TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

TABLES

TABLE OF CONTENTS
(Continued)

TABLES

FIGURES

APPENDICES

TABLE OF CONTENTS
(Continued)

APPENDICES

PREFACE

Airport master planning is a methodical process where each step is performed in sequence so that subsequent tasks rely on the results of their predecessors. The primary tasks in order of execution include: Inventory, Aviation Activity Forecasts, Demand/Capacity Analysis, Facility Requirements, Alternatives Analyses, Implementation Plan, and Airport Plans. The typical planning process is briefly summarized as follows.

Inventory - The inventory process collects and quantifies information concerning the existing airport and adjacent properties, including the existing runway/taxiway system, hangars, aircraft parking apron, airport access and property holdings, adjacent land uses, and airport services. This information is utilized throughout the planning process. Also, statistical and projected data pertaining to the airport and its service area, such as aviation activity, population, employment, income, development trends, and future trends is collected. This information provides the foundation on which forecasts are developed.

Aviation Activity Forecasts - To plan for the future it is necessary to develop a forecast of the level of airport activity that can be anticipated at set intervals in the future. Development of forecasts is intended to provide this idea of future levels of passengers and aircraft operations and the types of aircraft that will operate at the airport. Forecasts are developed using various mathematical, market share, and trend related projection techniques to develop a realistic estimate of the future number of based aircraft, type of aircraft (fleet mix), and the total number of aircraft operations (landings and takeoffs) that should be accommodated. The forecasts are one of two elements of the master plan that the Federal Aviation Administration (FAA) reviews and approves prior to proceeding to the next task.

Demand/Capacity Analysis - Every airport has an upper limit on the number of aircraft operations (landings and takeoffs) that the runway and taxiway system can accommodate. This upper limit is referred to as the airfield capacity. Airfield capacity is evaluated both on an hourly and annual basis. As with the airfield, the existing capacity and capability of other airport facilities, i.e., navigational aids (NAVAIDs), terminal building, hangars, tie-downs, auto parking, etc. are compared to future demands.

Facility Requirements - This analysis presents future requirements for airport facilities in terms of additional square feet, lineal feet, acreage, or other appropriate units of measurement. The output of this part of the master plan is a list of optimum facility improvements that the airport should implement over the 20-year planning period to accommodate anticipated aviation activity.

Alternatives Analysis - This portion of the master plan utilizes the facility requirements from the previous task and identifies options that will satisfy these requirements and comply with FAA criteria. The options considered can range from minor changes or additions to the existing airport to major reconfiguration of the airport, its property, and its facilities depending upon the existing capacity needs previously identified. One or a combination of various development alternatives will form the basis for the airport layout plan drawing set.

Implementation Plan - After the facility requirements are determined and the alternatives analysis identifies the most viable manner of meeting these needs, the financial plan and capital improvement program (CIP) identifies sources of funding and the phasing of the required improvements. The financial plan identifies those items eligible for federal and state funding and those requiring local (airport) or private funding.

Airport Plans - Associated with the development of the master plan is the preparation of a series of drawings that depict both the existing airport and the proposed changes to the airport over the next 20 years. This set of drawings is commonly referred to as the Airport Layout Plan Drawing Set. As is the case with forecasts, these drawings must be reviewed and approved by the FAA for Master Plan recommendations to be eligible for FAA funding.

The FAA has very specific guidelines and criteria provided in the form of Advisory Circulars and Federal Aviation Regulations that are used in developing the airport master plan. Based on the forecasts of future aviation activity, the master plan establishes a schedule of financial and construction priorities as well as identifying the sources to be used to fund airport improvements over the short-range (0 to 5 years), intermediate-range (6 to 10 years), and long-range (11 to 20 years) planning periods. As such, it is both a physical and financial plan for use in guiding local decisions relating to airport facilities and their potential improvement.

The aviation forecasts and facility requirements developed based on their projections should be regarded as generalized planning tools or thresholds that assume attainment of the projected activity. Should the forecasts prove to be conservative, proposed improvements can be advanced in the CIP schedule. Likewise, if traffic growth materializes at a slower rate than forecast, deferral of recommended improvements would be prudent.

The Master Plan Update for Athens-Ben Epps Airport was initiated in October of 1997. The initial work effort resulted in the production of the "Master Plan Update Aviation Activity Forecasts Technical Paper", which is incorporated herein as Appendix I. Typically, the master planning process is a continuous, uninterrupted effort. However, seven months into the process, work was delayed at the direction of Airport representatives while other analyses, related to, but outside of, the master planning process, were conducted. In June of 2001, work was resumed on the Master Plan project at the request of the Airport Director. Therefore, the following is the result of the resumption of the Master Plan Update. This Report includes the Inventory, Aviation Activity Forecasts, Demand/Capacity Analysis, Facility Requirements, Environmental Overview, Alternatives Analyses, Implementation Plan, and Airport Plans sections, and presents the various outputs and results of the supplemental analyses that were conducted.

Five additional studies were conducted as part of this supplemental analysis effort. Excerpts from these reports and studies are included in this document as appropriate; full reports have been incorporated as appendices, i.e.:

- Runway 9/27 Length Analysis, Appendix II;
- Runway 9/27 Extension Feasibility, Appendix III;
- Commercial Terminal Building Demand/Capacity Analysis, Appendix IV;
- Commercial Terminal Alternative Analysis, Appendix V; and,
- General Aviation Terminal Building Conceptual Program, Appendix VI.

Appendix VII

MARKET ANALYSIS

MARKET ANALYSIS

Establishment of Geographical Market Areas

Introduction

This task establishes both the commercial service and general aviation geographical market areas for the Athens-Ben Epps Airport (AHN). The analysis considers reasonable driving times to and from the Airport, existing competing airports, and prior analysis contained in other existing studies, as appropriate.

Commercial Service Market Area

AHN has offered scheduled regional airline service since January 1975. Scheduled service is presently offered to Charlotte-Douglas International Airport. Various sources including the GSASP and 1995 Master Plan Update were reviewed to determine the geographical market area for commercial service. The commercial service market area consists of the following eleven counties:

- Clarke
- Madison
- Hart
- Elbert
- Oglethorpe
- Oconee
- Morgan
- Walton
- Barrow
- Jackson
- Gwinnett

The Market Area consists of a diameter of approximately 80 statute miles. The analysis considers an assessment of actual originating enplanements (by county) using the Airport, as well as the influence of other competing airports offering scheduled airline service. These competing airports include Greenville-Spartanburg, located approximately 90 statute miles northeast of Athens; and Atlanta-Hartsfield International (ATL), located approximately 70 statute miles southwest of Athens.

Greene County (which lies between Oglethorpe and Morgan Counties) is not included in the commercial service market area for AHN as published in the system plan. This is because analysis indicates that Greene County is primarily served by Atlanta-Hartsfield International Airport to the west, and Augusta-Bush Field to the east. The existence of U.S. 278 and Interstate 20, which run through central Greene County, greatly influences this factor. Also, much of the northwest section of Greene County contains the Oconee National Forest, which will remain undeveloped.

In addition, Gwinnett County is included in the commercial service market area for the Airport. Although Gwinnett County is located approximately midway between the Airport and ATL, driving time from Gwinnett County to the Airport is estimated to be half that between Gwinnet County and ATL.

General Aviation Market Area

Historically, various surveys have been conducted to determine how far various general aviation airport users are willing to drive to gain access to an airport. The results of these surveys indicate that the majority of general aviation airport users are reluctant to drive more than 30 minutes to gain access to an airport.

While the 30-minute driving time (isocronical) rule can be used as a starting point with regard to market area analysis, many other factors need to be considered. These factors include the location of other competing airports, and the facilities offered at the competing airports, such as runway length, navigational aids, and available hangars.

With regard to the general aviation geographical market area, two market areas have been established. Market Area A, the primary market area, considers the 30 minute driving time isocronical, which has then been adjusted in consideration of the locations of other neighboring airports. These neighboring airports are listed below in Table 4-1 along with their direction and distance from Athens/Ben Epps Airport.

Table 4-1
ATHENS/BEN EPPS AIRPORT MASTER PLAN
Neighboring Airports

NEIGHBORING AIRPORT	DIRECTION	DISTANCE (SM)
Franklin County Airport	North	28
Elbert County Airport	Northeast	30
Wilkes County Airport	Southeast	31
Greene County Airport	South-southeast	27
Madison Municipal Airport	South-southwest	24
Walton County Airport	Southwest	24
Winder/Barrow County Airport	West	19
Jackson County Airport	Northwest	20

Market Area A is considered the primary market area for the Airport because all types of general aviation activity can be marketed in this geographical area without undue competition from neighboring airports.

Market Area B is considered the secondary market area for the Airport and considers the superior facilities in place at the AHN. These facilities include a primary runway length of 5,522 feet, a crosswind runway length of 4,000 feet, a precision (ILS) instrument approach, and an automated weather reporting facility (ASOS).

Since none of the neighboring airports, with the exception of Winder, can offer near equivalent facilities, Market Area B considers that some general aviation airport users will drive farther and bypass neighboring airports to gain access to the superior facilities available at Athens/Ben Epps Airport. This is especially true for business and corporate general aviation airport users that require at least a 5,000 foot runway length and precision instrument approach capabilities to conduct operations.

Primary Market Area A includes Clarke County, Oconee County, and the inner portions of Jackson, Madison, and Oglethorpe Counties.

In addition to the above, Secondary Market Area B includes major portions of Jackson, Madison, Oglethorpe, and Morgan Counties, as well as the inner portions of Elbert, Walton, and Greene Counties. The portion of Greene County that contains the Oconee National Forest is not included in the Market Area, as it will remain undeveloped.

Socioeconomic Characteristics of the Market Areas

Introduction

The Commercial Service and General Aviation geographical market areas for the Athens/Ben Epps Airport substantially comprise the Northeast Georgia Region, which includes the Athens Metropolitan Statistical Area (MSA). The Northeast Georgia Region encompasses some 3,250 square miles of land area. While most of the area is predominantly rural in nature, Clarke County and the City of Athens, located in the center of the region, is considered the urban and economic "hub" of the region. The Airport is strategically located in Clarke County, approximately four miles east of downtown Athens.

Socioeconomic Characteristics

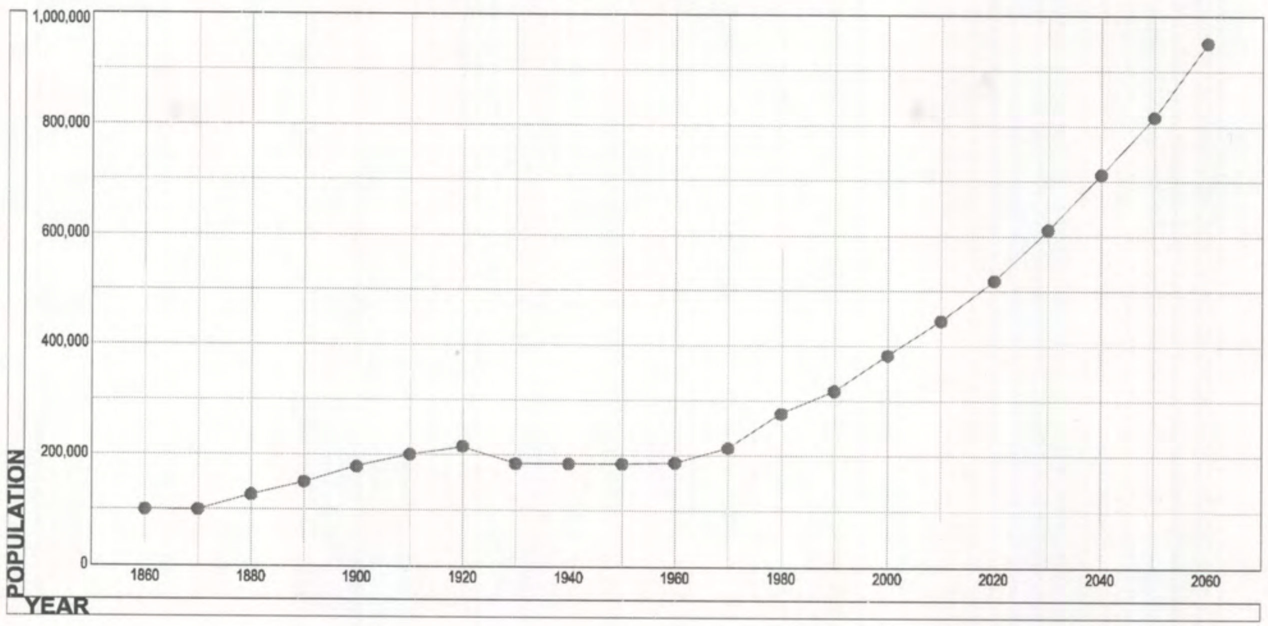
Historically, both the Northeast Georgia Region and the Athens MSA have demonstrated significant growth considering important socioeconomic indicators. As an example, over the 1980 through 1990 time period, population within the Athens MSA grew at double the population growth rate of the United States, or 20.3 percent compared with the national growth rate of 9.8 percent. During the same period, employment grew 33.3 percent as compared with a national growth rate of 22.2 percent. Also, personal income grew 55.7 percent compared with a national growth rate of 28.9 percent.

As discussed in the Northeast Georgia Regional Comprehensive Plan, the socioeconomic characteristics of the region are anticipated to also achieve significant growth in the future. As shown in Figure 4-1, population in the Region is expected to exceed 500,000 persons in the year 2020. By the year 2060, regional population is projected to approach 1 million persons.

Important strides are also projected with regard to employment and personal income. As discussed in detail in the Northeast Georgia Regional Comprehensive Plan, the following "attributes" will greatly influence the future socioeconomic characteristics of the Region.

FIGURE 4-1

NORTHEAST GEORGIA POPULATION TRENDS & PROJECTIONS 1860 - 2060



Favorable Economic Geography

The region is fortunate to have a very favorable location to facilitate growth. The western counties of the region are very close to Atlanta, one of the fastest growing MSAs in the country, which is attracting more than its share of new corporate facilities. The western counties of the region such as

Walton and Barrow are heavily influenced by the growth in the metro Atlanta area.

The Northeast Georgia region is fortunate to be located on the I-85 corridor between Atlanta and the also rapidly expanding areas of Greenville/Spartanburg and Charlotte. This corridor will continue to be a natural growth area for the Southeast, and the Northeast Georgia region will benefit. The region also benefits from being on the I-20 corridor between Atlanta and Augusta. While not as heavily developed as the I-85 corridor, I-20 provides easy access to large metro markets from those counties located on the southern edge of the region.

Much of the growth in the U.S. is occurring in areas within an hour drive from major metro areas. These outlying areas benefit from the high-level economic activity occurring in the major metro areas while offering a lower cost, higher quality of life environment.

Excellent Labor/Management Relations

The overwhelming majority of the firms in the Northeast region consider that labor/management relations are excellent in their companies and in the area in general. Even in companies where managers stated that productivity and the work ethic could be improved, labor/management relations usually receive high marks.

Competitive Labor and Other Business Costs

Labor costs in the region are very competitive when compared to Georgia and other areas of the U.S. General business costs in the region are moderate, including utility, land, and transportation costs. The overall tax burden in Georgia is moderate, and the state has an aggressive economic development program offering attractive incentives to highly sought-after firms.

The University of Georgia

The University is obviously one of the economic mainstays of Clarke, Oconee, Madison, and many of the other counties in the Northeast Georgia region. With an enrollment of approximately 29,000 and a staff of almost 9,000, the direct and indirect employment effects of the University are huge.

The University will continue to generate growth for the area in a number of ways, including improving the general quality of life, making the area a more attractive location for companies, and attracting students, faculty, and staff to the area who are inclined to create start-up businesses.

High Quality of Life and Low Cost of Living

Quality of life means different things to different people. Some people think that life in large urban areas is preferable, while others want to live in rural surroundings. The region is in the fortunate position of being able to offer a variety of lifestyles that appeal to a variety of executives and managers, including living in the rural countryside, living in a small town, living in a medium-size college town (Athens), or living in one of the country's fastest growing metro areas (Atlanta). The region is also fortunate to have many large lakes (e.g., Lake Oconee) which provide recreational opportunities as well as the option to have a lakefront home.

Excellent Surface Transportation System

The Northeast Georgia region has an excellent surface transportation infrastructure from the economic development perspective. Interstates 85 and 20 go through the region (roughly defining its borders), providing links with Atlanta, Greenville/Spartanburg, Charlotte, and points north, and Georgia 316 now links Athens directly with Atlanta and provides another growth corridor. The region has 11 rail corridors and is served by the CSX system, the Norfolk Southern System, and the short line Great Walton Railroad Company.

Aviation Industry Trends Assessment

Introduction

This task provides an assessment of presently occurring and anticipated aviation industry trends in both commercial aviation and general aviation. Awareness of these trends will better position the Airport to respond to related market opportunities. Publications such as *FAA Aviation Forecasts for Fiscal Years 1997-2008* were used in this assessment.

Commercial Aviation Industry Trends

The commercial aviation industry recorded its third consecutive year of strong growth in 1996, and this trend has continued through 1997. The expanding U.S. and world economies have had a major impact on the demand for aviation services. U.S. commercial air carrier passenger enplanements, which had averaged less than 1.0 percent growth between 1990 and 1993, grew at an annual rate of 6.2 percent over the last three years.

In 1996, the large U.S. air carriers increased their system capacity (available seat miles) by only 2.9 percent. As a result, system-wide load factors increased from 66.8percent in 1995 to 68.8 percent in 1996. This represents an all-time high.

In response to anticipated capacity constraints, aging aircraft issues, and a robust market, new commercial aircraft orders totaled 1,046 in 1996. This represents the third largest buy in history, and has been supplemented with additional orders by U.S. airlines in 1997. The industry's vastly improved financial position has supported the ability to buy new aircraft, along with the expectations of lower aircraft operating and maintenance costs.

U.S. large air carriers enplaned 523.6 million domestic passengers in 1996. Domestic enplanements are projected to reach 827.1 million in 2008. This represents a 58 percent increase over the twelve-year period. In 1996, regional airlines enplaned 57.5 million passengers. This represents 10.3 percent of all passenger traffic in scheduled domestic air service. By the year 2008, regional airlines are expected to enplane 106.9 million passengers, and account for 11.9 percent of all domestic passenger enplanements. This represents an 86 percent increase in regional airline enplanements over the twelve-year period.

While major "hub" airports such as Atlanta-Hartsfield International are expected to continue to dominate the commercial service market in future years, important new industry trends are presently occurring which could influence market opportunities at the Airport. Service by low-cost carriers is anticipated to increase in future years. Some of these carriers prefer to offer service from non-hub airports, which can serve a large portion of a major metropolitan area. Since airport related costs (such as landing fees) are lower at non-hub airports, these carriers can keep costs down and offer direct service to major markets existing within a short to medium stage length. This also allows passengers to escape the congestion (and expense) of the major hub airport.

Established regional airlines are presently making plans to incorporate new regional jet aircraft into service as rapidly as possible. These aircraft include the Embraer EMB-145, which is configured with 50 passenger seats, and the Dornier 328 Jet, which is planned to offer 34 passenger seats. The speed, range, and passenger comfort of these new regional jet aircraft will allow airports offering regional service (with such aircraft) to serve new short to medium market destinations, and attract new domestic passengers.

While air cargo activity (including overnight express) is anticipated to continue with a strong growth trend, it is uncertain if this growth trend will produce related market opportunities for the Airport to any significant degree. This uncertainty is based upon consideration of the extensive air cargo facilities in place at Atlanta-Hartsfield International Airport, and factors associated with airfreight consolidation requirements and the added expense of flying air cargo short distances.

General Aviation Industry Trends

During 1996, the general aviation industry continued to show (overall) modest signs of recovery. For the twelve-month period ending September 30, 1996, general aviation aircraft manufacturers shipped a total of 1,093 aircraft, a 9.4 percent increase over shipments for the same 1995 period. Of the shipments in 1996, 577 were piston powered aircraft, while 285 were turboprops and 231 were jet aircraft.

With regard to aircraft operations, general aviation activity at combined FAA and contract towered airports declined for the sixth consecutive year in 1996, down 1.9 percent to 35.3 million operations.

Most of the decline continues to involve local operations, indicating a continuing reduction in instructional flying and local sightseeing flights.

Total hours flown by general aviation aircraft increased 6.6 percent in 1995 to 25.4 million. This was the first recorded increase since 1989. Based on the number of hours flown, personal use continues to be a major reason given for general aviation activity, along with the combined use categories of business and corporate flying. Personal flying hours increased from 7.9 million hours in 1993 to 8.1 million hours in 1994 and to 9.1 million hours (up 12.5 percent) in 1995. Business and corporate flying increased 12.3 percent in 1995, from 5.6 to 6.3 million hours flown.

Over the 1996 through 2008 time period, the active general aviation fleet is expected to increase from 181,341 to 196,600 aircraft. This represents an 8.4 percent increase or an average annual growth rate of 0.8 percent. Percentage wise, turboprop and jet aircraft are anticipated to account for the largest increase, growing 14.8 and 18.0 percent, respectively. Single engine piston and multi-engine piston aircraft are anticipated to increase by 8.3 and 4.5 percent, respectively.

Over the same 1996 through 2008 time period, general aviation hours flown are projected to increase from 25.6 million to 28.9 million, a 12.9 percent increase. General aviation aircraft operations at combined FAA and contract-towered airports are projected to increase from 35.3 million to 38.4 million, an 8.8 percent increase. With regard to general aviation, important new industry trends are also presently occurring which could influence market opportunities at the Airport. Strong growth is projected in the increase of turboprop and jet aircraft to support business and corporate flying. Aircraft manufacturers also see this market opportunity and are responding by producing a new generation of business/corporate aircraft to serve both domestic and international business travel. Aircraft such as the Learjet 45, Global Express, Citation 10, and Gulfstream 5 will meet this expanding market. In addition, Boeing has announced plans to produce a Boeing Business Jet.

Orders and sales for these and other business aircraft are currently reaching record levels. The businesses and corporations that will own/operate these aircraft will require suitable airports with facilities in place to accommodate trip missions.

Market Analysis and Recommendations

Introduction

Considering the expanding socioeconomic characteristics of the defined market areas along with the positive aviation industry trends being realized, this section now identifies market opportunities that might be pursued by the Airport.

