-21 and Runway 12-30, in combination with Runway 8-26 provide the hourly capacity that the airport needs both today and well into the century. In fact, the less Runway 17-35 is used, the better the hourly airfield capacity. While providing higher operational capacity, those two runways combined with Runway 8-26 provide essentially the same wind coverage as Runways 17-35 with Runway 8-26.

The city of Albuquerque directors of Aviation Department have realized several facts over the years.

1) **The noise issues at the airport will not get better, they will only get worse.**

   That is why it is important to have a noise abatement plan in place. Flights to and from the north using Runway 17-35 do not help. Flights to and from the south may help noise abatement slightly, but to be truly effective, they would significantly affect the operational capacity of the airport. It is highly unlikely that the NMAUC would be interested in increasing flight delays for its members. It would also not be interested in sacrificing the access of general aviation to the airport to provide adequate capacity for use by commercial and military aircraft.

2) **The airport needs another independent air carrier qualified runway. Because runways 8-26 and runway 17-35 intersect, if one is closed because of a problem or accident, it could result in the closure of both runways, effectively closing the airport.**

This is one of the reasons that Runway 3-21 was upgraded to serve commercial and military aircraft.

3) **There will come a time when the terminal and the number of gates will have to be expanded to accommodate the growth of the city.**

The current Master Plan Update has shown that adequate terminal facilities could be provided with or without the space currently occupied by Runway 17-35.

They update the plan to meet changing needs and they have taken steps to implement some of the requirements of the plan. Most notably they have totally rebuilt runway 3-21. It has been extended, widened and has an ILS installed. It is now a fully qualified air carrier runway. They have rebuilt every other runway at the airport with the exception of runway 17-35.

These runway improvements were needed to provide adequate operational capacity for the airport. They also ensure that the airport can remain operational when the intersection of Runway 17-35 and Runway 8-26 is shut down for any reason.

They relocated the airport rental car return off-site, to provide more available space in the immediate terminal area.

The relocation was done because the rental cars had simply run out of space for their operations. The choice had become one of maintaining public parking in the terminal area or reducing public parking to make more room for rental cars.

NMAUC feels very little has been done to solicit input from the actual users of the airport. General Aviation, Air Carrier, and the Military users should be notified and meetings should be held to gain from their knowledge and experience. We believe that the Aviation Department has decided on a plan and is working toward that end with little regard to concerns of those who pilot the aircraft and use the airport.

Aviation users have served on both a technical committee and a community committee in this master plan update. The public workshops have been open to everyone, and many pilots have attended and voiced there concerns. The Aviation Department and the Master Plan consultants have been accepting and reviewing comments from any and all interested persons and groups since the Master Plan began. All working papers drafted with regards to the Master Plan have been available for viewing on the consultant's web site at www.coffmanassociates.com. The draft Master Plan will be available at the same address throughout the approval process.

The Aviation Department and the consultants also held a special meeting with the general aviation users on April 23, 2002. The additional meeting was held to present the draft plan and its rationale, then to answer the user's questions. The Consultants have listened to all user concerns. In turn, it is hoped the users would study the current materials on the subject and hear the concerns and the reasons that the closing of Runway 17-35 is being considered.

We are of the opinion that the Aviation Department has purposely left runway 17-35 in a state of disrepair, in an attempt to make it appear more practical to close, than repair. Perhaps there are political implications, which would benefit those in city government, should they be able to claim responsibility for an end to some of those noise issues. Closure of the runway would certainly earn votes in Southeast Heights. The Aviation Department has decided the only logical room for expansion of the terminal complex necessitates the closure of runway 17-35. Due to the apparent political benefits, they see the expense of runway renovation repairs, coupled with the need for room, as a win, win situation.

The current, approved Master Plan for ABQ is the Master Plan approved in 1994. That Master Plan calls for the closure of Runway 17-35. Even with expanded research, the Master Plan as now drafted has not found anything to alter the previous recommendation. Since 1994, safety and economic issues have become even more prevalent in the FAA's review of airports. Besides the runway incursion issue discussed earlier, a benefit-cost analysis is now required for any project that requests over $5.0 million in federal funding.

Rehabilitation of Runway 17-35 has been estimated to cost $27.0 million dollars. With the minimal use this runway supports, a benefit-cost analysis will not support this expenditure. If the use of the runway is increased, the capacity of the airfield is affected and operational delay increases. Thus costs, not benefits would increase, and the benefit-cost ratio would be even lower.