Commercial Service Market Opportunities

As previously discussed, established regional airlines are growing rapidly, and expanding service with new regional jet aircraft. Domestic passengers are welcoming these new aircraft and the expanded non-stop service to more destinations, which the regional airlines are now providing. Comair, has been considered a leader in this field, and currently operates more than 50 Canadair Regional Jet Aircraft.

Service by low-cost carriers offering flights from non-hub airports, which can serve a large portion of a major market area, is also expanding. Southwest Airlines has been a leader in this field. Other examples include Pro-Air Airlines, which recently began service out of Detroit City Airport using Boeing 737-400 equipment. This aircraft was selected for its ability to operate from the airport's existing 5,000-foot runway.

With regard to the Athens/Ben Epps Airport, the potential ability to achieve enhanced regional airline air service is considered quite probable. The ability to achieve potential air service by low-cost carriers operating larger aircraft (such as the Boeing 737) on a scheduled basis is considered less probable. In the latter case, it is questionable if the Airport Market Area could stimulate an adequate number of passengers to make service by such low-cost carriers financially viable. In addition, a possible low-cost carrier operating at the Airport would be required to compete with low-cost carriers presently serving the Atlanta-Hartsfield International Airport.

In an effort to better determine achievability, it is recommended that an air service study be accomplished for the Airport. Such a study would include participation by area governments and chambers of commerce, and result in the establishment of an air service marketing and development plan.

The plan would identify specific airlines considered to be most logical candidates for AHN, and result in the preparation of detailed air service proposals to be presented to the candidate airlines. Based on research, the proposals would present a business plan to be reviewed by the candidate airlines. The business plan would show that enhanced air service is feasible (from the perspective of the candidate airline), and outline various incentives, which might include: a commitment to make desired infrastructure upgrades; reduced airline airport operating fees; reduced passenger fees (such as free auto parking); a financial risk-sharing program; etc.

General Aviation Market Opportunities

General aviation market opportunities are considered most prominent in the area of business and corporate travel. Orders for new generation business/corporate turboprop and jet aircraft are high. In addition, companies offering "fractional ownership" of business aircraft are experiencing record growth. As an example, Executive Jet (Net Jet) Incorporated currently has a fleet of over 110 aircraft serving over 800 clients. Companies such as Executive Jet offer business and corporate clients access to business aircraft without the increased expense of total ownership.

The potential ability of the AHN to serve the expanding business/corporate travel market is considered quite high. However, two important factors must be considered. First, it is important that the Airport offer the facilities and services that the business and corporate users require. Fixed Base Operator (FBO) facilities and services must be geared to respond to these special requirements, offering adequate terminal facilities, food catering, and quick turn-around times. Rental car and limousine services are also important. Secondly, the availability of the Airport and services offered to the business/corporate user should be advertised. This can be accomplished by developing a brief brochure with mailings to prospective tenants and transient users. Ads can also be taken in publications such as AOPA's Airport Directory. Companies such as Executive Jet Incorporated can also be contacted directly to establish use agreements that might include reduced fuel flowage fees for regular airport users.

CHAPTER 4: CONCEPTUAL COST ANALYSIS

4.1 Introduction

Development costs of the terminal project are presented in this section based on the range of program scope as defined in Chapter 3 of this report. However, costs may vary not only as a result of the range of programmatic elements (building size) but also due to the quality of the development. For example, a Cadillac automobile and a Chevrolet may be of similar size, but the Cadillac is more expensive due to more expensive parts, more sophisticated systems, and higher aesthetic design. The same is true of buildings. The range of costs based on this qualitative analysis is combined with the range of quantitative program from Chapter 3 to determine the range of total costs for the implementation of the project.

As discussed in Chapter 1 Section "General Program Goals and Issues", the airport intends for this terminal building to be a showcase facility to help attract new business to the airport and to Athens. This Chapter explores the ramifications of that goal as it relates to the cost of the facility and compares it to the airport's ability to finance the project.

4.2 Preliminary Building Cost / Comparative Analysis

At this preliminary programming stage, the most effective estimating is based on square footage of comparable building types and construction. To assist in this comparison, four project case studies were selected to show the effect of various building design decisions on the project costs. The historical project costs were escalated to the current year (2001) at an assumed average inflation of 3.5% per year since the initial bidding. Two of the projects represented simple single story construction with building costs slightly under $100 per square foot. The other two projects represented aspects of two-story construction, more complex building forms, and higher levels of quality and finish, resulting in building costs of between $120 and $150 per square foot. This $90 - $150 range is a result of different building materials, configurations, complexities, and systems utilized.

All building components have a range of material options that provide different levels of quality at different costs. Generally, the lower the initial capital cost, the higher the future maintenance costs. In addition, the shape and aesthetics of a building affect its overall cost. A simple rectangular structure with uniform components used throughout is less expensive than a more complex building form, such as an "L" shape or two-story structure, or a building with an irregular façade. While it is true that more complex building shapes create more interesting buildings, it is also true that complexity creates higher development costs. Lastly, any systems used in the building have cost trends similar to building components. Generally, more efficient and longer lasting systems cost more than simple, inexpensive systems.

For the purposes of this analysis, $90 per square foot of terminal building is considered to represent the low end of the reasonable construction cost range and $150 per square foot is considered to be the upper end of the reasonable range.

Table 4.2 "Development Cost Matrix" indicates the range of building construction costs for the project based on the range of both facility size and building quality. The lower end of the total building construction cost range is $432,000 and the upper end is $2,535,000.

Table 4.2 Development Cost Matrix

	MINIMUM BUILDING AREA[1]	MAXIMUM BUILDING AREA[1]
Building Size (sq. ft.)	**4,800**	**16,900**
Minimum-Quality Unit Cost	$90/sf	$90/sf
Minimum Building Construction Cost	**$432,000**	**$1,521,000**
Maximum-Quality Unit Cost	$150/sf	$150/sf
Maximum Building Construction Cost	**$720,000**	**$2,535,000**

1. *See Table 3.2*

4.3 Preliminary Site Cost

Site development programming has not been included as a part of this report. However, these costs must not be ignored when developing the project's budget. Based on discussions with the airport staff, the General Aviation Terminal will utilize existing parking lots for its vehicular needs. The terminal will also be constructed adjacent to existing apron. In addition, all necessary utilities are either already at the building site or will be brought to the site under other improvement projects; and therefore, are not considered as part of this project. The site improvements are limited to utility connections and minor paving to tie-in with existing pavements. Costs for the site improvements are assumed to be 5-10 percent of the building costs.

4.4 Project Feasibility and Final Recommendation

The Athens-Clarke County Unified Government has budgeted $1,000,000 for the General Aviation Terminal at Athens-Ben Epps Airport. This budget must include building and site development costs (including utilities), contingencies, furnishings, equipment, professional fees, and other costs. Based on this budget and conceptual estimates for the building and all other costs, this project is feasible. However, it will not be able to meet all of the programmatic or quality goals as outlined at the beginning of the study. To fit within the allocated budget, the terminal size and quality will fall close to the low end of the range for both as previously described. To illustrate this point, Table 4.4.a provides a conceptual budget breakdown of the total project.

Table 4.4.a Recommended Program Budget

Item / Description	Estimated Cost
Building Construction (+/- 6,700 sf x $110/sf)	$ 737,000
Site Construction	$ 50,000
Construction Subtotal	**$ 787,000**
Fees & Contingencies	$ 213,000
GRAND TOTAL	**$ 1,000,000**

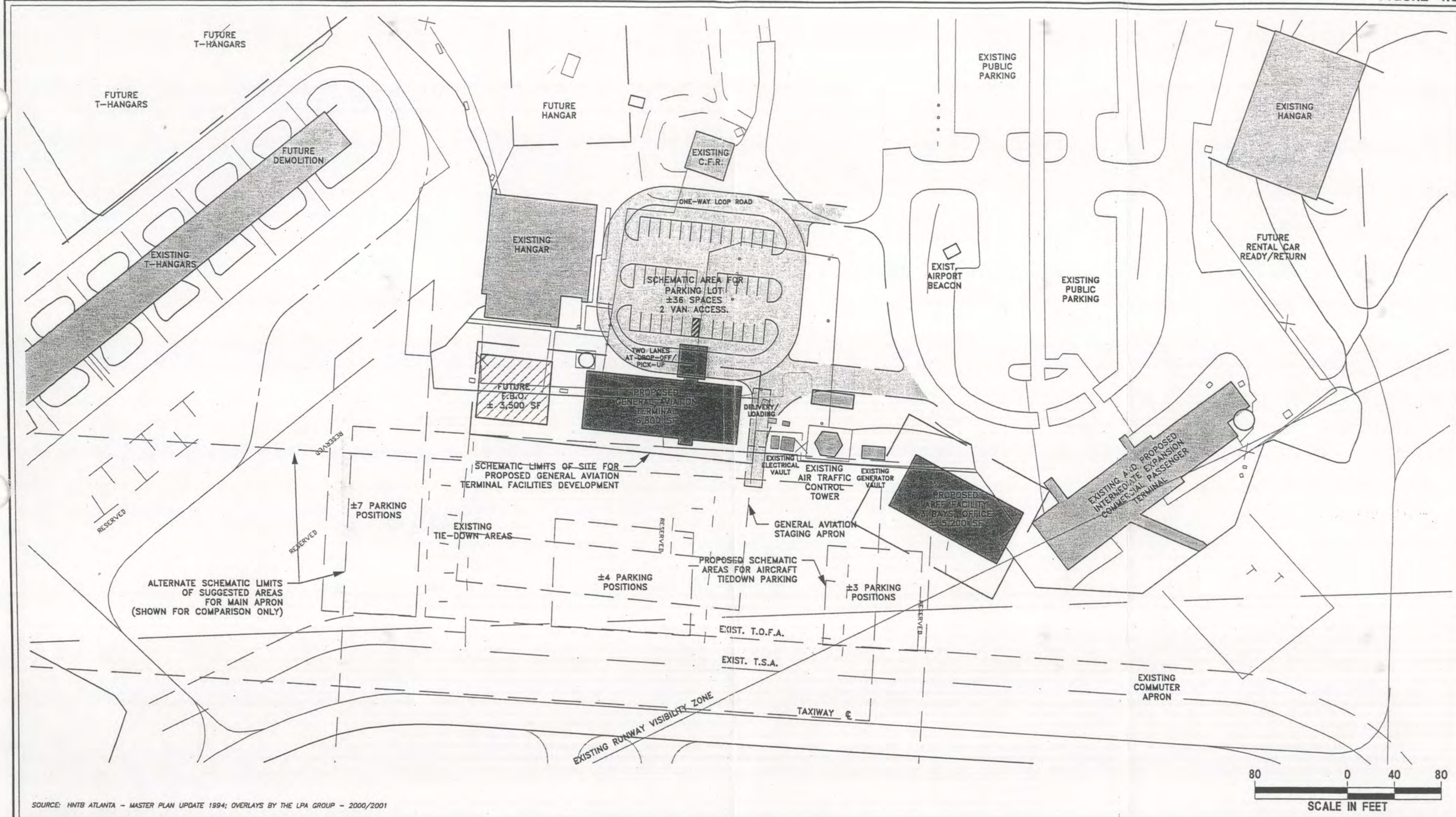
This budget assumes a building area of approximately 6,700 square feet. Table 4.4.b "Recommended Program Breakdown" indicates the final revised program breakdown that provides the list of spaces and their sizes to fit within the budget. This program also reflects medium-to-low cost construction materials, a relatively simple building shape and configuration, and relatively low-cost building systems. Successful implementation of this project will require design creativity to provide a facility that achieves most of the qualitative goals as outlined at the beginning of the report and yet adheres to the budget defined above.

Table 4.4.b Recommended Program Breakdown

Service (Space) to be Provided	Classification of Functions	Select	Comments
Total of General Use - Site		145720	
Site - Airside - Aircraft Main/Transient Ramp	NOT RANKED	53,900	To be determined under Separate Program
Site - Airside - Aircraft Staging Ramp	NOT RANKED	17,300	To be determined under Separate Program
Site - Airside Taxiways / Hangar Access	NOT RANKED		
Site - Airside - Aircraft Tie-Down Parking	NOT RANKED	43,100	To be determined under Separate Program
Site - Airside - Line Service Ramp	NOT RANKED		
Site - Landside - Access Road	NOT RANKED	11,920	To be determined under Separate Program
Site - Landside - Vehicle Parking Lot	NOT RANKED	15,000	To be determined under Separate Program
Site - Landside - Rental Car Parking	MUST HAVE	1,800	To be determined under separate program
Site - Landside - Delivery / Loading Area	NOT RANKED	0	
Site - Landside - Pick-Up / Drop-Off Lane	NOT RANKED	2,700	
Total of General Use - Site (Building)		415	
Site - Airside Covered Entry	HIGH WANT	75	Covered Exterior Entry, open sides for four to six people with luggage
Site - Landside - Covered Entry	HIGH WANT	340	To Cover vehicles during pick up and drop off - **two** lanes. **one** bus
General Use - Building		2055	
Public - Main Lobby	MUST HAVE	0	Assumed included in Public Atrium - if separate, 240 s.f. / 16 persons
Public - Control Center / Reception	MUST HAVE	190	Includes Line Crew Service Counter functions
Public - Control Center: Storage – Merchandise 1	HIGH WANT	30	Cabinetry or shallow closets off control / reception
Public - Control Center: Storage – Memorabilia	HIGH WANT	30	Cabinetry or shallow closets off control / reception
Public - Restrooms - Common Corridor/Water	MUST HAVE	75	
Public - Restrooms - Men	MUST HAVE	225	Approx. space for **four** water closets or equivalent, **three** lavatory
Public - Restrooms - Women	MUST HAVE	225	Approx . space for **four** water closets, **three** lavatory
Public - Atrium	HIGH WANT	1,160	Includes Public Lobby, openbetween floors - plane replica at 24'x24'
Public - Administrative (GA) Offices	MUST HAVE	0	Airport indicates only Line Crew Operations Mananger as GA Offices
Public - Observation Area	HIGH WANT	0	Include in Lobby / Atrium, or Circulation spaces
Public - Entry Vestibules	NOT RANKED	120	Two - airlocks between sets of sliding doors, minimal with sliding
Passenger		310	
Public - Passenger Waiting	MUST HAVE	0	assumed in public atrium space
Public - Telephone Booths	MUST HAVE	20	One enclosed telephone booth with shelves, non-accessible
Public - Vending - Coffee Bar / Kitchenette / Catering	MUST HAVE	75	See also vending, tables - should be grouped together
Public - Vending - Vending Machines	NOT RANKED	80	Room for **three** machines, people standing in front
Public - Vending - Dining Area	NOT RANKED	135	Two tables with two seats each, minimum accesible - shared aisle
Public - Supplies / Commissary / Sundries Display	HIGH WANT	0	small display to be included in Reception Counter above
Public - Local Interest Displays / Advertising	HIGH WANT		included in lobby
Public - Souvenir Shop	NICE TO HAVE	0	Display included in Reception. 2-4 floor mounted shelf racks, room to mill.
Business Traveler		840	
Public - Conference Center	MUST HAVE	640	For **39** persons. large conference tables and some equipment
Public - Conference Center – Equipment Storage	NOT RANKED	40	To store A/V equipment, presentation materials off conference
Public - Conference Center – Kitchenette / Catering	HIGH WANT	160	Size of room as indicated by User Goup Committee

Table 4.4.b Recommended Program Breakdown (continued)

Service (Space) to be Provided	Classification of Functions	Select	Comments
Flight Crew		**520**	
Flight Crew Flight Planning	MUST HAVE	115	**Three** planning stations and **one** weather station
Flight Crew Lounge	MUST HAVE	325	Small to medium size lounge - to include tables, recliners, chairs for 9 to 13
Flight Crew Night Phone Exterior	MUST HAVE	15	small space with cover from weather
Line Crew / Ground Employees		**555**	
Line Crew Service Counter	MUST HAVE	0	Included in Control and Reception Space above - small area
Line Crew Work / Service Area	HIGH WANT	180	For **six** persons up and moving, work table and work counter
Line Crew Work Storage	NOT RANKED	55	storage closets or cabinets - not separate room
Line Crew Locker Room	HIGH WANT	65	**One locker** each for **six** persons in - change & weather/fire suits
Line Crew Emergency Shower / Eyewash	NOT RANKED	10	Interior or Exterior, **shared with other** functions/spaces
Line Crew Operations Manager / Supervisor	MUST HAVE	120	Ground floor, public accessible, near control center
Employee Restrooms - Additional	NOT RANKED	65	single, unisex, accessible restroom facilities
Employee Breakroom	HIGH WANT	60	Airport indicated no desire to provide separate
Airport Administration		**720**	
Airport Admin. – Reception	HIGH WANT	100	Staffed by receptionist with two to four chairs, table
Airport Admin. – Administrative Assistant	MUST HAVE	80	
Airport Admin. – Airport Manager	MUST HAVE	150	Office, room for meeting with two to three persons
Airport Admin -- Plan File / Meeting Room	MUST HAVE	200	For **12** persons, with conference table and fixed cabinet
Airport Admin. -- Filing / Copy Room	HIGH WANT	90	Assumed as separate space
Airport Admin. – Storage	NOT RANKED	100	Single room or small closets
Airport Admin. – Other Offices	NOT RANKED	0	Airport indicates no other offices associated with Administration
Miscellaneous Use Spaces		**0**	
Charter Operations (FBO) Office	NOT RANKED	0	Airport indicates no other services to be house in facility
Other Tenant Space (offices)	NICE TO HAVE	0	Airport indicates no other services to be house in facility
Support Services		**290**	
Janitor Closet	MUST HAVE	65	Accesible, to store typical cleaning equipment, supplies
Mechanical Room	MUST HAVE	90	To be determined during design - approximate
Electrical Room	MUST HAVE	75	To be determined during design - approximate
Computer / Telephone Room	HIGH WANT	60	May be included in other spaces, may be needed on second floor
Support Services - Circulation		**1,000**	
Circulation - Horizontal - 1st Floor	NOT RANKED	1,000	Approximated: may be decreased during design if overlap is possible
Circulation - Vertical: Stairs	NOT RANKED	0	None: Single Story Typical space for a 13' floor to floor, enclosed egress
Circulation - Vertical: Elevator	NOT RANKED	0	None: Single Story ADA Compliant elevator and shaft enclosure, typical
Circulation - Horizontal - 2nd Floor	NOT RANKED	0	None: Single Story - Approximate: assumes less space on second floor
Total General Building Area		**6,700**	



SOURCE: HNTB ATLANTA – MASTER PLAN UPDATE 1994; OVERLAYS BY THE LPA GROUP – 2000/2001

THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
GENERAL AVIATION TERMINAL DEVELOPMENT CONCEPTUAL PROGRAMMING

SCHEMATIC LAYOUT - PROPOSED TERMINAL AREA PLAN

NORTH

Figure 4.5

CHAPTER 3A: PROGRAM REQUIREMENTS

3.1 General Facility Description

The basis of any General Aviation Facility is to provide fueling, parking, and flight related services to independent, corporate, and charter pilots and their aircraft. At its most basic, the General Aviation Facility is a fueling and resting stop for pilots. At its most developed, the General Aviation Facility is a single source for planning, repair, marketing, flight services, and business meetings for pilots and passengers.

The General Aviation Terminal serves as the junction point where passengers meet their pilots and where pilots acquire certain services for their planes and passengers. Services provided at the General Aviation Terminal include vehicle parking for passengers and flight crews, waiting areas for crew and passengers, restrooms, line service for aircraft, parking or hangars for aircraft, flight planning facilities, community information and contacts, and food vending or concessions.

The spaces named and described below include spaces typical to General Aviation Facilities, and additional spaces identified during discussions with the General Aviation Advisory Committee as desirable. The actual spaces provided for Athens-Ben Epps Regional Airport may not include all of the spaces described below, or all of the functionalities for each space described under each heading. Table 4.4.b "Recommended Program Breakdown" at the end of Chapter 4 shows the spaces selected under this programming effort and further defines the programming elements determined to be appropriate for the General Aviation facilities at Athens-Ben Epps Regional Airport.

The Terminal design will address the immediate needs of the Airport and should consider long-term requirements for the operation of the General Aviation Facility and the fulfillment of the objectives of the Athens-Clarke County Airport Authority. The Project overall is intended to address the functional, operational, and activity requirements anticipated for the General Aviation facility and Airport Administration Offices.

The General Aviation Facility at Ben Epps Airport will provide:

a. Flight Crew Flight Planning support
b. Fueling services
c. Transient aircraft parking spaces / tie downs
d. Flight Crew Lounge / Rest support spaces
e. Crew / Traveler light supplies (of sundries class)
f. Passenger waiting facilities
g. Passenger / crew 'concierge' services –
   telephones, rental car, community information, etc.
h. Business Traveler Meeting Facilities
i. Additional Functions at General Aviation Terminal.
   1) Fixed Base Operator may also be housed in the General Aviation Terminal
   2) Airport Administration will also be housed in the GAT

3.2 General Terminal Description

In general, the General Aviation Terminal at Athens-Ben Epps Airport will offer customary services to general aviation pilots, their passengers, their aircraft, and their crew. In addition, the General Aviation Terminal will provide meeting support services to business travelers. The terminal building program will also provide space for Airport Administration.

Services and functional spaces identified from previous similar projects and from discussion with the Airport board listed in Table 1.1, "List of Services", have been shown in Table 3.2 "Functional Spaces – Area Requirements" with a general range of areas for each space given in square feet. Areas identified in Table 3.2 as 'Small SF' are the smallest reasonable space to accomplish the functions; areas identified as 'Upper SF' are generously sized for the functions described. These are given for purposes of comparison; actual sizes selected should generally fall somewhere in between for each functional area to be included in the program.

Design emphasis in exterior elements shall be placed on the incorporation of what can best be described as more traditional styles and the incorporation of durable and timeless materials and methods while remaining sensitive to the surroundings. The design is intended to provide a sense of quality, endurance and character, as well as a sense of place and to serve as a community hub and focal point. The Airport intends for the exterior image of the General Aviation terminal to be representative of the community image of Athens and Clarke County, and has identified some exemplary buildings in historic downtown Athens for reference. See "Architectural Narrative" below for additional information on qualities desired for the exterior of the Terminal.

Table 3.2 Functional Spaces – Area Requirements

Service (Space) to be Provided	SMALL SF	UPPER SF
General Site Area		
Site - Airside - Aircraft Main/Transient Ramp	150,000	150,000
Site - Airside - Aircraft Staging Ramp		50,000
Site - Airside Taxiways / Hangar Access		
Site - Airside - Aircraft Tie-Down Parking	120,000	120,000
Site - Airside - Line Service Ramp		
Site - Airside Covered Entry	50	140
Site - Landside - Access Road	2,000	2,000
Site - Landside - Vehicle Parking Lot	22,500	30,000
Site - Landside - Rental Car Parking	1,200	3,000
Site - Landside - Delivery / Loading Area		
Site - Landside - Pick-Up / Drop-Off Lane		
Site - Landside - Covered Entry	0	250
General Use - Building		
Public - Main Lobby	780	2,100
Public - Control Center / Reception	190	400
Public - Control Center: Storage – Merchandise 1	0	100
Public - Control Center: Storage – Memorabilia	0	100
Public - Restrooms - Common Corridor/Water Fountain	0	125
Public - Restrooms - Men	100	250
Public - Restrooms - Women	100	250
Public - Atrium	0	2,025
Public - Administrative (GA) Offices	175	200
Public - Observation Area	0	0
Public - Entry Vestibules	50	140
Passenger		
Public - Passenger Waiting	0	0
Public - Telephone Booths	24	100
Public - Vending - Coffee Bar / Kitchenette / Catering	35	150
Public - Vending - Vending Machines	35	150
Public - Vending - Dining Area	0	650
Public - Supplies / Commissary / Sundries Display	0	50
Public - Local Interest Displays / Advertising	0	0
Public - Souvenir Shop	0	50
Business Traveler		
Public - Conference Center	300	790
Public - Conference Center – Equipment Storage	0	100
Public - Conference Center – Kitchenette / Catering	35	150
Flight Crew		
Flight Crew Flight Planning	63	150
Flight Crew Lounge	335	500
Flight Crew Restrooms	30	200
Flight Crew Shower	0	200
Flight Crew Quiet Room	80	200
Flight Crew Night Phone Exterior	0	50
Line Crew / Ground Employees		
Line Crew Service Counter	20	150
Line Crew Work / Service Area	155	175
Line Crew Work Storage	0	70
Line Crew Locker Room	0	150
Line Crew Emergency Shower / Eyewash	0	25
Line Crew Operations Manager / Supervisor	40	150
Employee Restrooms - Additional	50	70
Employee Breakroom	0	100
Airport Administration		
Airport Admin. – Reception	100	120
Airport Admin. – Administrative Assistant	100	120
Airport Admin. – Airport Manager	150	220
Airport Admin – Plan File / Meeting Room	0	250
Airport Admin. – Filing / Copy Room	75	120
Airport Admin. – Storage	100	150
Airport Admin. – Other Offices	0	600
Miscellaneous Use Spaces		
Charter Operations (FBO) Office	35	150
Other Tenant Space (offices)	0	650
Support Services		
Janitor Closet	10	100
Mechanical Room	65	140
Electrical Room	65	100
Computer / Telephone Room	65	150
Support Services - Circulation		
Circulation - Horizontal - 1st Floor	375	1,550
Circulation - Vertical: Stairs	0	580
Circulation - Vertical: Elevator	0	90
Circulation - Horizontal - 2nd Floor	0	1,025

3.3 Staffing Requirements

Assumptions

Currently, the General Aviation areas to be staffed on a regular basis by Athens-Ben Epps Airport include the Reception / Control Areas, the Customer Service / Line Counter, the Airport Operations Supervisor, and the Line Crew Work Area. At present, the Reception Area is staffed by two part-time employees on alternating shifts. Staffing hours may change for this function in the immediate planning period, but the critical level of staff members is not expected to change. Currently there are six full time employees who work varying shifts in the Line Crew Area and one Airport Operations Supervisor. These levels are assumed to remain relatively steady for the foreseeable future. It may be assumed that one employee would be added to the Line Crew in the intermediate future.

Critical Staffing Levels for the immediate planning period (next 10 years)

Functional Area	Maximum Staff per shift
Reception / Central Control	2 employees (maximum per shift)
Customer Service / Line Counter	included in Line Operations, per Airport
Line Crew	6 to 7 employees at shift overlap

The Airport Administration areas currently expected to be housed in the GA Terminal in the immediate future include the Airport Manager, an Administrative Assistant, and possibly another staff position.

Staff levels for other offices and for any fixed base operators are more difficult to forecast. It can be assumed that on average, these spaces should be sized to each accommodate one to two staff in fixed daily positions.

Additional staff (maintenance, janitor, special events host) is assumed to be transient, and no additional 'housing' space needs to be provided for these staff members.

3.4 Space / Function Descriptions

Functional Groupings

The services to be provided by the General Aviation Facility at Athens Ben Epps Airport can be separated into several key areas:

- General Use Services;
- Passenger Services;
- Business Traveler Services;
- Flight Crew Services;
- Line Crew Services;
- Airport Administration Areas; and,
- Various support services.

General Use Services, as the name implies, would be common to several user groups. Specific areas within the program include: the lobby, parking areas, aircraft ramp, and reception and control areas.

Passenger Services are geared toward providing comfort, direction, and assistance to the passengers waiting on a flight or arriving after a flight, these areas include the lobby amenities, reception, restrooms, vending, and souvenirs.

Services for the Business Travelers include: meeting spaces, conference facilities, presentation equipment and tools; catering amenities (kitchenette); computer hook-ups; lounge and lobby areas.

Flight Crew Services are those functions that directly enable the pilots and crew; these areas include flight planning, flight "catering", crew lounge, and quiet rooms.

Line Crew Services are used primarily by employees of the General Aviation Facility who work to support the flight crew and aircraft. Spaces specific to the Line Crew might include fueling services, maintenance equipment, storage, line crew work areas, and flight 'catering'.

Airport Administration Areas will be included in the General Aviation Terminal in order to upgrade the current administration facilities and provide the airport with adequate room to house their various departments in a centralized location without duplicating services.

General Use – Site Functions – Airside

Aircraft Staging Ramp

The staging ramp is that area of the apron nearest the Terminal building where arriving planes are received and immediately serviced, and where outbound planes are parked and prepared for boarding and departure. Equipment in or near this area includes fuel storage tanks or two fuel trucks, two or more pick-ups/service vehicles, one aircraft tug (diesel powered), one aircraft power unit (APU, a mobile gas-fired unit) and other equipment needed by Line Crew operations. As noted in Chapter 2, fueling operations should be conducted at least 100 feet from the airside openings (doors and windows) of the terminal building.

The staging apron is part of the Aircraft Operations Area (AOA), and is considered to include the taxilanes leading to and from the apron. The staging apron should be as close as possible to the airside access of the General Aviation Terminal, and must be in line of sight of the Air Traffic Control Tower. The apron should be adjacent to other buildings or functions for General Aviation Aircraft – such as maintenance (by a FBO) or storage hangars – and provide direct access to taxi aircraft to these locations.

A leading commercial operator of general aviation facilities recommends 100 feet of depth for the area devoted to the staging apron at their facilities. FAA regulations require taxilanes to be 79 feet clear or 115 feet clear for Design Group I and II aircraft, respectively. It is assumed that most aircraft using the terminal building will taxi to this staging area. An area at least 115 feet deep by the width of the building should be considered for the Staging Ramp.

The same commercial operator recommends an overall ramp area on the airside frontage of the AOA that is 300 feet deep by 500 feet wide, 150,000 square feet for transient parking including taxilanes and separating smaller general aviation aircraft from larger air-taxi or heavier commercial aircraft. Based on the current operations and conditions at the General Aviation facility, it appears that this would be more than adequate for Athens-Ben Epps Regional Airport. The existing apron will not allow 300 feet of depth between the terminal location and the existing edge of paving, but an equivalent area may be accommodated in a different configuration. The FAA design guidelines recommend an area of 360 square yards for the design number of transient aircraft and an area of 300 square yards for the design number of based airplane.

Taxiways / Taxilanes / Hangar Access

An existing taxiway is located along the south edge of the AOA apron connecting Taxiways A and A3 with the commuter apron and taxiway B3. The existing taxiway is established for a maximum of a Design Group II aircraft. No objects should be located within 57.5 feet of the centerline of this taxiway at a minimum, to provide adequate clearance for maneuvering aircraft. This required clearance and the required clearance immediately adjacent to the building limit the amount of apron available on the AOA on the airside frontage of the General Aviation Terminal. The proposed site plan should take these clearances into consideration.

Existing hangars for General Aviation aircraft are located to the west of the current and proposed General Aviation Terminal facilities and can be accessed across the apron. Additional T-hangars will be developed near the existing T-hangars, to the west and north of the current hangars. The airfield apron may be expanded and rehabilitated in conjunction with that development.

If the apron is expanded in connection with proposed taxiway extension and addition, the taxiway access and taxilanes will also be reconfigured. For the typical aircraft (Design Group I and II) operating out of the General Aviation facilities, the Taxilane Object Free Area can be assumed to be 115 feet wide. If larger aircraft will operate at the General Aviation Terminal, greater clearances will be required.

Access should also be provided to allow aircraft to maneuver to FBO facilities for maintenance or other services. An existing FBO is located to the immediate northwest of the proposed site. Planned developments at the Airport include additional FBO hangars north of the existing FBO shown in the site plan.

Aircraft Tiedown Parking

The site plan for the General Aviation Facilities should include a tiedown layout. The Civil Engineer should be familiar with the FAA Advisory Circulars and requirements for aircraft maneuvering and aircraft parking. As noted above, the required taxiways and taxilanes on the available existing apron limit the remaining area for parking positions. The TOFA and TSA from the existing apron taxilane in conjunction with the proposed clear lane adjacent to the terminal building appear to limit the available parking positions beyond the existing locations. Based on the preliminary layout and the controlling lines for aircraft operations, the available apron may be sufficient, but not convenient to the terminal. If the apron is expanded for the proposed taxiway and taxilane improvements, this may improve the airside parking arrangement. The location of the terminal building and nearby proposed improvements should be reviewed for impacts on the airside parking arrangement. For design purposes, it is recommended that parking zones for personal or corporate aircraft be separated from parking for heavier commercial aircraft.

The Airport currently has 72 aircraft tiedown spaces available at the airport for locally based and transient aircraft. Preliminary forecasting and analysis indicate that this number of spaces should be sufficient for the near future. This assumes that in the future the airport will provide additional hangar storage space for more local operators thereby opening a greater percentage of the apron parking to transient operators.

Typical planning methods would use the peak hour demand for the transient aircraft-parking apron; currently the airport estimates the peak hour demand as between 14 and 16 aircraft. It is expected that this will grow slightly over the next few years. It would be reasonable to expect 20 transient aircraft in the peak hour in the intermediate future. Based on the above guidelines, 7,200 square yards or 64,800 square feet of apron would be recommended to accommodate the peak transient aircraft. Athens-Ben Epps generally has more transient general aviation operations than locally based operations. Assuming that local demand is 10% less than transient demand, it would be reasonable to expect 18 locally based aircraft as the peak demand. An area of 5,400 square yards or 48,600 square feet should be included to accommodate peak hour local traffic near the terminal; this area may be reduced if the configuration is based on specific aircraft at the airport. It is assumed that long-term aircraft parking and hangars are provided remote from the main apron.

Line Service Ramp
Adjacent to the staging ramp, this area is somewhat removed from the temporary parking spaces for planes recently arrived and planes about to depart. Near the Line Crew area, this area should provide space for typical maintenance and restocking of the aircraft by the line crew from the Line Service Area.

Airside Covered Entry
If the site and building configuration permits, a small covered entry for pedestrian access may be provided. This covered area may provide limited protection from inclement weather and may or may not be part of an airlock vestibule with automatic doors. This area shall not extend far onto the airside ramp, and if provided should not obscure views to the airside from the Control Center.

General Use – Site Functions – Landside
Access Road
Current plans for improvements to Airport facilities include extension and realignment of the Airport loop road with additional access to the General Aviation, FBO, and hangar facilities. Vehicular access will be provided for all vehicles from a public thoroughfare to the General Aviation parking lot. Access may or may not be shared with access to the Commercial Terminal. Vehicle traffic may be one-way or may be two ways, as space permits. One-way traffic flow is generally preferred for terminal access. Access from a public way will be provided to the parking lots and a lane directly in front of the terminal building itself, as described under other sections.

Vehicle Parking Areas
Paved parking areas should be relatively close to the building and provide adequate parking and maneuvering area for vehicle parking for visitors and employees. Ideally, the number of spaces provided would be based on the peak demand forecast for next ten-year period. As several of the cars may be parked for several days, it is assumed that parking requirements could be evaluated over the peak week rather than by daily limits or turnover. In the absence of this forecasting data, it is recommended to base parking areas on a minimum of one space per 200 square feet of public space and one space per two employees, as detailed in Chapter 2. Handicapped parking spaces will be required. Spaces for wheelchair accessible vehicles may be included in general parking or may be separated and adjacent to pedestrian walkways. The critical design vehicle for roadway and parking access shall be an intra-city motor coach or bus, of the type used for charter travel. Additional spaces for rental cars and aisles for maneuvering larger vehicles should be provided as noted below.

It is probable that the number of spaces required to accommodate the number of passenger cars during the peak week of the peak month will exceed the Zoning requirements outlined in Chapter 2. For planning purposes, a minimum of one space per 200 square feet of public space and one space per two employees is considered for a typical month. If the terminal building is 6,700 square feet gross and 4,800 square feet are dedicated to Assembly (public) use and there are no more than 12 employees working at shift overlap, this would result in 30 parking spaces at a minimum for General Aviation use, 2 of which should be van-accessible. If space and budget allow, additional parking should be provided to accommodate future increases in demand.

Typical parking spaces for full-size automobiles shall be not less than 9 feet wide by 18 feet deep. Accessible parking for wheelchair accessible vans shall be a minimum of 13 feet wide by 20 feet deep, appropriately striped and designated, and along an accessible route to and from the terminal building. If the handicapped space is provided in general parking, it shall be 13 feet wide and 20 feet deep and along an accessible path to the terminal. If handicapped parking is parallel to and adjacent to a pedestrian walk, it shall be 13 feet wide and not less than 24 feet in length. If the walk is raised from the parking area, an accessible curb cut shall be provided adjacent to the parking space in compliance with accessibility guidelines referenced in Section 2.4 "Building Code Issues."

If reworking or adding onto an existing parking lot, parking spaces shall be angled to match the existing parking. If developing a new parking lot, parking spaces shall be designed to be 90-degree spaces. As recirculation is expected within the lot, the parking areas may be designed to accommodate two-way traffic. If so, the lanes shall be a minimum of 24 feet in width clear, except at a designated handicapped accessible parking space, where the clear aisle distance may be reduced to 22 feet at the accessible space.

The minimum clearances and requirements for the parking lots shall be reviewed for compliance with the requirements for the critical design vehicles – motor coaches (buses) for charter groups. The access lane and recirculation lanes in the parking lot shall be capable of handling these vehicles as they travel to and from the terminal. It is recommended that some parking distant from the terminal building also be marked for the occasional temporary parking of large chartered motor coaches, due to the occasional significant demand placed on the facility by a single large group (i.e., sports teams to or from the local university) traveling to or from the General Aviation facility. Adequate room should be provided to accommodate three motor coaches at one time in the parking lot. Parking spaces for these larger vehicles should be secondary to spaces for personal automobiles, as the nature of their use is infrequent and temporary.

A separate loading area is not required, but a loading lane, preferably with access to both the landside and the airside of the General Aviation Terminal, shall be provided. Separate from the parking lot circulation, this lane shall be a minimum of 10 feet wide (12 to 15 feet preferred) by 50 feet deep on the landside.

Rental Car Ready Parking Spaces

Additional spaces for pick-up / drop-off of rental cars are desired in the parking lot. If provided, these spaces should be close to the building entrance, and preferably within view of the Control Center operator. The airport requests at least one space for each agency anticipated to be operating at the Airport. It is reasonable to assume that there will be no more than four agencies in the near future.

Pick-Up / Drop-Off Lane
For the convenience of passengers, a pick-up and drop-off lane is desired adjacent to the landside entry of the Terminal Building. In the interest of safety, this lane should be designated for one-way traffic only in front of the terminal. This lane should accommodate vehicles as large as passenger motor coaches (tour buses). The Airport would like to be able to have two actual lanes – to allow for passing of vehicles stopped at the terminal entrance. Access to this drop-off lane may be direct from the Terminal access road, and should also allow for recirculation to and from the parking lot.

Landside Covered Entry
The landside entry is desired to include a roofed cover over the pick-up and drop-off lane, and the cover and its associated supports should be designed to allow the critical design vehicle – motor coaches – to park and unload passengers or to pass through and recirculate.

Delivery / Loading Access
A loading dock or ramp does not appear to be required, but at a minimum a loading area should be provided, preferably a single lane with access to both the landside and the airside of the Terminal. This lane may be separate from, or part of, the parking lot circulation, and shall be a minimum of 10 feet (12 to 15 feet preferred) wide by 50 feet deep on the landside. The loading lane shall be designed to accommodate a semi-trailer truck.

General Use / Public Services – Building
Main Lobby
Sometimes described as the 'hub' or the 'beehive' of activity at the terminal, this space is the focal point of the building. All major pathways should converge here. Entrances from the Airside and the Landside should open immediately onto this area. Working towards an open concept of arranging the building spaces for maximum efficiency, this space should open onto or merge with several other features of the building: the Control Center / reception counter, passenger waiting, vending and dining, public restrooms, public telephones, the line crew service counter, any merchandise displays for general consumption, community information displays, pilot message boards, and the large conference center, if possible. At a minimum, these spaces should be clearly visible from within the public lobby. If the terminal has a second story, access to vertical circulation should be from this area. The lobby and any public spaces accessory to it shall be accessible for handicapped persons. The Airport has requested that the main entries be automatic doors for the hands-free operation of travelers arriving airside or landside.

Control Center / Reception
The Control Center must be readily visible upon entering the building from both the Airside and the Landside. The Control Center should be located to provide the Receptionist stationed here a view direct onto the aircraft arrival line and to the Line Crew Work Area. It is convenient to locate the Control Center near the Airside entry from the ramp. The Receptionist should be able to greet all visitors from this location, and direct them to appropriate areas in the building as needed.

The Control Center Receptionist will be responsible for observing the great majority of functions and activities at the Terminal from this location. Responsibilities of the Control Center Operator will include: observing the vending and dining area; the display, sale, and stocking of products, pilot supplies, travel sundries, and imprinted souvenir materials; controlling access to the Airfield by travelers from inside the Terminal and by vehicles landside requesting access to the ramp; initiating orders for flight service and closing out orders; directing visitors to other tenants of the General Aviation Terminal; and scheduling and setting up the Conference Centers as requested.

Furthermore, the Control Center Receptionist will also control much of the general communications at the terminal: from keeping track of flight arrivals and departures; taking and posting messages to flight crews; maintaining a bulletin board of flight crew messages and notices to airmen; receiving and directing telephone calls for most of the General Aviation Terminal; communications with the line crew inside and outside the building; and air to ground communications.

The Control Center service counter should be sized at a minimum to accommodate three customers waiting at the counter at one time. The following equipment shall be provided at this area:

Messaging / Posting Board
Telephones / Telephone Control (Airport and Public)
Closed Circuit Monitors – to ramp, incoming vehicles, any remote area
Access control station for vehicles to airside ramp, airside doors, Flight Crew Lounge
Radio base for air to ground communication with line crew
and ground-to-ground communication among line crew and control
Intercom to Flight Crew, Line Crew, and possibly Passenger Waiting
Unicom Monitor
Computer (probably networked)
Printer(s)
Cash Drawer
Safe (Size and Type to Be Determined)
Credit Card Machines (Reader/Verifier)
Facsimile machine
Small photocopier
Paperwork Storage or below-counter file cabinets

Some of this equipment will require external antennae mounts. Coordinate with the Owner's actual equipment selections and existing antennae stands to provide the required mountings and connections.

An area should be provided for the Flight Crew to coordinate services for their aircraft with the Line Crew. The counter space dedicated for this function should accommodate at least two people simultaneous on both sides. This area must have direct visual and audio connection to the Line Crew Work Area or the Line Crew Operations Manager.

Public Restrooms and Water Fountains

The cleanliness and appearance of the public restrooms is a critical issue for General Aviation Terminals. These are usually the first stop for most passengers arriving from the airside, and form a large part of the overall impression of the General Aviation Facilities. Restrooms for men and women should be provided immediately off of the Passenger Waiting and Main Lobby and in direct sight of the entrance from the Airside. Preferably, they should be visible from the landside entrance as well.

The number and type of toilet and lavatory fixtures shall meet or exceed the requirements of the building code, associated Plumbing Code, and any applicable regulatory guidelines. The Airport's advisory committee has indicated that they would prefer three water closets and two urinals provided in the men's restroom and a commensurate number of water closets in the women's restroom. All facilities shall be fully accessible for individuals with physical disabilities, as required by the

Americans with Disabilities Act, the building code provisions for accessibility, and the State of Georgia Handicapped Law and Amendments.

Entry doors should be eliminated, if possible, in favor of turned corridor entries to provide privacy without the impedance of door swings for travelers with baggage. A common entry vestibule may be provided as part of the entry sequence. Layout, fixtures, controls, and materials selected for these areas should emphasize ease of use and should provide durable sanitary surfaces, easily cleaned and easily maintained. Shelves may be provided in stalls, if appropriate, for the stowage of carried luggage. Ideally, controls should be automatic, no-touch type, wherever possible for cleanliness and conservation. The sound system used in the public waiting area should continue into the restrooms.

Care should be taken in the selection of systems and finishes in the entry vestibule and adjacent to the restrooms to control unwanted noise and odors in the public areas. Outside of the toilet and lavatory areas, material finishes and arrangement should be selected with attention to sound control. If sound control materials cannot be provided sufficient to control sound entering the lobby and lounge areas, a white noise or background sound generator may be installed in the entry vestibule to mask unwanted noise. The mechanical system shall provide for sufficient fresh airflow through the restrooms, and shall prevent air exchange from the restrooms back into interior spaces.

Drinking fountains, provided per the Plumbing Code requirements, should be provided outside of the restrooms. The Airport has indicated they would prefer water fountains be separate from restrooms. Accessible drinking fountains shall be provided near the public space in the terminal.