Unless some significant benefit can be attained from this runway, the Aviation Department can only continue the "band-aid" approach to keeping this runway operational. This will only become more costly in the future, and eventually will become ineffective.

The issue is <u>safety</u>. There are times when the wind blows straight down runway 17-35 at speeds from 40 to 60 kts. If landing on runway 17-35 is not allowed, the only viable alternative is 3-21.

As indicated earlier from the NOAA data, this statement appears to be an exaggeration. The NOAA station at ABQ recorded only one wind measurement over 40 kts in ten years and over 87,500 observations. That one measurement was for a winds blowing straight down Runway 8-26, not Runway 17-35. The data further shows there were no observations of winds over 34 kts blowing down Runway 17-35.

This creates a crosswind component, which exceeds the manufacturer's limits on almost all aircraft; these limits are imposed for safe operation of the aircraft. We have heard the

statement "aircraft which cannot land under these conditions should go to double Eagle II Airport." At times, the winds will exceed the limitations of the large air carriers. Can we deplane airline passengers at Double Eagle?

It has never been suggested by the Aviation Department or the consultants that air carriers be diverted to Double Eagle II. A wind rose evaluation of crosswind components at ABQ indicates that with crosswinds of 20 knots or higher, the combination of Runways 8-26 and 3-21 provides coverage 99.87 percent of the time. That leaves just 0.13 percent of the time above this level. Most commercial carriers are certified for crosswinds higher than this level. FAA planning standards uses an even lower crosswind component. For most air carrier jets, this is 16 knots. Runways 8-26 and 3-21 provide 99.48 percent wind coverage. This is significantly higher than is available at most other commercial service airports around the country. Runway 17-35 increases this to 99.92 percent. So Runway 17-35 can increase coverage by 0.44 percent for commercial jets. This affects no more than 380 passenger and cargo flights a year. As we all know, some delays are to be expected at any airport. It is important that they do not become excessive, and 380 flights is far from being excessive.

Should lighter aircraft which carry the leaders of our community, be forced to land at another airport, where they have no way of housing their aircraft or securing ground transportation?

It is good to know that the NMAUC members would delay or divert rather than take off in an excessive crosswind. Since NMAUC would not operate their aircraft in an unsafe manner, and considering the statement above, it would appear that the NMAUC concern is really a matter of convenience rather than safety.

The FAA standards for most business jets is also a 16 knot crosswind. Other business aircraft as well as commuter turboprops are planned at a 13 knot crosswind. Smaller single and twin engine props are examined based up a 10.5 knot crosswind. Again, most aircraft are certified for winds well above the FAA planning standards.

Four runways versus three adds just 1.18 percent coverage at 10.5 knots and 0.41 percent for the larger aircraft. This equates to no more than 800 annual general aviation operations and 200 commuter operations annually.

Assuming approximately half are takeoffs and half are landings, up to 400 aircraft over the course of a year may need to hold until winds subside to takeoff. The 400 aircraft enroute would have an option to hold until the winds are favorable or divert. Double Eagle II has a north-south runway that can be used by general aviation aircraft, so it is an option for diversion. Even considering the costs of the inconvenience associated with a diversion, the $27 million dollar rehabilitation investment cannot be justified.

We all pay taxes and the use of federal funds requires that <u>everyone be allowed to use the airport.</u>

General aviation, commercial and military aircraft can all use Albuquerque International Sunport. The closure of Runway 17-35 will not change that. Since all NMAUC members pay taxes into the Aviation Trust Fund, they certainly must want those funds used on projects that provide the most benefits to safety and capacity. Since there is always a limit on the funds available, it is critical that those funds be used to maximize their benefit. Spending $27 million on a project that is beneficial to less than 1,400 operations a year could delay or prevent more deserving projects at ABQ or other airports used by NMAUC members.

Do we really want to close an International Airport because of wind? Yes there are severe weather problems and such conditions do at times close airports. However, we have a solution in place for this particular problem, and we can control it, but the Aviation Department proposes that we give it up.

With three runway orientations still available, it will take very strong winds to create a crosswind component that cannot be handled. A strong wind is generally considered a severe weather condition. Still, less than 1,400 operations of over 230,000 annual operations at ABQ would be affected by closing Runway 17-35.

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