Public Atrium

As part of, or opening onto, the public lobby and the passenger waiting area, a high (two story) atrium should be provided. Much of the area should be glazed, to open views onto the airside and air operations, and to provide light into the atrium. This area, in conjunction with the lobby, should be large enough to accommodate the passengers from two regional jets (25 to 30 each). The airport would like for the combined areas to be able to accommodate a football team (50 to 75 persons, two planes worth) standing room only, on occasion.

The Advisory Committee expressed a desire for the structure and arrangement of this atrium space to focus public attention on a display of a replica of Ben Epps' aircraft. The Owner will provide the designer with actual weight and relevant dimensions (approximately 24' x 24') prior to initiating design. Additionally, informational displays and graphics relating to the Athens-Ben Epps Airport, the City of Athens and Clarke County are desired to be incorporated throughout the public areas, and may be considered throughout the design. An informational placard describing the replica and relevant history should be provided at a point of interest close to the replica itself.

Public Observation Area

The Airport would like to provide an area for the public to observe aircraft in operation; currently a small outdoor covered area is provided at the airport. It is generally assumed that the public lobby, the atrium and the passenger waiting areas, which should all have visual connection to the airfield, can also serve as areas for the public to gather and observe airport operations.

Passenger Services

Public Telephone Booths

For flight crews and travelers to conduct business privately, telephone booths may be provided in or near the Lobby. All phones shall be pay telephones using some form of credit card authorization – no coin-operated telephones will be used. Telephone Booths are desired to include a comfortable seating area and a small work area for the business traveler to spread out work papers or to place a laptop for connection to the phone data port. The booths should be able to be individually closed off from the noise of the lobby area while the occupant remains in partial view of the Control Center. Booths are desired to provide the occupant and their work reasonable separation from direct audio or visual observation by persons in the lobby.

Passenger Waiting

This is the primary waiting and gathering space for aircraft passengers. After the lobby, this area will serve to form most visitors' impression of the Athens-Ben Epps General Aviation Terminal. Emphasis should be placed on providing a comfortable waiting space. Small groups should be able to sit independent of one another, and a variety of seating arrangements should be possible with minimal effort.

The lounge ideally will provide a balanced arrangement of open spaces and quiet areas to allow for small discussions and group gatherings as well as private reading or individual work areas. The Waiting Lounge should be adjacent to the lobby, the restrooms, the reception / control center, and the vending area. The design should provide for observation of the aircraft parking and arrival area from the majority of locations in this space.

This area should be situated to be observed by the Control Center. Separation of lobby and gathering spaces from smaller, more private seating areas may be accomplished by low planters or dividing walls. Literature racks and displays may be provided throughout the waiting area. Seating throughout should be comfortable and durable. Elements of interest in this area could be focused on fixtures and furniture and accessories. Large blocks of seating should be avoided; an assortment of small tables, displays, or accessories may be provided to serve the waiting passengers' needs and to break up the lounge into smaller segments.

Care should be taken in the layout of lighting in this area to provide low intensity overhead lighting, but sufficient lighting in reading areas, if provided. Consideration may be given to task or individual lighting in some areas. In addition to ample windows viewing onto the Aircraft Operations Area, skylights and clerestory windows may be included. Speakers should be inconspicuously mounted to provide background music throughout the passenger waiting area. A small fountain or water feature may be included in this area for visual and acoustical purposes.

Vending / Coffee Bar / Kitchenette / Catering

This area is for the use of Flight Crew and Passengers alike. It should be conveniently located off of the public lobby, and within sight of the Control Center. Space and connections for vending machines should be provided, along with a countertop, commercial grade coffee service and a small countertop / bar area. Vending should anticipate soft drinks, snacks/candy, and sandwiches; individual machines, or combined service may be used depending on available space. The coffee service shall allow for individuals waiting in the terminal to procure individual servings, as well as allow Flight Crew to fill coffee containers to take onboard aircraft. Cups and coffee supplies shall also be provided at the counter. Storage space for coffee and vending supplies, as well as general cleaning supplies shall be provided at the counter as well. A small bar sink or single bowl kitchen sink should be provided at this counter. A heavy-duty dishwasher is desired adjacent to this space (or under the counter, if space permits) for Flight Crews to clean aircraft dishes and flatware. Additional catering services will be provided by the Line Crew.

Vending – Dining Area
A small dining area comprised of two or more booths is desired adjacent to vending and off of the public waiting area. Fixed seats and tables are preferred, and all surfaces should be durable and easily maintained. This area may be physically separate from other areas, but should be visible to and from other public areas.

Flight Supplies / Commissary / Travel Sundries
As part of the Control Center, or separate from but under the control of the receptionist, an area to display pilot supplies, maps, charts, and specialized aviation products is desirable. A small 'drug store' style display of travelers' goods (aspirin, toothpaste, postcards, etc.) may be provided together with or separate from these materials. Depending on the arrangement, these areas may be under-counter display cases around the Control Center, secure wall displays of products, or could be areas partially separated from the lobby by glazing. It is preferred to separate these areas from the general flow of Flight Crew and passengers. Sales of all products will be handled through the Control Center. Additional merchandise not on display should be securely stored at or adjacent to the Control Center.

Local Interest Displays and Souvenir Shop
As an image-marketing tool and business development area for the City, County, and Region, the Airport will include items of local interest, and merchandise (memorabilia) highlighting items of local interest. To inform travelers of items of local interest, displays may include: information cards, brochures, or flyers for rental car agencies, hotels, restaurants, entertainments, and local activities; for business development, items may include pamphlets and brochures from local and regional development agencies. Items of local interest for sale may include: postcards, photographs, sweatshirts, shirts, hats, pennants and paraphernalia featuring the local University of Georgia and its mascot; similar materials for tourists visiting the historic town of Athens. Similar to the Commissary materials noted above, these materials should be prominently displayed, but browsing should occur out of the general flow of passenger traffic. Sale or distribution will be controlled through Reception. Storage for these materials would preferably be separate from the materials noted under the Commissary/Sundries, but should also be secure and adjacent to the Control Center. Coordinate with the Owner for specific materials in these displays.

Passenger / Business Traveler Services
Conference Center
The Conference Center should be designed to facilitate meetings up to and including press conferences. The conference room should be flexible in arrangement to accommodate several types of meetings and presentations. Typical meetings are expected to be business meetings or presentations including slide or computer presentations to groups. This area may also be used for seminar presentations and roundtable discussions. This Conference Center will also host Board Meetings at least once a month, this will include public audience and audio recording and may entail video recording. Some consideration may be given to providing room dividers; however, most configurations should be accomplished by rearranging furnishings alone.

Additional consideration should be given to the finishes and fixtures in this area, as this area has been identified as key to the image of the General Aviation Terminal. If the Conference Center is on the same floor as the Passenger Waiting Lounge, some of the chairs in the Lounge should be interchangeable with chairs in the conference room for maximum flexibility in size of meeting groups.

Equipment to be provided in this area include:

- podium or lectern
- projection screen
- computer hook-ups for projected computer presentations
- slide projector
- overhead projector
- audio recording for board meetings
- television / video playback cart, roll-away stand
- dry erase / white boards
- telephone with speakerphone capabilities / credit card for long distance calls

Storage space for mobile equipment and stock catering items may be provided in cabinets or closets within the Conference Room proper, or a secure adjacent storage closet should be provided for presentation and conference materials.

Conference Center Kitchenette / Catering Preparation
At a minimum, a counter with bar sink and refrigerator shall be provided at the Conference Center to support occasional catered meetings or meals. An area for preparation of coffee and other beverages should be provided in or attached to the Conference Room. Storage for beverages and other catering supplies may be provided in this area. The Advisory Committee desires additional space beyond these minimal functions for more extensive catering and / or larger meetings.

Equipment to be provided in this area includes:

- Beverage/Coffee Kitchenette Closet
- Coffee-Maker
- Bar Sink
- Counter Space
- Under-Counter Refrigerator to store catering trays

Flight Crew Services
Flight Planning
An area for weather briefing and flight planning should be provided adjacent to the central lobby or to the Control Center. In other typical General Aviation terminals, this is a separate room, but functionally it need not be closed off from other areas. To preserve the overall open quality of the terminal, this space may be along a circulation corridor, or may be only partially separated from other functional areas. This function should be separated from the Flight Crew Lounge. The airport would like to provide three flight-planning stations and one DTN weather station – a dedicated computer terminal for researching flight planning paths and regional weather data.

The airport would like to encourage minimal time for Flight Crews in Flight Planning. Flight planning stations should be designed for stand-up usage and should provide sloped counters for map layout with a small shelf underneath for temporary storage of reference material. However the space is enclosed, adequate wall space must be provided for large maps – VFR or IFR (coordinate with Airport for number and sizes to display) to calculate flight distances. A television may be provided to display dedicated weather or flight channel information. A bulletin board shall be provided to post local airport operational information and notices-to-airmen. A telephone should be provided at each flight planning station. These phones will allow local calls, and shall have direct dial access to flight planning services (ATIS and FSS), air traffic control updates, weather services, and toll-free dialing.

Equipment to be provided in this area include:

- a computer terminal for DTN which consists of
  - a monitor, a keyboard, a proprietary processing unit, and a data cable
- television and data cable for the weather channel
- dedicated telephone connections to flight planning and air traffic control
- tack board or other mounting for regional / national maps, Notices to Airmen.

Flight Crew Lounge

Flight Crews normally use these facilities for several hours while waiting on their passengers to return or arrive. The Flight Crew Lounge is a primary function of the General Aviation Terminal and should serve to attract business travelers to the facility. The Flight Crew Lounge should provide a higher degree of comfort than the passenger lounge. This area shall be separate from the Lobby and from Passenger Waiting. Access shall be observed from the Control Center. This area should provide direct observation of the passenger parking and arrival area, and may provide direct observation of the aircraft parking area.

The Flight Crew Lounge should be designed to incorporate several reclining chairs, a television, chairs for reading or writing, and work or game tables. Work surfaces should be large enough for the updating of flight charts and layout of small maps. Phones for local calls and a direct audio link to the Line Crew / Control Center shall be provided. Magazine and book displays may be provided, along with a variety of tables throughout the area. Finishes and furnishings should be similar to that of other public areas of the terminal building, but are not necessarily the same level of quality as those in the Lobby or Conference Spaces. Restroom facilities should be provided adjacent to the lounge. If shower facilities are provided, they should be adjacent to the restroom facilities and are preferred to be separate. If quiet rooms or bunks are provided, they shall be accessible from the Flight Crew Lounge, but should be isolated from the main area and activities of the lounge.

Flight Crew Restrooms

A minimum of one unisex toilet and lavatory is desired for the exclusive use of the Flight Crews. This restroom should be accessed directly from the Flight Crew Lounge. Restrooms shall voluntarily be made fully handicap accessible, although no usage by disabled personnel is expected in the immediate future. Fixtures and materials in this area shall be durable, easily cleaned, and low maintenance.

Flight Crew Shower

If practical, the Advisory Committee desires at least one shower for the use of the Flight Crew; it is preferred that any shower be adjacent to, but separate from, the Flight Crew Restrooms. If provided, this unisex shower would meet the standards for a handicap accessible standing / seated shower area. The shower would be secured from the interior. Ideally, an area for changing should be provided in the same room as the shower with hooks and/or shelving for clothes and personal supplies. Fixtures, surfaces, and materials in this area shall be durable, easily cleaned, and low maintenance.

Flight Crew Quiet Room
The General Aviation Advisory Committee would like to include a separate room from the Flight Crew Lounge, provided with comfortable, overstuffed, reclining chairs where pilots may rest uninterrupted for a few hours while waiting on passengers. Alternately, if space permits, one or more bunks or bunk rooms may be provided. Quiet rooms shall be situated as far as practical from public areas and from the parking area. Wall construction shall be designed to reduce noise infiltration from interior and exterior spaces.

Flight Crew Night Phone
For after hours use, a pay telephone accessible from the airside landing/ aircraft parking area must be provided for arriving pilots to close flight plans and obtain ground transportation. This phone shall be a pay telephone using a credit card – no coin-operated telephones shall be used. A well-lighted area, protected from the weather shall be provided, preferably with two seats. The Airport will provide contact numbers in a weatherproof display adjacent to the telephone.

Line Crew Services / Ground Employee Services
Line Crew Service Counter
An area should be provided for the Flight Crew to coordinate services for aircraft with the Line Crew. The initial processing of work orders for flight services will occur at this area. This function may be incorporated in the Control Center, or may be a separate area. The counter dedicated for this function should accommodate at least two people simultaneous on both sides. This area must have direct visual and audio connection to the Line Crew Work Area or the Operations Manager.
Line Crew Work / Service Area
It is essential that the Line Crew have visual observation of the aircraft parking / staging area and a line of sight to the taxiway for incoming aircraft (the Flight Line). The Line Crew must also be able to move easily from the Work Area to the aircraft staging area. The Line Crew should have a direct visual connection to the Control Center, and occasionally needs physical access to the Control Center. Ideally, the workflow of the Line Crew Service should be separated from the flow of passengers and flight crew through the terminal. An exit shall be provided which allows the line crew to move quickly to the future Airport Rescue and Fire Fighting Facilities. The Line Crew should be situated near the Control Center, adjacent to the Operations Manager. If employee locker rooms and restrooms are to be provided, they should be adjacent to the Line Crew Work Area. This area should have larger access doors to the airside or to the delivery lane (if appropriate) to receive deliveries of equipment and materials. If possible, access should be provided on both the landside and the airside.

The Line Crew Service Area should have communication with the Control Center, access to a radio for ground to air communications (based from the Control Center), alarms to monitor the glide slope and localizer (ILS) for aircraft approach, telephones, a tool board or workbench, a status/work ticket board for aircraft and service information.

Some equipment in this area will require external antennae mounts. Coordinate with equipment provided at other areas, the Owner's actual equipment selections, and existing antennae stands to provide required mountings and connections.

There should be appropriate storage for windshield cleaning equipment, small tools, and other miscellaneous line service supplies. As noted earlier, the amounts and types of materials stored here will be within acceptable standard storage limits, typically not requiring additional treatment for hazardous storage. Some catering items will also be handled through the Line Crew and equipment stored here.

If oil or equipment storage exceeds 50 square feet of floor space, or if it is determined that the type or quantity of material stored constitutes a hazardous use group, a separate storage room with fire separation shall be provided. Designer shall review Owner supply list and quantities during design.

Ice may be provided at the vending area for use by individuals, but the line crew will provide ice by the bag to supply the aircraft from a volume icemaker. A storage refrigerator may also be provided to hold catering items to be taken aboard aircraft, if so; it should be conveniently accessed from the loading lane and entry from the landside. A heavy-duty icemaker with 50 to 75 pound capacity should be provided, and a commercial-type, catering tray storage refrigerator may be provided, if feasible.

The Line Crew work area is a hard-use area, commercial and industrial equipment and supplies will be in use in this area. The Line Crew is operational in all kinds of weather, and this area will be exposed to weather and wet conditions. Provide durable, non-slick floors and work surfaces. This area should receive more durable finishes with low maintenance materials throughout. Emphasis should be placed on serviceability in this area. Access to this area from passenger areas should be limited

Due to the supplies used in this area, and the fuels used by the line crew on the adjacent apron, an emergency eyewash and an emergency shower shall be provided nearby. See below.

Equipment to be provided in this area include:

- intercom
- glide slope / ILS monitors and alarms
- storage shelves / cabinets
- white boards for recording work status
- icemaker
- catering refrigerator
- emergency wash

Line Crew Locker Room

A locker room may be provided with lockers for each Line Crew employee. It is not currently anticipated that other employees will share this space. Lockers or storage closets should accommodate personal clothes storage, inclement weather gear, and fire response gear. Not all of this gear necessarily needs to be individually stored; group storage may be acceptable, depending on the use of the gear. Depending on the type and size of lockers available, a closet area with a rod to hang raincoats / raingear and fire suits may be provided in addition to lockers. The locker rooms should be adjacent to, or in line of sight observation of the Line Crew Manager; if a restroom is provided for the line crew, the locker room should be precedent or adjacent to it. If a restroom is provided, this area need not be separated from the Line Crew Work Area, but need only provide storage of personal items or individual work uniforms, weather gear, and safety equipment. If a restroom is not provided, provisions should be made for reasonable privacy during uniform changes.

Equipment to be provided in this area includes:

- durable, open wire lockers
- bench

Line Crew Restrooms

If space permits, a separate restroom for the Line Crew may be provided. This should be adjacent to the Work Area, and to the Locker Room, if provided. This could be a unisex toilet and lavatory, and if provided should be fully accessible for the physically disabled.

Line Crew Emergency Shower / Eyewash

Due to the supplies and the fuels used by the line crew on the adjacent apron, an emergency eyewash and an emergency shower shall be provided nearby. If the flight crew facilities are provided with a shower, and it is on the same floor as the Line Crew Work area, and it is within a reasonable distance from usage areas, it may be possible to arrange access to this shower for emergency purposes. If this presents undue difficulties, an emergency shower and/or eye wash station shall be provided in the Line Crew Work Area, in an adjacent locker room or restroom, or at the exterior, adjacent to the apron staging area. If located on the interior, at least one floor drain shall be provided.

Line Crew Operations Manager Office

The Line Crew Operations Manager oversees the day-to-day operations of the Control Center and the Line Service Crew. This office must have visual observation to both and communication with both. The Line Crew Manager must also have line of sight to the aircraft staging area. This office should have a view to aircraft parking as well. Extensive use of glazing is anticipated to accomplish these connections, as the Line Crew Manager will need to be separable from other functions at some times. This office will also serve for the Line Crew Manager to meet with clients, vendors, and employees and should be accessible from the public lobby. This office should be adequate for a large work desk and should be provided with adequate built-in shelving for maintenance and operations manuals, data ports for a computer, a telephone, an intercom to the Control Center and to the exterior aircraft staging area and, if needed, to the Line Crew Work Area. In addition, the Manager should be able to monitor ground-to-air communication, and approach alarms. Carefully arranged, these could be shared with the Line Crew. The interior finishes and image of this office should be in keeping with other public areas of the General Aviations Terminal. If this area opens onto the public lobby, use of glazing should be considered to create a connection to the lobby while providing privacy for business functions.

Equipment to be provided in this area include:

- ground-to-air scanner
- work desk / computer desk
- telephone
- data connection
- storage shelves / cabinets
- intercom / exterior public address
- built-in shelving

Employee Restrooms (additional)

If restrooms other than the public restrooms are desired at other locations in the building (e.g. Employee Restrooms, see the "Building Parameter Classification" table in this Chapter), then, depending on the estimated demand, restrooms may be either a unisex toilet and lavatory or shall be separate facilities for men and for women. Restrooms shall in any case be made handicap accessible. Fixtures and materials in this area shall be durable, easily cleaned, and low maintenance. Plumbing fixtures would preferably be 'no-touch', automatic operation where available for public use.

Employee Breakroom

The Airport has expressed a desire to keep employee functions separate from passenger and flight crew functions. In order to provide functional services for the ground employees (including the Line Crew) to utilize rather than those spaces intended for the traveling public and flight crews, a breakroom or lounge may be provided. This should be separate from main public ways and work areas; away from the lobby, conference center, passenger waiting, and flight crew lounge. If provided, this area should include, at a minimum, several chairs and one or two fixed or movable table. This space may include small kitchenette facilities, such as a bar sink, coffee center, and microwave. Counter and storage space may also be included.

Airport Administration Areas

All of the Airport Administration Areas may be accessed by the public and shall be made accessible to individuals with physical disabilities as required under the provisions of the Americans with Disabilities Act and the Georgia State Handicapped Law and American National Standard Handicapped Requirements A117.1. These spaces may be considered Business Occupancy for purposes of Code Review and Occupant Load calculations.

Reception

Provide an area to receive visitors to the Airport. This area will be staffed by an Administrative Assistant/Receptionist, and should accommodate three to four visitors. Depending on size and arrangement, reception may be part of the Administrative Assistant area noted below, or may be a separate space.

Equipment in this area may include:

- telephone / sub switchboard control
- computer workstation
- intercom

Administrative Assistant

This area shall open onto or be adjacent to Airport Administration Reception and shall be adjacent to the office of the Airport Manager. This area should have control of or be located near the Filing / Copy Room, where many of the functions of the Assistant will be carried out. The person staffing this area will be responsible for much of the correspondence, filing, and communications of the Airport. The office should include room for a desk with a computer workstation, may include a fax machine and postage equipment if not included at Reception or in the File / Copy Room.

Equipment in this area may include:

- telephone / sub switchboard control (see above)
- computer workstation
- facsimile machine with dedicated line (see below)
- intercom

Airport Manager

This space should have visual connection to the Airfield, and may have line of sight view to the commercial terminal building as well. This area serves as the office for the Airport Manager and may also serve to hold small meetings. Access from the Public Spaces should be controlled through the Airport Receptionist and/or the Administrative Assistant. The furnishings and finishes in this space should be of similar quality to those in the Public Lobby and Public Waiting Area. Chairs similar to those in the Conference Center may be considered. The Airport Manager will have a telephone with speaker capabilities and a computer workstation.

Equipment in this area may include:

telephone with speakerphone capabilities
computer workstation
intercom

Plan File / Meeting Room

This area should be near the Airport Reception Area. This space should serve multiple purposes. Plans for Airport Projects will be stored here in flat files and reviewed on tables in this area as needed by the Airport. The Airport Staff will use this area for small meetings; business travelers may also use this area for small meeting groups when the Conference Center is occupied. Furnishings and finishes should be similar to those in the Conference Center for maximum flexibility, so that chairs may be moved from one to another to accommodate various meeting arrangements. The work surface for plan review should be a durable surface material. A white board should be provided for meeting notes, and wall space should be kept free for display of large scale planning documents or discussion postings. This area should also be equipped with a speakerphone and a data connection.

Equipment in this area may include:

telephone with speaker phone capabilities
additional power outlets if presentations may be given here
data ports for itinerant use
write-on / wipe-off white board

Filing / Copy Room

Provide room for several file cabinets, storage of office supplies, a photocopier, a facsimile machine, postage equipment, and work surfaces. This area should be under the control of, open onto, or be near to the Administrative Assistant. If the Copy Room opens onto the Reception Area, provisions shall be made for secure storage of equipment and supplies in the Copy Room. Coordinate with the Owner to verify what furnishings and equipment will be carried over from the existing facilities and what will be provided as part of this project. Power in this area should be provided at floor and work surface levels, and for future additional equipment should be in excess of current requirements.

Equipment in this area may include:

telephone and intercom
photocopier(s) with future data port available
facsimile machine with dedicated line
postage meter and scales
cabinets and counters

Other Administrative Offices
The Administrative services of an Airport typically include additional office staff. Space may be needed for a bookkeeper or treasurer, information technology manager, additional assistants, or other staff. These functions have widely varied requirements for space and other supports. Any additional offices should be coordinated with the Airport for specific requirements. All offices should be equipped with power connections, and data and telephone conduits for future connections. The Airport does not anticipate any additional staff to have offices at this time.

Various support Spaces
Janitorial Closet
At least one closet or room shall be provided in the building for the storage of cleaning supplies. This area shall have a service sink - floor mounted or wall mounted - sturdy and secure shelves, and a broom and mop rack. In addition to fixed shelving and equipment, this closet shall have floor space ample enough to store typical maintenance and cleaning equipment in use at present at the Airport. Depending on the size and arrangement of the Terminal Building, additional closets may be required for each floor.

Fixtures and equipment in this area will include:

- service sink
- mop rack / hooks
- open shelving

and may also include:

- lockable cabinet (depending on cleaning compounds stored here)

Mechanical Room
At least one closed room on an exterior wall (preferably landside) shall be provided to house equipment for the heating, ventilation, and air-conditioning systems. Depending on the systems selected, condensers and compressors may be installed exterior of this space. The size and configuration of this room (or rooms) is dependent on the mechanical systems selected and designed for the ultimate building development. If the building is two stories, there will probably be mechanical rooms on each floor. If a fire suppression system (sprinklers) is installed, the standpipe and pumps for that system may be housed in the same space, or a separate mechanical room. This area shall be separated from the Electrical Room. Depending on the size and type of condensing/refrigerating equipment, this area may be required to be enclosed by a one-hour rated assembly. Although those conditions are unlikely given current assumptions of mechanical equipment, it is nevertheless recommended that these areas be fully enclosed by a smoke partition assembly, at a minimum. Mechanical Rooms shall be secure spaces, and shall allow for controlled access only by authorized persons.

Electrical Room
At least one closed room on an exterior wall (preferably landside) shall be provided to house panel boards and other equipment for electrical distribution. The size of this space is dependent on the ultimate building development. If the building is two stories, there may also be an electrical room or closet on the second floor. This area should generally be separated from the Mechanical Room. Based on current assumptions, there does not appear to be a building code requirement to separate the electrical room from the remainder of the building; however, it is recommended that, at a

minimum, the electrical room(s) be fully enclosed by a smoke partition assembly. Electrical Rooms shall be secure spaces, and shall allow for controlled access only by authorized persons.

Telephone / Computer / Communications Closet(s)
Given the number and function of communication devices and systems anticipated in this program, at least one telephone panel and one centralized data hub should be included. Under most circumstances, this space could be included in the Electrical Room above. The Electrical Engineer may recommend that the systems be physically separated based on other design requirements. This might be more convenient for the building operator. If not included in the Electrical Room, the communications closet should be located adjacent. Depending on the type of communication system and the number of interconnections, additional small closets or panels may be needed at other locations in the plan, notably in a two-story arrangement. The design should consider future expansion and possible impacts in this area required by additional service.

Data ports should be provided at most spaces as noted under their descriptions, and conduits shall be run to the communications closet, with pull wire for spaces not wired initially. The type of data wiring and data communications network will vary widely depending on the available technology at the time of design. Additional power, conduit, and space for panels shall be provided as reasonable for future development and expansion. Depending on the type of network, the total distance of a run, and the number of interconnections in the system, additional small hub connectors or communications closets may be needed at other locations. The electrical designer or specialty systems consultant shall meet with the Owner to determine what available systems will best serve the Airport's needs for the foreseeable future.

Circulation Space
Horizontal Circulation
In addition to specifically programmed spaces, a means of moving people and equipment among those spaces must be provided. Horizontal circulation includes all hallways, corridors, vestibules and paths between specific spaces that are not included directly in those spaces. At this programmatic stage, a generalized estimate of typical space based on other functions can be assumed to be dedicated to circulation. In a single story building, twelve to twenty percent of a building is generally dedicated to circulation, depending on the size and arrangement of the building. In a multiple story building, a larger overall percentage of the building is typically used for horizontal circulation, especially if portions of upper floors open to view lower floors. The areas shown at this programmatic stage are fairly conservative, as the design has not been worked out. Based on other considerations, and the functional arrangement of spaces, it is possible that less space may be needed; if spaces open one onto another, for example, less overall space is dedicated to circulation.

Vertical Circulation
If a two-story solution is selected for this building, provisions must be made for the movement of people and equipment between levels. In a Public Assembly building, this generally means two sets of enclosed stairways at a minimum; it may also include elevators. Based on interpretation of the Georgia State Handicapped Law, it appears that all public buildings must be designed for full accessibility by handicapped individuals; in order to comply with this intent, it is assumed that a personnel elevator would be required for a two-story public building with public facilities on the upper story. Any stairs or elevators shall be enclosed in a fire-rated assembly as required by applicable building code sections.

3.5 Spatial / Functional Relationships

Impact of Key Design Issues

Ideal Terminal Flow

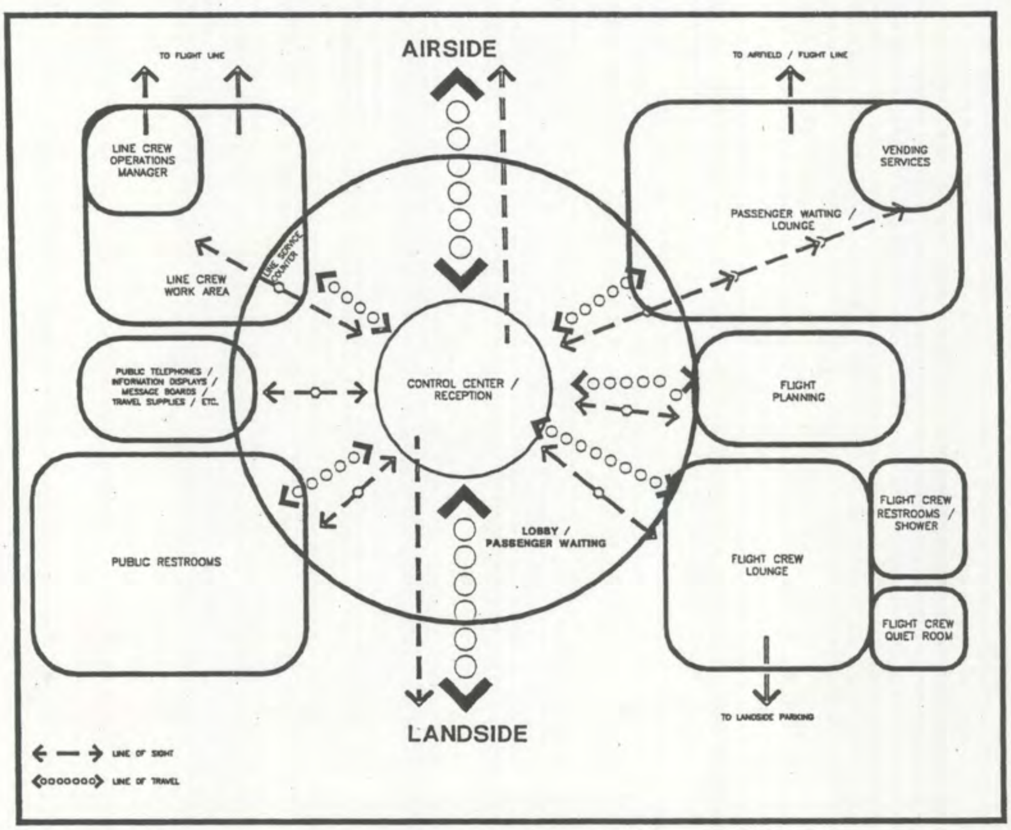
The requirements of the General Aviation Terminal are few and fairly simple, viewed in plan. The building layout should reflect the basic simplicity of the building functions and generally be organized by direct functional relationships between the interior spaces/facilities and site facilities. The interior layout should address the configuration of the airfield and passenger and service driveways.

The design of the terminal building should provide short and direct pedestrian routes for the traveling public from vehicular parking areas to passenger waiting areas or direct to aircraft parking areas. The design should provide views to the airfield operations from the waiting areas, control area, manager/line crew area, and any other public gathering areas in the building.

The waiting room is the center of all major circulation paths in the terminal building. Most routes will direct travelers to or from this space. Starting from this central area, an open plan with minimal partitioning will allow for better circulation, better views to the airfield and parking areas, and a more spacious appearance.

Figure 3.5.a "Ideal Spatial Diagram" illustrates a simplified model terminal building showing the flow of travelers and key spatial relationships.

Figure 3.5.a Ideal Spatial Diagram



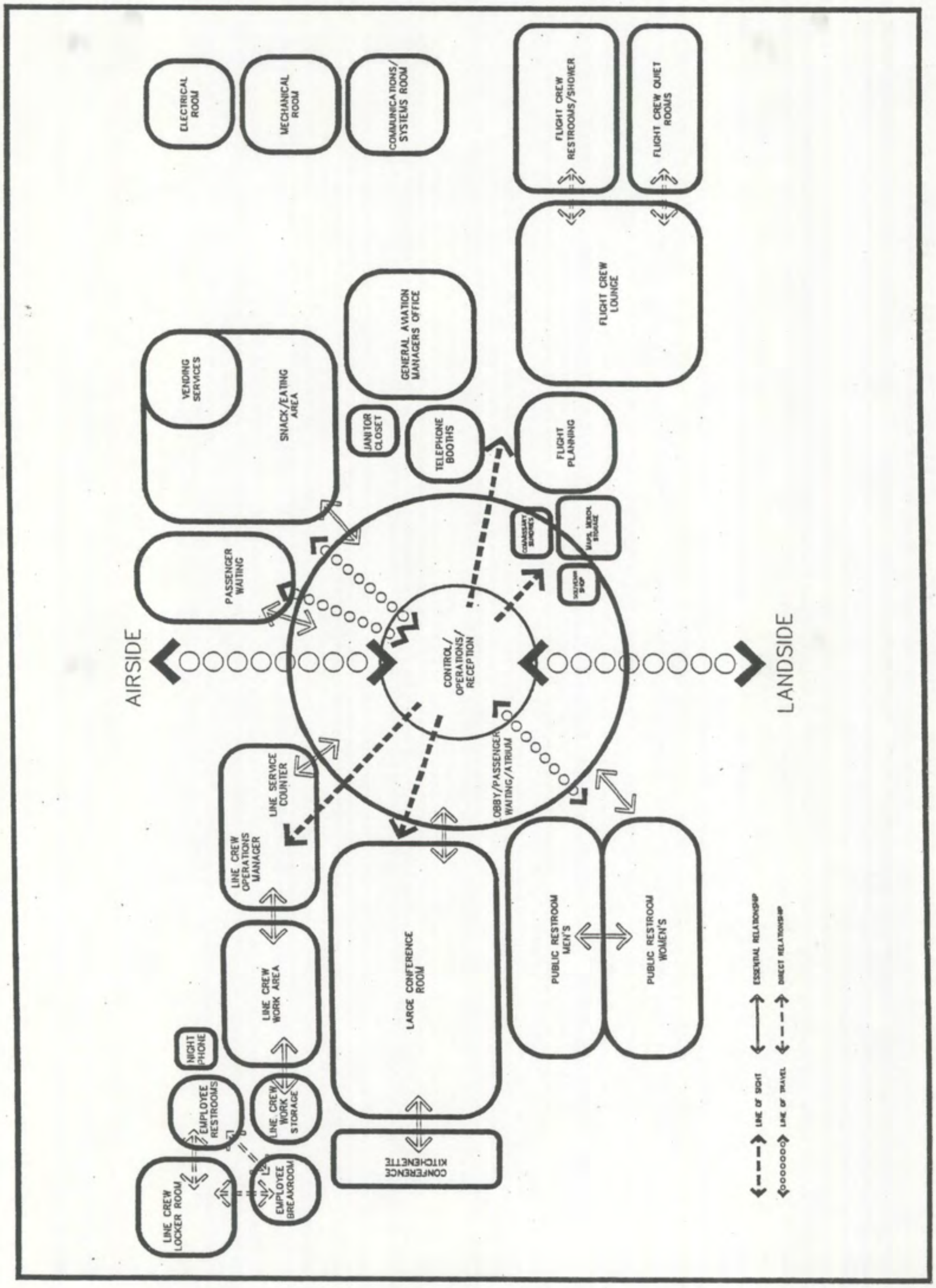
Spatial Relationships

The Airport has identified relationships between the functional spaces defined by the programming concepts. These relationships have been quantified to express the preferred arrangement of rooms and spaces. See Figure 3.5.b "Spatial Relationship Matrix", which graphically represents the preferred arrangement of these spaces.

See Figure 3.5.c, "Space Relationship Diagram" which illustrates both the passenger flow and some of the functional (and visual) connections between the primary spaces defined in these programming concepts. The size of each labeled area is proportional to the average space requirements for each defined in the early stages of the conceptual programming effort. The Airport Administration areas are not shown in this diagram.

Figure 3.5.b Spatial Relationship Matrix

Figure 3.5.c Space Relationship Diagram



3.6 Civil Narrative

Improvements associated with the General Aviation Terminal are being addressed under separate projects with the Airport. Civil Improvements necessary for this project will include improving utilities to the proposed site – water supply, fire fighting water supply, storm water, sanitary sewer or septic system, natural gas fuel, electric power distribution, telephone and cable communications connections – soils and subsurface testing and mediation if necessary, grading, access road, parking lots, driveways, airside apron replacement or mediation if necessary, and fencing. Roadway paving shall meet State of Georgia Department of Transportation standards and be similar to other roadside paving existing or proposed at the Airport. Airside Apron paving shall be designed to meet FAA specifications for anticipated aircraft operations and be similar to existing and proposed apron paving at the Airport. Additional concerns and issues related to site and utility improvements are addressed under throughout this Conceptual Program.

3.7 Architectural Narrative

3.7.1 Architectural Design Narrative

The General Aviation Terminal Building is expected to be a one or two story building of conventional steel frame or of metal stud frame construction (or a combination of the two). A single story layout is preferred, for accessibility and cost issues. However, if a Public Atrium is provided, the height of the atrium is expected to approach two stories. The exterior walls should be primarily of brick veneer finish and may include some areas of exterior finish and insulation system. Extensive use of glazing systems is anticipated throughout the building. The primary roof system preferred is a standing seam metal roof. Depending on the ultimate design, height considerations may require a mansard fascia (a sloping façade at the roof line that projects in front of the wall and above the roof) with a low slope membrane roof beyond, or, as an alternate, a brick parapet wall extending above a low slope roof may be acceptable.

Interior finishes should be durable for high-traffic areas, but should also convey a restrained, Executive / Professional Office atmosphere to the traveling visitor. Furnishings and finishes in the public areas should emphasize comfort and may be of a higher grade than finishes normally associated with transportation terminals. Ceiling height and space allocations are desired generous enough to convey a sense of openness between connected areas, as noted previously.

The Airport Staff and the Advisory Committee have expressed a desire that the image and impression of the building be similar to what can best be described as the Classic City style of buildings in the downtown area of Athens. It is desired that the design emphasize traditional materials and methods and provide a sense of quality and a distinctive impression on the visitor. The Airport would like the design to be in keeping with the Athens Classic Center arts and convention center, in keeping with the functional aspects of the Terminal defined elsewhere in the Conceptual Programming, and appropriately using modern technology and methods.

The Airport has requested that the main entries be automatic doors for the hands-free operation of travelers arriving airside or landside. An entry vestibule, creating an airlock between interior and exterior conditions is generally preferred if space permits. As noted earlier, the landside entry is desired to be covered by a Porte cochere over the pick-up and drop-off lane, and the airside entry may be covered, space permitting. The design should integrate these elements into the stylistic concepts noted above.

3.7.2 Structural

The General Aviation Terminal design should anticipate future expansion possibilities. Conventional framed steel provides ease of expansion, and allows for the clear spans needed to promote the desired open quality of the lobby and atrium areas. It can be assumed that the primary structural system will be load bearing steel column and beam, with a metal deck roof diaphragm. The roof system is dependent on the final roof configuration: the roof system should be steel trusses if the roof is sloped standing seam and should be steel joists if the roof is a low slope membrane or built up roof. The secondary 'structural' system is expected to be non-combustible steel studs supporting the exterior veneer. Interior structural elements should be steel columns where required, or steel studs where in a non-load bearing condition. If a second floor is required, the floor should be poured concrete on metal deck supported by steel joists.

In general, the foundation system should consist of isolated spread footings at column locations and of reinforced spread footings supporting load bearing concrete masonry unit foundation walls below exterior brick walls. The floor system is expected to be a poured in place concrete slab system on grade with thickened toe at perimeter. Alternately, depending on the structural design, the toe footing and masonry foundation walls could be integrated at the option of the designer. No retaining walls are currently expected in connection with the building development. No loading docks are expected, as noted earlier.

Structural design is dependent on the final configuration of the building plan. A geotechnical study is recommended during design once site selection has been finalized. The results of this study will further define the requirements for the foundations. The Structural Engineer will design the foundation and structural systems based on the results of that testing. Much of the Airport property is above a large vein of granite rock, and this subsurface condition must be taken into consideration. The roof system may support mechanical equipment depending on system selection and design.

3.7.3 Fire Protection

The preliminary building code analysis indicates that the structural members could be unprotected assemblies, and for the immediate future, the area allowed without a sprinkler system would be sufficient. If the General Aviation Terminal is expected to expand greatly in the short-term future, a sprinkler system may be required to accommodate the additional square footage. As noted in the Code Analysis discussion in Chapter 2, a sprinkler system is recommended.

Guidelines published by the National Fire Protection Association (NFPA) would require that windows and doors facing the airside where fueling operations occur be protected by a deluge sprinkler system. Forthcoming revisions to the International Building Code will offer additional incentives to install sprinkler systems in most public buildings, especially Assembly Occupancy. Although a sprinkler system may be recommended in this facility, a more thorough analysis based on the final project plan and anticipated future development would clarify the advantages.

If a fire suppression system is included, all areas in the building, including exterior covered areas, shall be fully sprinklered by a zoned system designed to meet the standards of the Athens Clarke-County Fire Marshal and the NFPA 13 Standards for Sprinkler Systems. Openings in the exterior airside near where fueling operations occur shall be protected by rolling fire grilles and/or a deluge sprinkler system that meets NFPA standards for Fire Suppression Sprinklers.

3.7.4 Plumbing

The facility shall be provided with a plumbing system sufficient for the final layout, and should be designed with extra capacity for future expansion. The design shall be in accordance with the Plumbing Code and associated amendments listed in the Code Analysis section of Chapter 2. All work shall comply with the requirements of the Americans with Disabilities Act and the Georgia State Handicapped Law, as applicable. Where required, work shall comply with applicable NFPA Standards. In no case shall the description in this document be interpreted to contravene any national, state, or local codes, laws, and standards; in case of conflict, the more stringent requirement shall govern.

Work included in the project may include the following:

- Domestic Cold Water Systems
- Domestic Hot Water and Hot Water Return Systems
- Sanitary Waste and Ventilation Systems
- Storm Drainage Systems
- Natural Gas Distribution Systems
- Plumbing Fixtures and Equipment
- Fire Protection / Suppression System – Wet or Dry Pipe

The plumbing designer shall coordinate systems and requirements with other disciplines during design. See Civil for a discussion of site utilities.

Water Distribution. Domestic cold and hot water, and recirculating hot water systems should be distributed in type 'L' hard drawn copper tubing when installed above ground inside the building envelope. For below slab / below grade installations, type 'K' hard drawn copper, or cement lined, ductile iron pipe should be used. Hot water and recirculating hot water tubing should be insulated from the water heater to the point of use valve or faucet.

Sanitary Waste / Vent Piping. When installed above grade, sanitary piping for waste and vent piping should be non-hub cast iron with stainless steel couplings. When installed below grade, sanitary piping may be hub and spigot cast iron with tar coated, mechanical, or caulked joint connections, or polyvinyl chloride (PVC) piping where appropriate. Plumbing Engineer shall coordinate tie-ins to sewage or septic system with Civil Engineer as needed.

Storm Drain Piping. When installed above grade, storm drain piping should be hubless cast iron with heavy-duty stainless steel couplings. When installed below slab or grade, storm drain piping should be hub and spigot cast iron with tar coated, mechanical, or caulked joint connections. Plumbing Engineer shall coordinate with Storm Water Drainage plan for Airport and coordinate tie-ins with Civil Engineer as needed.

Natural Gas Distribution. When installed above grade, gas piping for low pressures systems shall be schedule 40 black steel pipe with threaded steel connectors, valves, and fittings. When installed below slab or grade, natural gas distribution should be by schedule 40 black steel pipe, mill wrapped, with welded steel connectors and fittings, wrapped or coated with high-density polyethylene or polyethylene tape, as appropriate.

Plumbing Fixtures and Equipment: Will be selected by discussion between Plumbing Designer and Owner during design process. All fixtures shall comply with applicable codes, and shall comply with requirements for accessibility for disabled individuals as required. All fixtures should be selected for durability and ease of maintenance. In gang or public toilets, all fixtures are desired to have automatic controls.

Water Closets are expected to be a wall hung, vitreous china, white, with elongated bowl, concealed 1.6 gallon flush valve, heavy duty elongated open front toilet seat without cover, carrier support and vandal proof fasteners as needed.

Urinals are desired to be vitreous china, white, with concealed 1.0 gallon flush valve, carrier support, and vandal proof fasteners.

Lavatories may be of two types: single, individual lavatories, and grouped counter mounted vanities. Single occurrences of lavatories without counters should be wall hung, vitreous china, white, with faucet controls to be either automatic or with wrist blades for handicapped control, and insulated trap and supplies where exposed. Lavatories under counters are desired to be either integral, molded bowls of the same solid-surface material as the countertop, sized for accessible use, or may be individual, under-hung, vitreous china for installation in the countertop.

Water Fountains are desired to be electric water coolers, wall hung, of stainless steel construction, with carrier support in wall. Provide either one unit with bi-level bowls, or provide two units, one at standard height and one mounted for access from a wheelchair.

Kitchen Sink should be one compartment, heavy-duty stainless steel construction, self-rimming bowl. The airport staff prefers a deck-mounted gooseneck faucet with wrist blade lever handles for hot and cold water adjustment. An optional, auxiliary pre-rinse flexible hose faucet may also be provided, at the direction of the Owner.

Bar Sink is desired to be one compartment, heavy-duty stainless steel construction, self-rimming bowl. Fixture should be a deck-mounted gooseneck faucet with blade lever handles for hot and cold water adjustment.

Service Sink shall be of heavy-duty construction, and may be either a floor sink or low-mounted standing compartment for ease of use.

Dishwasher would ideally be a commercial-grade, under-counter mounted model with booster water heater to 155°, heavy-duty construction with stainless steel interior, automatic pumped drain, scrap screen filter, two levels of racks able to handle 25 dishes per rack or 45 standard glasses per rack, capable of up to six cycles per hour, optional drying mode, designed for sound reducing (quiet) operation, with solid state controls; the dishwasher should have variable wash settings and be equipped with a safety interlock for operating. In selection of model, ease of use and variability in amount and type of dishes to be cleaned by any given crew should be carefully considered.

Water Heaters are desired to be high efficiency, natural gas fired, storage type with electronic ignition for food preparation, shower, and toilet areas. A re-circulating pump shall be installed if the length of hot water pipe from the water heater to the most remote fixture is greater than 50 feet. If a water heater serves a shower area, the capacity of the water heater should be sufficient to provide adequate hot water temperature and flow for full and continuous use of the showers for 30 minutes at maximum. If a water heater serves a shower area and toilets, it should be a staged unit for quick heat recovery to ensure that adequate hot water will be available, both in temperature and flow. An electric booster heater should be provided at the kitchen sink / coffee maker and dishwasher. All water heaters shall be designed and installed for compliance with the applicable building and plumbing codes.

Floor Drains shall be installed in toilet rooms, mechanical rooms, kitchen or vending areas, adjacent to the icemaker or cooler/compressors (vending machines), and in the Line Crew Work Area. All floor drains in toilet rooms shall have trap primers. If a floor drain may be subject to evaporation, provide a trap primer or deep seal traps.

Oil Separator is not indicated by typical service and materials in use at this time. .

Roof Drains, gutters, and downspouts shall be provided as required by the final design. Storm water shall be collected and directed into an appropriate storm water system, or returned to ground if the selected site is not provided with a storm water collection system. All roof drains, downspouts, conductors, and storm water systems shall be designed to comply with building code requirements.

Emergency Eye Wash / Shower shall be installed as indicated in area narratives. Carefully coordinate type and location with design for Line Crew Work Area.

3.7.5 Mechanical: Heating, Ventilation and Air Conditioning (HVAC)

The following design parameters shall be used for the mechanical system. System shall be designed to comply with the mechanical code referenced in the Code Analysis section of Chapter 2, and equipment shall comply with the requirements of the National Electric Code and any local standards required as noted in Chapter 2. The building envelope and mechanical systems shall be designed to meet the requirements of the Model Energy Code and any local amendments adopted. In no case shall the description in this document be interpreted to contravene any national, state, or local codes, laws, and standards; in case of conflict, the more stringent requirement shall govern. Mechanical equipment and ducts shall be designed in accordance with appropriate industry standards (see Chapter 2 for listing of some applicable standards).

In offices, lobby, waiting, and associated use areas, the target environment shall be within 5° of 72°F and relative humidity within 5% of 50%. Outside air conditions for design purposes shall be considered 15°F in the winter, 95°F ambient in the summer. The mechanical system (HVAC) should be designed for a zoned system. Individual heating, ventilating, and cooling units should serve specific zones, or groups of areas. Most zones in this building are expected to have similar heating and cooling comfort requirements. Each zone should be sized to provide a similar comfort level throughout based on the capacity of the unit serving that zone. As an example, the Control Center and Atrium might be one zone, the Passenger Waiting Lounge and Vending Area another, and the Airport Administration Areas might be a third, and so on.

Controls for all heating, ventilating, and air-conditioning equipment should be electronic. Programmable thermostats are preferred for most areas. Decisions on the type of controls and programming shall be determined by Mechanical Engineer and Owner in the final design. Individual

HVAC zones should be controlled by independent thermostats. It is preferred that conference or meeting areas be provided with individual thermostats and controls.

Air Conditioning Systems shall be selected for efficient, comfortable operation to all areas in the building. The designer will determine if rooftop units or separate condensers and air handlers will be used. Generally, for ease of operation, gas-fired heating and direct-expansion-cooling units are recommended. Air conditioning should serve all spaces in the terminal building except for mechanical rooms, unless otherwise indicated. Small areas, such as storage closets or the janitor closet, may be served from adjacent conditioned space, if allowed by code, at the discretion of the mechanical engineer. Entry vestibules, if provided, may or may not be served by the HVAC units; pressurization and heat/air loss due to the arrangement of air locks should be carefully considered in these areas. Conference or meeting areas should be provided with adequate air conditioning for their maximum capacity occupancy, assuming full sun on the southern exposure and windows.

Heating of most spaces, in general, is preferred to be by gas fired, heat pack units provided in combination with the conditioning units. Vestibules that do not receive ducted conditioning may be heated by electric, UL rated, ceiling suspended radiant heaters. The Line Crew area, frequently open to cold weather, may be served by additional suspended radiant heaters to provide comfort and improve efficiency of forced air heating to this area.

Ventilation or Exhaust Systems should be provided for all areas not included in general heating and air conditioning distribution, and for areas requiring additional airflow to control humidity, moisture, or odor. Examples include janitor closets, toilet and rest rooms, showers, shop rooms, mechanical rooms, any storage area separated from the main HVAC, and possibly heat output from cooling compressors (icemaker and vending). Ventilation shall be designed and selected by the mechanical engineer for individual spaces in accordance with the applicable codes and of industry standards. Provide louvers to exterior where appropriate, or means to make up the exhaust air from adjacent interior spaces.

Exhaust from the restrooms and showers shall be sized according to the requirements of the referenced code, at a minimum. The Airport prefers that gang toilets be continuously exhausted; this should be considered for fresh air changes in design. It is preferred that exhaust fans in the showers and single toilet rooms be controlled by the operation of the light switch for each room.

Heat and moisture output from equipment (icemaker, dishwasher, vending machines) should be evaluated to determine whether ducted exhaust is feasible for each location. Storage rooms in excess of 100 square feet, mechanical rooms containing fire suppression equipment, and electrical rooms shall be exhaust ventilated according to appropriate code requirements. A roof mounted fan controlled by a thermostat may be sufficient for these spaces, pending evaluations by the Mechanical Engineer.

Air Distribution Systems
In general, it is expected that fresh or conditioned air will be provided by means of forced air, ducted supply and ducted return, zoned by unit as described above. Thermostatic controls shall be provided at each zone. In larger volume areas (two story spaces), ducted supply with plenum return may be acceptable. The type of system will be selected during design. Supply and return ducting shall comply with the Sheet Metal Association (SMACNA) Duct Construction Standards, Current edition, and applicable sections of the mechanical code referenced in Chapter 2.

3.7.6 Electrical

The following general design parameters shall be used for the electrical systems. All systems shall be designed to comply with the electrical and building codes referenced in the Code Analysis section of Chapter 2, and all equipment shall comply with the requirements of the National Electric Code (NEC) and should be new equipment (except where specifically noted), and shall be listed and labeled by an independent testing agency (Underwriter's Laboratory, UL) where appropriate. Equipment and fixtures shall meet appropriate industry standards (ANSI, NEMA, ASTM, ICEA, IEEE, and IESNA for example). In no case shall the description in this document be interpreted to contravene any national, state, or local codes, laws, and standards; in case of conflict, the more stringent requirement shall govern.

In general, all systems shall be designed for energy efficient operation, ease of use and maintenance, with durable fixtures and equipment, and in anticipation of future expansion, should be designed to exceed current demand. Systems included under the general heading of 'Electrical' include power, lighting, life safety sensing and alarms, telephone communications, wiring for data networks, wiring and layout for intercoms and sound systems, and wiring for access control or security systems. Depending on the complexity required of some of the additional systems, more than one specialized electrical designer may be required for proper coordination. The level of complexity shall be determined in preliminary design based on discussions with the Owner.

Primary Service

Electrical service entrance is expected to be 480/277-volt, three phase, four wire, 60-cycle service from an exterior pad mounted transformer. Transformer should be installed and maintained by the local electrical utility company. Service size shall be based on ultimate design. Cables at service entrance shall be copper, run underground from the transformer to the primary panel board (or switchboard) through a duct bank encased in concrete, per the National Electric Code.

The primary distribution panel should include the main breaker, group mounted distribution circuit breakers, copper bussing, full neutral bus, bonded neutral and ground bus. The service entrance panel shall be grounded per the National Electrical Code. See Grounding below. The primary panel board, switchboard, any switchgear and secondary distribution panels (see below) shall be installed and secured in the Electrical Room described earlier, access to which shall be restricted to authorized persons.

Grounding

Electrical Engineer should give additional consideration to typical weather and geotechnical conditions at this site. The Owner indicates a high frequency of lightning strikes on the property. Care should be taken to provide protection to the primary service and main panels. Electrical designer shall discuss available options for lightning and surge protection with Owner to determine requirements. At a minimum, a grounding system in compliance with referenced codes and standards shall be provided. Around the perimeter of the entire building, provide a buried ground ring conductor, with bonded conductors from the primary panel board (or switch board) and from building structural steel.

Electrical Distribution
Based on the ultimate building design, distribution method and branch circuit panel boards shall be provided to serve the design loads. The design should include spare power and circuits for future expansion and equipment. 480/277 and 208/120 volt panel boards shall be provided as required to serve appropriate loads.

Each secondary panel board shall have a main circuit breaker for the panel. For each branch circuit from the panel there shall be a separate bolted circuit breaker and an individual grounding conductor shall be provided, sized and installed in accordance with the NEC.

Provide Dry-Type Transformers where required to step down 480 volt power to 208/120 volt for lower voltage equipment or for general power to convenience receptacles.

Large HVAC equipment (and possibly some of the catering / kitchen equipment) will require 480 volt, 3-phase power. Any motorized equipment greater than one horsepower shall be provided with 208 volt, single-phase power. Any motors one-half horsepower or less may be powered by 120 volt, single phase. Designer shall coordinate appropriate power requirements with available equipment.

Lighting may be supplied at 120-volt single phase or at 277-volt single phase, depending on evaluation of available systems by lighting designer. Designer should select one consistent system for majority of public spaces.

Convenience receptacles throughout should typically be distributed at 120 volt, single phase. Most control panels for subsystems should be 120 volt, single-phase power.

All panel board feed lines, branch circuits, and low voltage systems shall be run in conduit. Wherever practical, all conduits should be concealed in or above ceilings and in walls. Exposed conduit should be avoided interior where possible. Where impractical, exposed conduit shall be run as high as practical, and shall be installed to be coordinated with any other exposed building structure, ductwork, piping or equipment. Concealed or exposed conduit, interior or exterior, should be uniform and shall be appropriate for the condition as defined by the applicable code requirements.

Feed lines and branch circuits should be copper conductors. Other systems and distribution lines shall also be copper conductors, the minimum size as recommended by the systems suppliers. Conductors shall be appropriately selected by the electrical engineer. Conductors shall typically be insulated; insulation shall be appropriate for size of wire and type of service.

Emergency Power
No auxiliary power generator is currently anticipated for this facility. Emergency lighting will be provided as described under the lighting section below. If the Owner elects to provide auxiliary power at this facility, the generator should be an emergency standby type sized to provide power to the entire building. Generator should be permanent exterior pad mounted, all weather (or housed in a weatherproof enclosure), natural gas fired, able to provide 500KW/625 kVA, 480/277-volt power. Emergency power generator should include mufflers, batteries and charger, and solid-state control panel. To avoid redundancy in distribution, the generator may use the service panel and distribution system; if so, when in emergency operation, the transfer will isolate the building service so that the generator does not feed power back to the primary service line. In the event of loss of utility power, transfer to the auxiliary power generator should be automatic. Retransfer back to utility power shall

be by timed delay, to ensure secure operation. Provisions should include required conduits, connections, switches, and panel boards of adequate size for emergency operation as described.

Lighting

Exterior lighting is expected airside for the apron parking, landside in the vehicle parking lot, and at the building perimeter and entries. Additional site lighting may be required for signage and architectural illumination. Lighting fixtures should typically be selected to match existing fixtures at the airport. Except as noted below, exterior fixtures are preferred to be controlled by photoelectric cells, generally on from dusk until dawn.

Airside lighting shall be either roof mounted or pole mounted high-intensity discharge (HID) lamps. Lighting shall be arranged to provide adequate illumination along the aircraft-staging ramp, and towards the parking areas. Depending on the building arrangement and distance from the ramp, building mounted floodlights may provide sufficient illumination. Alternately, 25-foot poles ground mounted in the staging ramp may be adequate. Airside lighting control should be both automatic by photoelectric cells, on from dusk to dawn, and by manual operation.

General parking lot illumination shall be provided by pole-mounted HID fixtures. Lamp type should match existing airport parking lighting. At the receiving lane (for deliveries), wall mounted floodlights may be included to provide adequate lighting when needed at this area.

The airside entry should have downlights to illuminate the entry door. The night phone for pilots arriving after normal operating hours should be brightly illuminated: if open to the exterior, by downlights; if enclosed, by encased fluorescent lights or covered incandescent downlights. The landside entry, if covered entry, should have downlights in the ceiling and may have accent downlights ceiling- or wall-mounted to highlight the entry door.

Building security lighting should generally be by wall mounted HID fixtures. Depending on landscaping elements and building configuration near the security fence, additional ground mounted HID fixtures may be installed for adequate illumination and security measures.

Facility and site signage illumination, flagpole illumination, and possibly illumination of building or landscape elements may be by ground-mounted HID metal halide fixtures, typical.

Interior lighting shall be determined during design. Lighting for office and lobby areas should be a combination of fluorescent and incandescent fixtures. It is anticipated that the public areas will have a number of feature elements that may require specialized illumination, either in fixture or lamp type. The following will serve as guidelines, in addition to required codes and industry standards.

In general, suspended acoustical ceiling areas shall receive 24" x 24" recessed fluorescent fixtures, storage areas or some office work areas may use either 24" x 24" or 24" x 48" recessed parabolic fluorescent fixtures. In some areas, task lighting or directional accent lighting may be provided by recessed incandescent lights or exposed downlights. Unless specifically addressed, fluorescent fixtures should not be suspended or surface-mounted in suspended acoustical ceiling areas. In storage or support spaces with exposed ceilings, suspended fluorescent fixtures should be provided.

In areas with drywall or specialty ceilings, typical fixtures should be recessed. An exception may be made in high ceiling areas, such as the public lobby, public atrium, passenger waiting area, and conference rooms, where suspended incandescent feature fixtures may be appropriate, and where incandescent or halogen downlights and feature spots may be incorporated in the overall lighting design. At display counters, public counters, vending and dining areas, downlight incandescent may be provided for task illumination.

Toilet, shower, and locker areas should be provided with a combination of surface mounted or recessed fluorescent (depending on ceiling type) and recessed incandescent down lights or wall-mounted incandescent lights at vanities or lavatories. Fixtures located in these areas shall be selected for their appropriateness to high humidity areas and long-term durability, and shall be warranted against corrosion for not less than five years.

Depending on the building design and interior design scheme, high ceiling public areas and corridors may be illuminated by concealed uplighting – incandescent or fluorescent mounted in soffits and arranged to highlight ceilings or other building features. Lighting design should include halogen spot lights or other appropriate lighting to adequately illuminate selected elements in the building: for example, uplighting and accent lighting on the model airplane in the public atrium, spotlighting on displays of local artwork or informational displays. Selected systems should be coordinated with the Airport during design, and should use consistent fixture and lamp types throughout.

Selected fixtures along exit pathways and in common areas and all exit signs shall be connected to branch circuits supported by the emergency generator (if provided) or provided with back-up power supply to meet all code requirements for illumination along the egress path.

Life Safety Sensing and Alarms

The Architect and Electrical Engineer shall coordinate with the Owner's security consultant to tie-in the building fire alarm system to the Airport Campus security system and plan as required. At a minimum, the Fire Alarm System shall comply with the guidelines of the National Fire Protection Association, the Americans with Disabilities Act Accessibility Guidelines, and any local amendments to the above, as noted in Chapter 2. The detection and alert system should be addressable by affected area and shall be coordinated with the local fire departments (on Airport and off). The system may include: manual pull stations, smoke detectors, heat detectors, duct-mounted smoke detectors, audible alarm stations, visual alarm stations, combined audible and visible alarm devices, and connections to all fire-suppression system switches and tamper devices as appropriate. The Main Control Panel for the fire alarm system shall be located in a secure location; recommended locations are in the Control Center, the Airport Operations Supervisor office, or the line crew area.

Telephone / Communications System

Civil designer and electrical designer shall coordinate service to the site with the local telephone company. If a Fixed Base Operator or other tenant may also occupy a portion of the building, separate service may be required. For each service line, two four inch service conduits from the site service to the Electrical Room or the Communications Room should be provided at a minimum. Plywood backboards for main telephone service panel should be provided. Service panel shall be coordinated with system selected by Owner. Grounding wire for the service panels at the backboard should be included. Telephone outlet locations shall be coordinated with the Owner during design, for the building areas noted in Section 3.4 to receive telephone service. Telephone junction boxes may be coordinated with data connections (see below), but should be located in fixed interior walls wherever possible, and should avoid locating in interior partitions. Telephone junction boxes shall connect to minimum 3/4" conduit to six inches above the ceiling, with pull wire to telephone panel board. Owner may elect to install telephone control and distribution system with Owner's forces.

Data Communications
Data systems connections are expected to be by Owner's forces. Data outlet locations shall be coordinated with Owner during design, for the building areas noted in Section 3.4 to receive data or computer connections. Data outlets should be located in fixed interior walls wherever possible, and should avoid locating in interior partitions. Data outlets may be coordinated with telephone outlets at most locations. A gang receptacle, including power outlets, is generally preferred. Junction boxes shall connect to minimum 3/4" conduits running to six inches above the ceiling, with pull wire to panel board in communications closet / electrical room per ultimate design.

Public Address / Sound Speakers
The Airport would prefer to include a low voltage public announcement speaker. Desired system would be addressable for different zones. Main controls are expected at the Control Center. Speakers for the public address system (PA) should be provided in all public areas for the announcement of flights. Speakers should also be run to the Line Crew area, interior work area and exterior near the aircraft staging apron, and the Line Crew Operations Manager. The Line Crew Manager should have access to a remote station for communication to the Line Crew at the Exterior. Speakers should also be run to Flight Planning and the Flight Crew Lounge, but should not be located in or adjacent to the Quiet Room. System should be addressable by zone, and units should be independently volume controlled, if feasible. Ceiling mounted speakers are preferred, or mounted concealed high in walls where ceiling mounting is impractical. Requirements of selected system should be coordinated during design.

In conjunction with the PA speakers, or as a separate system, a sound system is desired throughout the public areas for the broadcast of background music. The Main Lobby, Control Center, Passenger Waiting, vending and dining, restrooms, Flight Crew Lounge, common corridors, and exterior covered entries should be served by the sound system. The Line Crew Work Area, Quiet Rooms, additional restrooms, administrative areas, and individual offices are not expected to be served by the sound system. Main control for the sound system would be housed at the Control Center. Volume control for individual zones should be controlled from the main control. Requirements of desired system should be coordinated during design.

Access Control / Security System / Closed Circuit Monitoring
As noted under previous space descriptions, access from the landside to the airside shall be restricted to authorized individuals and shall be controlled by means to be determined. Access to the Airfield shall be controlled either internally by visual or closed-circuit monitoring, or by access card / code as determined by the current security plan and system at the Airport, or a combination of these two systems. After standard operating hours, the building shall be able to be secured.

The Security System(s) should be interconnected with the Airport's overall security systems and alarms. Specific security requirements shall be coordinated with the Owner's existing safety and security program for the Airport. The Owner's security specialist should consult with the Architect during design to determine the specific requirements and to coordinate required work.

It may be assumed that all doors or gates to the airside will be monitored for open / closed condition at a minimum. It is probable that a card reader or key-code entry tied to magnetic door locks may eventually be required at doors with access to the airside. Conduits for power and data connections should be provided at all such doors.

Interior motion detectors at primary interior spaces tied to a building alarm system, or a central notification system, may be required to secure the building after hours. The Owner may also wish to have a 'panic button' or call system installed with direct notification to the Airport Security and Fire Fighting offices, with call buttons located at the Line Crew Manager and at the Control Center.

As noted earlier, depending on the arrangement of the building for visual observation of building spaces from the Control Center, a closed circuit monitoring system may be required for the staff at the Control Center to adequately perform their duties. During design, the Architect and Electrical Engineer should present the Owner with options on how observation may be accomplished, and what systems are available, if required. If needed, cameras should be set up to observe the vehicular access gate to the airside ramp and the approach thereto, the airside ramp itself, Passenger Waiting, and the Flight Crew Lounge. A monitor, or series of monitors, may be provided at the Control Center, as should a means of recording the monitor images. Care should be taken to select a system adequate for current use and that allows for future expansion. The Architect and Electrical Engineer will coordinate the proprietary requirements of any selected system through the design as required.

Lightning Protection

The Owner has indicated that this area, due to geological conditions and geographic location, is prone to frequent lightning activity and strikes. Primary service should be protected as is reasonably available. Surge suppressors should be provided where appropriate, and data and phone systems may include surge and lightning protection, if feasible. The building structural steel should be adequately grounded in an approved manner. Electrical wiring and equipment should be grounded as best determined by the electrical engineer. A lightning protection system should be provided at the roof of the building to carry any transfer to ground as safely as possible. The type and arrangement of the system may be determined based on the actual configuration of the building.

3.7.7 Fixtures, Furnishings, and Equipment

A Fixtures, Furnishings, and Equipment package (FF&E) is intended to allow the Owner to specify specialty items such as conference chairs and tables, lounge chairs and plantings, computer systems, sound systems, televisions and video playback equipment, presentation equipment, dining area furniture, office furniture, office equipment, and so forth.

Items and materials are to be selected by Owner during design. Owner has a selected provider for most office and furnishings. Coordinate selections with Athens-Clarke County Purchasing agreements. It is currently assumed that no equipment will be reused from the existing facility.

It is recommended that the FF&E be constantly revised during design. Items in the FF&E are assumed to be Contractor provided and installed. If items are to be reused from existing Owner stores, purchased under existing Owner agreements, or deferred in time, items may be moved in or out of the FF&E and may be changed to Owner Provided/Contractor Installed, or Owner Provided and Installed. The Owner should conduct an initial survey of existing reusable furniture and equipment to coordinate with the Architect during design. As the project and available budget are further refined, the FF&E package may be revised.

Chapter 3b: Program Concepts

3.8 Key Design Objectives / Goals / Issues

The basis of any General Aviation facility is to provide flight related services to independent, corporate, and charter pilots and their aircraft. The General Aviation Terminal serves as the junction point where passengers meet their pilots and where pilots acquire certain services for their planes and passengers. A basic General Aviation Facility can be simply a fueling and resting stop for pilots. A General Aviation facility could also be developed to serve as a single source for planning, repair, marketing, hosting business meetings, and other services for pilots and passengers.

The General Aviation Terminal at Athens-Ben Epps Airport will offer customary services to general aviation pilots, their passengers, their aircraft, and their crew. In addition, the General Aviation Terminal will provide support services to business travelers. The terminal building program will also provide space for Airport Administration.

Development Process
The Athens-Ben Epps Regional Airport Authority created a committee of interested individuals to serve as the Advisory Committee for the General Aviation Terminal Facilities Conceptual Programming effort. Through meetings with the Advisory Committee and the Airport Director and analysis of existing similar terminal facilities, the Conceptual Program was refined to meet the specific needs of Athens-Ben Epps Regional Airport.

As part of the Conceptual Programming method, the Committee defined the services the General Aviation Facilities would offer, the priority and preferred arrangement of those services, exemplary buildings for both layout and image, and to review comparable building studies for construction types and materials related to cost impacts.

Key Goals
Beyond the programmatic requirements delineated in the previous chapters, the Airport indicated that the key issues to the success of the General Aviation Terminal Improvements were:

1) Pilots and Passengers come first
2) Executive Terminal in client service and building image
3) Positive and unique reflection of Airport, City of Athens and Clarke County
4) Openness of functional layout
5) Efficient flow of travelers from airside to landside

3.9 Functional Parameters

The Airport reviewed the listing of potential services for the Terminal Facilities (similar to that shown in Table 1.1, "List of Services") and assigned values to those services based on the priority of those spaces to the functionality and image desired for the General Aviation Facilities. Rankings for each possible service were "Must Have", "High Want", and "Nice to Have" in order of importance. The composite ranking of the services is shown in Table 3.9 "Building Parameter Classification". Services or spaces noted as "Not Ranked" were not originally included in the listing reviewed with the board. Spaces with no classification are mandatory or required.

Table 3.9 Building Parameter Classification

Service (Space) to be Provided	Classification of Functions	Comments
General Use - Site		
Site - Airside - Aircraft Main/Transient Ramp		
Site - Airside - Aircraft Staging Ramp	NOT RANKED	
Site - Airside Taxiways / Hangar Access		
Site - Airside - Aircraft Tie-Down Parking		
Site - Airside - Line Service Ramp	NOT RANKED	
Site - Airside Covered Entry	HIGH WANT	small for people, not aircraft, auto doors a must
Site - Landside - Access Road		
Site - Landside - Vehicle Parking Lot	NOT RANKED	
Site - Landside - Rental Car Parking	MUST HAVE	
Site - Landside - Delivery / Loading Area	NOT RANKED	
Site - Landside - Pick-Up / Drop-Off Lane	NOT RANKED	
Site - Landside - Covered Entry	HIGH WANT	with automatic doors
General Use - Building		
Public - Main Lobby	MUST HAVE	
Public - Control Center / Reception	MUST HAVE	one reception area
Public - Control Center: Storage – Merchandise 1	HIGH WANT	secure, space permitting
Public - Control Center: Storage – Memorabilia	HIGH WANT	secure, space permitting
Public - Restrooms - Common Corridor/Water Fountain	MUST HAVE	
Public - Restrooms - Men	MUST HAVE	open access
Public - Restrooms - Women	MUST HAVE	open access
Public Atrium – 'Museum' Display	HIGH WANT	large enough for plane
Public - Administrative (GA) Offices	MUST HAVE	keep to a minimum (included elsewhere)
Public - Observation Area	HIGH WANT	too much a gathering place
Public - Entry Vestibules	NOT RANKED	(see covered entries)
Passenger		
Public - Passenger Waiting	MUST HAVE	not large. (originally part of lounge)
Public - Telephone Booths	MUST HAVE	small individual booths for privacy. 1/2 telephones on wall
Public - Vending - Coffee Bar / Kitchenette / Catering	MUST HAVE	off of lobby. coffee & snacks/food
Public - Vending - Vending Machines	NOT RANKED	
Public - Vending - Dining Area	NOT RANKED	
Public - Supplies / Commissary / Sundries Display	HIGH WANT	at reception counter
Public - Local Interest Displays / Advertising	HIGH WANT	at reception counter. potential revenue
Public - Souvenir Shop	NICE TO HAVE	space permitting
Total Passenger Building		
Business Traveler		
Public - Conference Center	MUST HAVE	this is a real 'need'
Public - Conference Center – Equipment Storage	NOT RANKED	
Public - Conference Center – Kitchenette / Catering	HIGH WANT	not large = if budget allows
Flight Crew		
Flight Crew Flight Planning	MUST HAVE	
Flight Crew Lounge	MUST HAVE	isolated from pax. part of quite room
Flight Crew Restrooms	HIGH WANT	isolated from pax. part of quite room
Flight Crew Shower	HIGH WANT	part of quite room, part of restroom. men and women
Flight Crew Quiet Room	HIGH WANT	bunks not necessary
Flight Crew Night Phone Exterior	MUST HAVE	
Line Crew / Ground Employees		
Line Crew Service Counter	MUST HAVE	
Line Crew Work / Service Area	HIGH WANT	line shack
Line Crew Work Storage	NOT RANKED	
Line Crew Locker Room	HIGH WANT	necessary
Line Crew Emergency Shower / Eyewash	NOT RANKED	
Line Crew Operations Manager / Supervisor	MUST HAVE	
Employee Restrooms - Additional	NOT RANKED	necessary
Employee Breakroom	HIGH WANT	part of line crew area. keep employees seperate from pax. Small
Airport Administration		
Airport Admin. – Reception	HIGH WANT	
Airport Admin. – Administrative Assistant	MUST HAVE	
Airport Admin. – Airport Manager	MUST HAVE	
Airport Admin – Plan File / Meeting Room	MUST HAVE	
Airport Admin. – Filing / Copy Room	HIGH WANT	
Airport Admin. – Storage	NOT RANKED	
Airport Admin. – Other Offices	NOT RANKED	
Miscellaneous Use Spaces		
Charter Operations (FBO) Office	NOT RANKED	only if rental / lease
Other Tenant Space (offices)	NICE TO HAVE	may draw aviation related business. rental / lease
Support Services		
Janitor Closet	MUST HAVE	
Mechanical Room	MUST HAVE	
Electrical Room	MUST HAVE	
Computer/Telephone Room	HIGH WANT	
Support Services - Circulation		
Circulation - Horizontal - 1st Floor	NOT RANKED	
Circulation - Vertical: Stairs	NOT RANKED	
Circulation - Vertical: Elevator	NOT RANKED	
Circulation - Horizontal - 2nd Floor	NOT RANKED	

Based on the preferred size of spaces (referred to as "Upper Limit" or "Average Size" in other tables), had all of the "Must Have" spaces identified by the Airport been provided, those spaces alone would have totaled approximately 3,100 square feet. Using the same standards, the "High Want" spaces would have added approximately 2,300 square feet.

Ultimately, based on other factors and consideration of the interrelationship of some of these spaces, some services identified as "Must Have" were either included in other spaces or were omitted from the program altogether. Table 4.3: "Recommended Program Breakdown" summarizes the proposed program by Functional Space and includes brief explanations of the reasoning behind specific space selections and size allotments.

CHAPTER 2: PROGRAM PARAMETERS / GUIDELINES

2.1 Airport Planning Issues

Airport Master Plan

The Airport is currently revising its planning document and studies for the Master Plan Update are underway. At this time, the Update is expected to be available within the year. The Designer should be familiar with the Master Plan Update, especially the proposed improvements for the immediate future and the functions and buildings shown adjacent to the selected site for the General Aviation development on the Airport Layout Plan. For the purposes of this document, the Airport Layout Plan that was revised in 1994 was used as the reference plan for the North Terminal Area. The designer should verify any assumptions with the revised Master Plan when it is available; generally speaking, no major changes with respect to the General Aviation site are expected from the 1994 Master Plan.

For programming purposes, we consider a general site area to the West of the Air Traffic Control Tower (ATCT) as the selected site condition. See Figure 2.1 for approximate location (proposed impact area size is based on this Conceptual Program, general site is from planning documents). When the building is located on the site during design, the comments and parameters outlined below will need to be carefully reviewed in conjunction with the conditions of the site.

Relationships to Existing and Future Airport Functions

Commercial Passenger Terminal

As noted in Chapter 1, the Airport might arrange for some coordination of services offered only in the Commercial Terminal to be provided to General Aviation users, provided that the General Aviation and Commercial Terminals will be located to facilitate movement between the two. Ideally, it would be advantageous for both terminals to share landside improvements and facilities, notably parking, access road and terminal loop road, if feasible. For the immediate future, a relatively close arrangement of the two terminals is expected.

In the long-term future, the current preferred concept for development (pending completion and approval of the Master Plan) locates a new commercial terminal at a mid-field site across the airfield from its current location. Consideration in siting and size of the General Aviation facilities should be given to this planned relocation.

In the immediate future, the Airport Staff would like to locate the Airport Administration offices in the General Aviation Terminal. It is expected that when a new commercial terminal facility is developed on the Airport, most of the Airport Administrative functions will be relocated to that building.

It is anticipated that rental car offices housed in the Commercial Terminal will request spaces for parking rental cars in the General Aviation parking lot. The Airport does not currently anticipate any other duplication of offices or services from the Commercial Terminal building.

Aircraft Operations Areas
For airport planning purposes, the airfield operations are the primary organizing system. The relationship between the terminal buildings is determined by apron / taxiway and runway arrangement; frontage on the apron and access to taxiways is always at a premium. Although also important to the overall layout, compared to the requirements for runway and taxiway layouts, access road and parking relationships are secondary.

The parking and staging aprons are part of the Aircraft Operations Area (AOA), which includes the taxiways leading to and from the apron. These areas should be as close as possible to the airside access of the General Aviation Terminal, and must be in line of sight of the Air Traffic Control Tower. Access to the AOA and apron parking will be primary controlling factors in the location and situation of the general aviation terminal.

Federal Aviation Administration requirements for Airport Design (FAA AC 150/5300-13) establish design standards for airport facilities. The types of aircraft to be served by the airport determine the runway length, width and strength. Taxiways and aprons are also derived from the size, number, and type of aircraft to be served at the airport. The location of the runways, taxiways, and control tower establish effective setbacks and clearances for proper aviation operations. The Airport Layout plan should locate the existing and proposed Runway Protection Zones (RPZ), Runway Safety Areas (RSA), Runway Object Free Areas (R-OFA), Runway Visibility Zone (RVZ), existing and proposed Taxiways, Taxiway Safety Areas (TSA), Taxiway Object Free Areas (T-OFA), and Taxilane Object Free Zones (OFZ). All of these requirements for operational safety should be considered in locating the terminal building and associated facilities, including aircraft parking.

The preferred terminal building site appears to have its developable airside edge approximately 850 feet off the centerline of Runway 9/27. This distance places the preferred site beyond the limits of the RSA and the ROFA and under the horizontal surface of the navigable airspace around the runways, which limits any object to no more than 150' above the airport reference point. This limit is greater than the anticipated building height of less than two stories (55 feet) based on current codes.

Proposed improvements to the AOA in the near or intermediate future include a future parallel taxiway 400 feet north of the existing runway and a future taxilane that may be run through the existing tie-down areas. The preferred building site appears to be approximately 225 feet from the existing taxiway along the perimeter of the parking apron and more than 450 feet off the centerline of the planned future taxiway. This terminal building location is beyond the TSA and TOFA for either taxiway.

However, based on preliminary analysis of the proposed terminal site, there may be an impact to the existing aircraft tie-down parking positions. The TOFA and TSA from the existing apron taxilane in conjunction with the proposed clear lane adjacent to the terminal building appear to limit the available parking positions beyond the existing locations. To provide adequate tie downs, parking positions and taxilanes may need to be reconfigured.

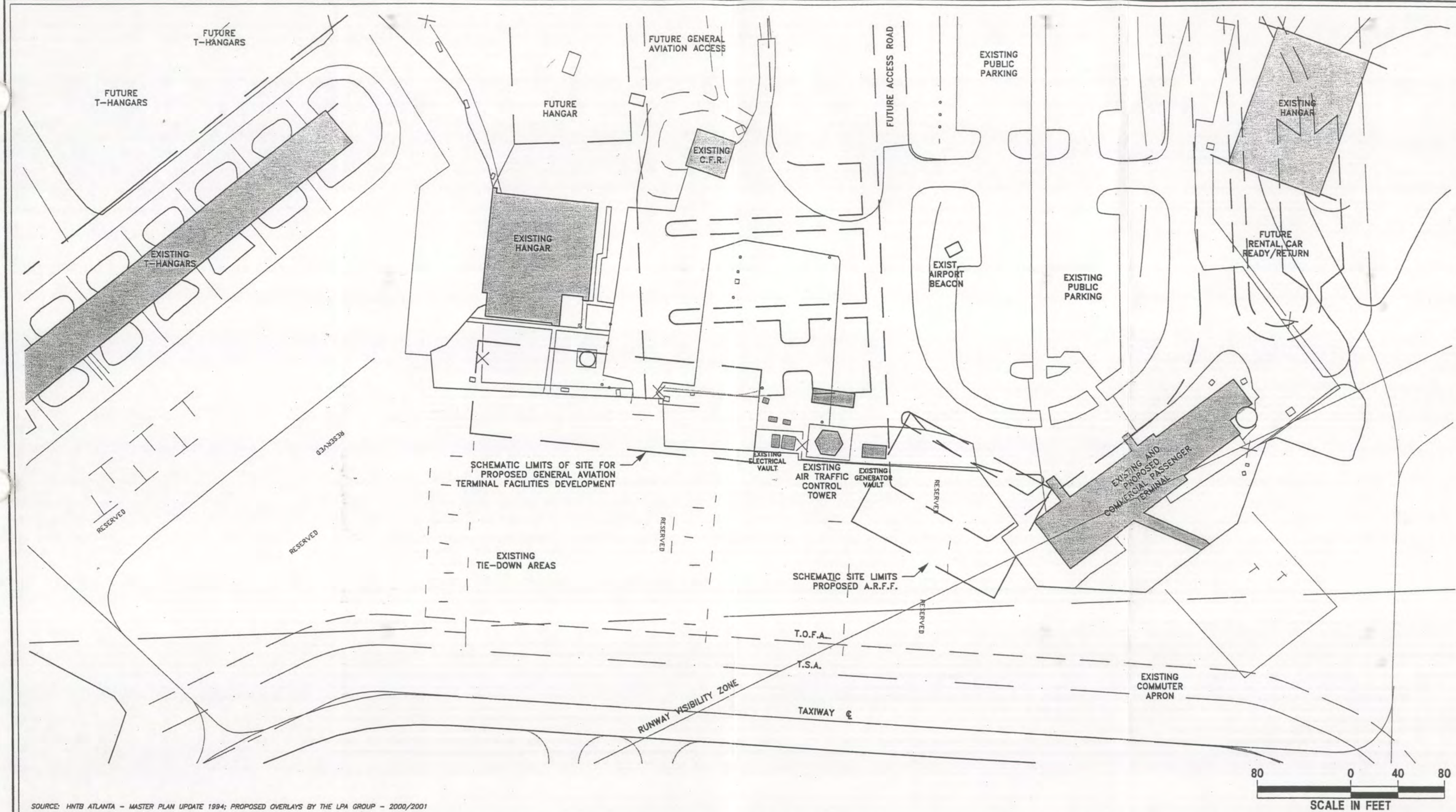
Air Traffic Control Tower Operations
Scheduled operations at the Commercial Terminal and flight plans for General Aviation aircraft are coordinated for usage of the Airfield. The General Aviation Terminal must be sited to allow the ATCT a clear line-of-sight observation of aircraft moving from parking to taxiway. The apron should be situated so that the Air Traffic Control Tower has a clear view of aircraft in parking positions.

Apron Usage
The General Aviation Terminal must be located adjacent to an adequate open area of the aircraft-parking apron. The terminal building should be located adjacent to the apron so that the facility is visible from the primary arrival runways. Aircraft will use the apron for temporary parking, staging, and overnight (tie-down) aircraft parking. It is recommended that separate areas be set aside for personal or corporate aircraft and for heavier commercial aircraft. Ideally, the apron for the General Aviation Terminal would be adjacent to other buildings or functions for General Aviation Aircraft – such as maintenance (by a FBO) or storage hangars. The tie-down parking need not be immediately in front of the facility, although this is typical. Based on the schematic layout of the proposed facilities and the controlling lines for aircraft operations, there appears to be sufficient available apron, but not immediately adjacent to the proposed terminal. If the apron is expanded for the proposed taxiway and taxilane improvements, this may improve the airside parking arrangement. Also, the location of the terminal building and nearby proposed improvements could have an impact on the airside parking.

Hangars and Other General Aviation Related Services
The proposed site is close to the existing and the proposed T-hangars, where many of the based aircraft using the General Aviation facilities will be housed. Proposed developments at the Airport include an additional fixed base operator (FBO) to the West of the proposed General Aviation Terminal. Future FBO's and continued expansion of the hangar facilities are expected in the same general areas as the current development.

Airport Rescue and Fire Fighting Facility
Currently a Crash and Fire Response (CFR) facility is located landside of the airport's security demarcation line; this is not an ideal layout. The Airport Rescue and Fire Fighting (ARFF) personnel respond to airside emergencies at the Airport – commercial and general aviation. The ARFF functions are currently staffed as needed by employees located at various locations on the Airport. The Line Crew at the General Aviation Terminal is expected to respond immediately when the ARFF is needed.

The current CFR facility will be replaced by the development of an ARFF facility. The General Aviation Terminal should be situated so that the Line Crew Work Area has direct access to the future ARFF. The preferred arrangement is for the Line Crew and the ARFF facility to be located on the Airside of the security demarcation line (Secure Identification Area (SIDA) line) and connected on a short, direct path. The location of the ARFF facility shown in sketches in these documents is schematic and tentative pending revisions to the Master Plan and programming for the ARFF facilities; final location should be verified with those efforts when completed.



SOURCE: HNTB ATLANTA – MASTER PLAN UPDATE 1994; PROPOSED OVERLAYS BY THE LPA GROUP – 2000/2001

THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
GENERAL AVIATION TERMINAL DEVELOPMENT CONCEPTUAL PROGRAMMING

SCHEMATIC LAYOUT - EXISTING TERMINAL AREA

Figure 2.1

2.2 Site Improvements

General Description of General Aviation Site

Some of the site improvements (access road, rough grading, portions of utility program) needed for the proposed General Aviation Terminal are being addressed by the Airport in separate programs currently underway or entering design phases. The Owner will make documentation on these improvements available to the designer of the General Aviation Terminal. The Civil and Geotechnical narrative for this project has been included in another programming effort; as such it will be summarized in the following sections.

Site Impacts

Based on similar General Aviation terminals and the program as defined in Chapter 3, the terminal building footprint will be between 5,700 square feet (633 square yards or 0.13 acres) and 7,700 square feet (856 square yards or 0.18 acres). It appears that the existing apron area should be adequate for the immediate future needs. The parking lots and delivery lanes anticipated may impact between 0.60 acres and 0.89 acres of ground surface area. Any impacts from the access road are not quantified at this time, awaiting coordination with future planned improvements. The total area impacted will vary depending on the configuration of access roads, the area required for the parking and delivery lane configuration, the ultimate building design, and any improvements or changes to the aircraft apron necessitated as a result of siting the building or adjacent improvements. These impacted areas further do not include any areas that will be impacted to provide or improve utilities to the site. It seems reasonable that this project may have direct impacts on at least five acres of existing airport property. The greater portion of this impacted area has existing built improvements – structures or paving – currently in place.

Grading and Soils

A licensed surveyor shall prepare a topographic survey of the proposed development area; this survey should be coordinated with existing boundary and topographic information prepared for the Airport. A geotechnical engineer should prepare appropriate testing and analysis of the selected site area. The civil engineering designer should, in working with the geotechnical engineer, use this data to design appropriate grading and soil conditions for the area to be developed. The proposed development will either be adjacent to or will displace existing construction. Where feasible, existing grades should be maintained. No retaining walls are currently expected. The site grading shall provide for adequate storm water control from all areas of the site (vehicular parking, building area, and apron development) in keeping with the Airport's Storm Water Management plan. Care should be taken on the Airside to further provide appropriate grading for the movement of aircraft while maintaining required ground slope away from the terminal building (minimum of one percent for the first fifty feet of the ramp), as called for in "Aircraft Fueling Ramp Drainage" in NFPA 415.

Utility Issues

The following utilities shall be provided for the General Aviation Terminal: domestic water, water for fire fighting, sewer, storm drainage, gas, electric, and communications. Utilities must be properly sized to meet the needs of the proposed facility as detailed in Chapter 3. Consideration should also be given to providing additional capacity for future expansion. Control, access, and indicator valves for the water supply shall be provided as required by the service provider; these shall be located to provide required clearances from existing or proposed structures and to avoid interfering with vehicular access and parking. Currently, the Airport uses septic tank systems to provide Sanitary Sewer on the Airport. Athens-Clarke County is pursuing an extension of existing sanitary sewer utilities to an adjacent property. The civil engineer shall analyze the options and recommend the appropriate course: septic system or connection to new service. Based on current assumptions, connection to the service line extension is preferred if adequate capacity is available.

Fire Protection Requirements
As noted in Section 2.4 "Building Code Issues", the Terminal Building is not required to be provided with a fire suppression sprinkler system. The survey should locate site utilities, including water lines and existing fire hydrants near the proposed site. Fire hydrants should be provided so that no part of the building is more than 500 feet from a fire hydrant. The Owner may elect to provide a sprinkler system for the building as an additional option; this is not currently anticipated. If the building is provided with a fire suppression system, the entire building should be sprinklered.

Site Access / Roadway
Current plans for improvements to Airport facilities include extension and realignment of the Airport loop road (currently Ben Epps Drive) with additional access to the General Aviation, FBO, and hangar facilities (currently Howard B. Stroud Drive). These plans are being reconsidered and refined. Vehicular access will be provided for all vehicles from a public thoroughfare to the General Aviation parking lot. Access may or may not be shared with access to the Commercial Terminal. Vehicle traffic may be one-way or may be two ways; if space permits, one-way traffic flow is generally preferred for terminal access.

Parking / Loading Requirements
The facility will comply with the general parking standards of the Athens-Clarke County Zoning Board. Parking for passenger cars shall be designed for full-size automobile, no special provisions for compact automobiles will be made. The parking areas and walks to them shall include provisions for accessibility for disabled travelers. Upon determination of the building design, an appropriately sized parking lot adjacent to the building shall be added, or existing parking may be reworked to accommodate the expected demand.

The majority of the traffic is transient and short-term parking. The length of time in parking is highly variable from several hours to a few days. Extended parking over several days is unusual at this type of facility.

Currently parking is free and is provided on site. It is expected that this will continue into the future. If parking can be shared with an adjacent building or function, the Airport may have greater flexibility to accommodate peak parking periods at a slight distance from the terminal and handle typical parking demands closer to the terminal.

2.3 Accessibility for Persons with Disabilities

The General Aviation Terminal Improvements will comply with applicable guidelines for accessibility for persons with physical disabilities. All areas in the Terminal Building normally open to the general public will be accessible, and public access to the site and to the airside will accommodate persons with physical disabilities. Parking, walks, and entrances will be accessible for persons with limited mobility; obstacles and obstructions will be minimized and marked as required for persons with vision and / or motor disabilities. Some typical functions of the ground employees require specific physical faculties to perform those task; these tasks are not addressed in this programming effort. Improvements should address the Americans with Disabilities Act Accessibility

Guidelines for Buildings and Facilities (ADAAG) and the State of Georgia Access and Use of Public Buildings by Persons with Disabilities and referenced portions of the American National Standards Institute A117.1-1992 Standard on Accessible and Usable Buildings and Facilities .

2.4 Planning and Zoning Issues

Zoning Category, Requirements
The proposed site, being approximately 3.5 acres located southeast of Howard B Stroud Drive and west of Ben Epps Drive, lies entirely within property owned by the Athens-Clarke County Unified Government and entirely within the boundaries of the Athens-Ben Epps Airport. See Figures 1.3a, 1.3b, and 2.1. All land at the Airport is included in the Government District class G. As such, any improvements under this program shall be in accordance with regulations and requirements established by Athens-Clarke County Unified Government and its Airport Authority for all facilities on the Airport. Beyond operational limitations on height and interference, the Airport has not currently adopted any proscriptive design guidelines for improvements on the Airport property.

The land and buildings under this program will remain the property and under the control of Athens-Clarke County Unified Government. All standards of the Airport Safety District, being derivative of Federal Aviation Administration (FAA) regulations and requirements, will be maintained. No change in building use or zoning classification will be required. FAA requirements are addressed previously under Airport Planning Issues.

Setbacks / Easements
The proposed site for this facility, being fully within the Airport property, is not adjacent to any 'public' roads. The Zoning category does not identify any setbacks from property or parcel lines. No easements have yet been identified on the site. However, on the Airport property there are long-term lease agreements with some of the adjacent airport uses, and proposed improvements should be reviewed with the Airport's planning department.

There are no established setbacks for the Government District on the Airport Property. However, due to other considerations, some clearance is expected on all sides of the General Aviation Terminal Building.

Height Restrictions
There is no established maximum building height for this zoning category. However, due to other considerations, a maximum building height of not more than fifty-five feet is expected.

Site Area Coverage
Under the requirements of this district, permanent and semi-permanent improvements may cover up to 100% of the site area. It is not anticipated that the built improvements will reach this maximum coverage. See landscape requirements below for additional information.

Site Access
Access from a public way will be provided to the parking lots and a lane directly in front of the terminal building itself, as described under other sections. See discussion under Airport Planning Issues related to proposed changes to the access roads on the Airport.

Vehicle Parking Areas

Athens-Clarke County Unified Government has established a zoning ordinance for minimum parking requirements. The minimum established from this ordinance should be evaluated with the expected number of travelers and visitors who would use the parking lot during the peak week of the year. The greater number of spaces shall establish the minimum requirements.

The current zoning does not include a use group for Passenger Terminals. The functions of the General Aviation Terminal are most similar to an Organization Hall (one space per 100 square feet of assembly space, plus one space per two employees), Place of Public Assembly without fixed seats (one space per 200 square feet of public space), or Professional and General Offices (one space for each 300 s.f. of gross floor area). It is probable that the number of spaces required to accommodate the number of passenger cars during the peak week of the peak month will exceed any of these requirements. For planning purposes, a minimum of one space per 200 square feet of public space and one space per two employees should be sufficient for a typical month. If the terminal building is 6,700 square feet gross and 4,800 square feet are dedicated to Assembly (public) use and there are no more than 12 employees working at shift overlap, this would result in 30 parking spaces for General Aviation use.

Due to the occasional significant demand placed on the facility by a single large group (i.e., sports teams to or from the local university) traveling through the General Aviation facility, it is recommended that some parking distant from the terminal building also be marked for the occasional temporary parking of large chartered motor coaches (buses).

A separate loading area is not required, but a loading lane, preferably with access to both the landside and the airside of the General Aviation Terminal, shall be provided. Separate from the parking lot circulation, this lane shall be a minimum of 10 feet wide (12 to 15 feet preferred) by 50 feet deep on the landside. The expected level of use does not justify a loading stall or ramp.

Parking spaces shall be designed to meet the Athens-Clarke County standards. Typical full-size parking spaces shall be not less than 9 feet wide and 18 feet deep. Although compact automobile spaces are allowed, the anticipated demand for this parking lot does not appear to justify designing for a row of compact car spaces. The parking area shall have adequate interior driveways connecting each parking space to the access road. The parking lots and driveways should connect to a driveway immediately in front of the terminal that allows for passenger pick-up and drop off and return to the parking area. The parking lot drive aisles should be arranged to allow for recirculation in the parking lot. As recirculation is expected within the lot, the parking areas may be designed to accommodate two-way traffic, and if so, the lanes shall be a minimum of 24 feet in width clear, except at a designated handicapped accessible parking space, where the clear aisle distance may be reduced to 22 feet at the accessible space.

Handicapped parking spaces will be required. Spaces for wheelchair accessible vehicles may be included in general parking or may be separated and adjacent to pedestrian walkways. If the handicapped space is provided in general parking, it shall be 13 feet wide and 20 feet deep, appropriately striped, clearly labeled with signage, and located along an accessible path to and from the terminal. If handicapped parking is parallel to and adjacent to a pedestrian walk, it shall be 13 feet wide and not less than 24 feet in length. If the walk is raised from the parking area, an accessible curb cut shall be provided adjacent to the parking space in compliance with accessibility guidelines referenced in Section 2.4 "Building Code Issues."

Once the total number of required parking spaces has been determined, the portion to be handicapped accessible shall be provided in keeping with Athens-Clarke County Unified Government's Zoning guidelines. For up to 100 spaces, one accessible space shall be provided per each 25 parking spaces or fraction thereof. For up to 250 spaces, a minimum of four accessible spaces shall be provided plus one for each additional 50 spaces or fraction thereof above 100.

These minimum clearances and requirements shall be reviewed for compliance with the requirements for the critical design vehicles – motor coaches (buses) for charter groups. Parking spaces for these larger vehicles should be secondary to spaces for personal automobiles, as the nature of their use is infrequent and temporary. Adequate room should be provided to accommodate three motor coaches at one time in the parking lot. The access lane and recirculation lanes in the parking lot shall be capable of handling these vehicles as they travel to and from the terminal entrance(s).

Landscape Requirements
Buffer Zones
The current ordinance for buildings in the Government District Zone does not include any required buffer zones around improved areas. However, the Airport has expressed a desire to voluntarily include planted buffer zones at parking areas and measures for landscaping between the landside parking areas and the terminal building entrance.

The Airport intends to develop planted buffer zones or islands around parking lots and between parking aisles in order to screen and divide large parking areas. The location and layout of the building development should anticipate building expansion. If possible, provide landscaping areas at the building ends (building faces which do not front directly on the Airside or the Landside) large enough to accommodate future expansion and to include future landscaping.

Landscaping and planted elements should buffer the terminal building and parking areas from the adjacent commercial terminal and the loop road, while preserving a line-of-sight view to the General Aviation Terminal so that drivers on the access loop road will be able to orient themselves to the airport layout. As noted above, buffer zones should be included in the parking layout both between the parking lot and the access road, and among parking lanes within the parking lot as directed by the Owner. Plantings adjacent to the airfield fencing should be kept to a minimum, and clear areas or low plantings are preferred adjacent to the terminal building and airfield apron.

The landscaping plan and the budget should be addressed with the Owner once a site has been selected. Priority shall be given to the development of the planted screening elements landside of the terminal building and at the parking area. A grassed or landscaped area should also be included landside adjacent to the terminal building. Planted areas should be served by an irrigation system in keeping with other landscaped areas on the airport. If the site and budget permit, a small covered outdoor picnic / observation area may be included. Plant selection should in all cases emphasize hearty and low maintenance plant selection, in keeping with the general scheme of the Airport landscaping and local and regional horticulture.

Tree Ordinance / Improvements
No tree ordinance is in place for this development zone. No special tree or plants have been identified for preservation or conservation in this area. Tree preservation or replacement shall be in keeping with the general guidelines above.

2.5 Regulatory Code Issues

2.5.1 Preliminary Building Code Analysis

The following code review is a preliminary analysis to assist in the planning of the terminal building as part of the Conceptual Program Development. The designers of the General Aviation Facilities shall perform all required analysis and necessary reviews as may be reasonable at each phase of the project development.

The Athens-Ben Epps Airport General Aviation Terminal Building has been programmed to consist of approximately 6,700 gross square feet.

Intended Building Usage and Occupancy Classification
The lobby and waiting spaces form the core area of the General Aviation Terminal, and the main purpose of these spaces is for the assembly of groups of people. The offices, work areas, and administrative spaces serve the business functions of the General Aviation Terminal. These Assembly and Business areas are the primary intended purpose of this building, some storage areas will be provided as accessories to these functions, but are not expected to include any hazardous storage. For a comprehensive review using the reference building codes, crew quiet rooms could be considered transient residential occupancy; the display and sale of merchandise could be considered as a partial mercantile occupancy. It is generally assumed that the requirements of the Assembly use will exceed any requirements based on the small portion of the building intended for these last two purposes. The building may be considered a mixed occupancy, however, the Building Code allows the building to be considered a single occupancy if the most restrictive requirements for the various occupancy classifications are applied to the entire building. Primary intended occupancy for purposes of this code review will be Assembly, Small Assembly, requiring no stage. This is also the most restrictive of the applicable occupancy classifications.

See Table 2.5.1.a, "Conceptual Building Code Analysis – Summary"

See Table 2.5.1.b, "Building Occupancy Summary and Area Tabulation".

Table 2.5.1.a – Conceptual Building Code Analysis – Summary

Occupancy Classification[1] per SBCCI Chapter 3		
Assembly Space, A2		5,045 square feet
Business Space, B		1,600 square feet
Mercantile, M		0 square feet
Residential, R1		0 square feet
Storage – Moderate Hazard, S1		60 square feet
Construction Type	*Allowed*	*Programmed*
SBCCI Types	Types I, II, IV, V	Type IV
NFPA Types	Types I, II, IV	Type II 000
Structural Members	Non-combustible	Non-Combustible
Protection for Members	Protected or Unprotected	Unprotected
Automatic Fire Sprinkler	Sprinklered or Unsprinklered	Unsprinklered
Building Data per SBCCI Table 500	*Allowed*	*Programmed*
Number of Floors	Two Stories	One Story
Maximum Height	55 feet	25-35 feet
Allowable Floor Area[2], 1-story	8,000 s.f.	6,700 s.f.
Allowable Floor Area, 2-story	8,000 s.f.	N/A
Rated Separations	*Required*	*Programmed*
Between Assembly and Business[3]	2-hour	None
Between Assembly and Kitchen	None	None
Mechanical / Electrical Rooms	Varies based on design	To be determined
Storage – non-hazardous	None, if less than 100 s.f.	None
Tenant Separation	1-hour	N/A
Fire Suppression Systems (Sprinklers)	*Required*	*Programmed*
SBCCI	None	None
NFPA 415	*See Note 4*	None
Occupant Load[5] (per SBCCI Table 1003.1, based on assumed square footage per usage)		
Assembly Space, A2, and accessory	15 s.f. net / occupant	318 occupants
Business Space, B	100 s.f. gross / occupant	16 occupants
Storage, S1	300 s.f. gross / occupant	1 occupants
Total Occupant Load		**335 occupants**

Notes:

1) *Building to be considered single occupancy – Small Assembly with no stage – per Section 303, for most purposes.*
2) *Allowable Floor Area may be increased: by 100% under Table 500 if fully sprinklered; by 50% if structure is protected throughout by 1-hour fire rated assembly; by percentage to be determined under Section 503.3.2, if a 30 foot clearance is provided; to unlimited area if one-story, surrounded by permanent open space of 60 feet clear on all sides, fully sprinklered, and with all exits at or near grade.*
3) *Separation would be required if building is considered mixed occupancy; exception to 303 should apply to other sections as well; Section 704.1.2.2.3 allows administrative and clerical offices which do not exceed 25% of area on a story to be considered accessory occupancy and to not be separated, Business Occupancy amounts to 24% of one-story area.*
4) *NFPA 415, when adopted, would require airport terminal buildings to be provided with automatic fire suppression systems; there is an exception for buildings less than 12,000 s.f. There is a separate requirement under NFPA 415 and 409, if openings are located less than 100 feet from "potential fuel spill points" then a deluge sprinkler system or automatic fire shutters must be provided at all openings that meet that condition.*
5) *Occupant Load is calculated based on intended use of programmed spaces. See 1 above.*

Table 2.5.1.b Building Occupancy Summary and Area Tabulation

Service (Space) to be Provided	Occupancy Classification	Select	Occupants
Occupancy Subtotal of General Use - Site			28
Site - Airside - Covered Entry	Assembly	75	5
Site - Landside - Covered Entry	Assembly	340	23
Occupancy Subtotal of General Use - Building			123
Public - Main Lobby	Assembly	0	0
Public - Control Center / Reception	Business	190	2
Public - Control Center: Storage – Merchandise 1	Storage	30	0
Public - Control Center: Storage – Memorabilia	Storage	30	0
Public - Restrooms - Common Corridor/Water Fountain	Assembly	75	5
Public - Restrooms - Men	Assembly	225	15
Public - Restrooms - Women	Assembly	225	15
Public - Atrium	Assembly	1,160	77
Public - Administrative (GA) Offices	Business	0	0
Public - Observation Area	Assembly	0	0
Public - Entry Vestibules	Assembly	120	8
Occupancy Subtotal of Passenger Building			21
Public - Passenger Waiting	Assembly	0	0
Public - Telephone Booths	Assembly	20	1
Public - Vending - Coffee Bar / Kitchenette / Catering	Assembly	75	5
Public - Vending - Vending Machines	Assembly	80	5
Public - Vending - Dining Area	Assembly	135	9
Public - Supplies / Commissary / Sundries Display	Mercantile	0	0
Public - Local Interest Displays / Advertising	Mercantile	0	0
Public - Souvenir Shop	Mercantile	0	0
Occupancy Subtotal of Business Traveler Area			54
Public - Conference Center – Large Executive Conference Room	Assembly	640	43
Public - Conference Center – Equipment Storage	Assembly	40	0
Public - Conference Center – Kitchenette / Catering	Assembly	160	11
Occupancy Subtotal of Flight Crew Area			25
Flight Crew Flight Planning	Business	115	1
Flight Crew Lounge	Assembly	325	22
Flight Crew Restrooms	Business	65	1
Flight Crew Shower	Business	0	0
Flight Crew Quiet Room	Residential 1	0	0
Flight Crew Night Phone Exterior	Business	15	1
Occupancy Subtotal of Line Crew / Ground Employees Area			9
Line Crew Service Counter	Business	0	0
Line Crew Work / Service Area	Business	180	2
Line Crew Work Storage	Business	55	1
Line Crew Locker Room	Business	65	1
Line Crew Emergency Shower / Eyewash	Business	10	0
Line Crew Operations Manager / Supervisor	Business	120	1
Employee Restrooms - Additional	Business	65	1
Employee Breakroom	Assembly	60	4
Occupancy Subtotal of Airport Administration Area			8
Airport Admin. – Reception	Business	100	1
Airport Admin. – Administrative Assistant	Business	80	1
Airport Admin. – Airport Manager	Business	150	2
Airport Admin – Plan File / Meeting Room	Business	200	2
Airport Admin. – Filing / Copy Room	Business	90	1
Airport Admin. – Storage	Business	100	1
Airport Admin. – Other Offices	Business	0	0
Occupancy Subtotal of Miscellaneous Use Spaces			0
Charter Operations (FBO) Office	Business	0	0
Other Tenant Space (offices)	Business	0	0
Occupancy Subtotal of Support Services			0
Janitor Closet	Accessory	65	0
Mechanical Room	Accessory	90	0
Electrical Room	Accessory	75	0
Computer / Telephone Room	Accessory	60	0
Occupancy Subtotal of Support Services - Circulation			67
Circulation - Horizontal - 1st Floor	Assembly	1,000	67
Circulation - Vertical: Stairs	Assembly	0	
Circulation - Vertical: Elevator	Assembly	0	
Circulation - Horizontal - 2nd Floor	Assembly	0	0
Total Occupants in Assembly Areas			315
Total Accessory Areas			0
Total Occupants in Business Areas			17
Total Storage Areas			0
Total Residential Areas			0
Total Occupants			335

2.5.2 Applicable Regulatory Codes / Standards

Life Safety and Building Codes

Current Codes Adopted by Athens-Clarke County

Georgia State Minimum Standard Building Code comprised of the following, and with local amendments as noted:
Standard Building Code – 1994 Edition. Southern Building Code Congress International (SBCCI), Inc. SBCCI. Birmingham, Alabama. 1994 (and revisions since).
Georgia State Amendments To the Standard Building Code. Georgia Department of Community Affairs (DCA), Office of Coordinated Planning. Atlanta, Georgia. January 1, 2000.
and amended as per:
Athens-Clarke County Local Amendments to State Building Code. Athens-Clarke County. Athens, Georgia.

Georgia State Minimum Mechanical Code comprised of the following, and with local amendments as noted:
Standard Mechanical Code / International Mechanical Code – 2000 Edition. SBCCI. 2000.
Georgia State Amendments to the Standard Mechanical Code. DCA. January 1, 2001.
and amended as per:
Athens-Clarke County Local Amendments to State Mechanical Code. Athens-Clarke County.

Georgia State Minimum Plumbing Code comprised of the following, and with local amendments as noted:
Standard Plumbing Code / International Plumbing Code – 2000 Edition. SBCCI. 2000.
Georgia State Amendments to the Standard Plumbing Code. DCA. January 1, 2001.
and amended as per:
Athens-Clarke County Local Amendments to State Plumbing Code. Athens-Clarke County.

Georgia State Minimum Gas Code / International Fuel Gas Code comprised of:
Standard Gas Code / International Fuel Gas Code – 2000 Edition. SBCCI. 2000.
Georgia State Amendments to the Gas Code. DCA. January 1, 2001.

Georgia State Minimum Standard Electrical Code comprised of the following, and with local amendments as noted:
National Electrical Code: NFPA 70 – 1999 Edition. National Fire Protection Association (NFPA), Inc. – National Electric Code Committee. NFPA. Quincy, Massachusetts. 1999 (and as revised).
Georgia State Amendments to the National Electrical Code. DCA. January 1, 2000.
and amended as per:
Athens-Clarke County Local Amendments to State Electrical Code. Athens-Clarke County.

Georgia State Minimum Standard Fire Prevention Code comprised of the following, with local amendments:
Standard Fire Prevention Code – 1994 Edition. SBCCI / Southeastern Association of Fire Chiefs / Southwestern Association of Fire Chiefs. SBCCI. 1994.
Georgia State Amendments to the Standard Fire Prevention Code. DCA. January 1, 2000.
See also *NFPA 1 – Fire Protection Code*.

National Fire Protection Association Fire Protection Code – NFPA 1 – 1997 Edition. NFPA. 1997 (and as revised).
Standard for the Office of the Fire Marshall for Athens-Clarke County.
Included by reference are portions of:
NFPA 101 – Life Safety Code – 1997 Edition. NFPA Committee on Safety to Life. NFPA. 1997
NFPA 13 – Standard for the Installation of Sprinkler Systems (and referenced standards*). NFPA. 1997.

Georgia State Energy Code for Buildings comprised of:
Model Energy Code – 1995 Edition. The Council of American Building Officials (CABO). CABO. 1995 (and as revised). Adopting by reference:
Codification of ASHRAE/IES Standard 90.1-1989 (RS-22). American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE/IES). 1993.
Georgia Supplements and Amendments to the 1995 CABO Model Energy Code - 3rd Edition. DCA. January 1, 2000. (Precedent for any discrepancies between the referenced standards.)

Additional Codes for Housing, Dwellings, Swimming Pools, Amusement Devices, Unsafe Building Abatement, and Existing Buildings have been adopted by Athens-Clarke County, but do not apply to the proposed project and are omitted

Reference Codes and Recommended Guidelines

Standard Building Code – 1997 Edition. SBCCI. 1997.

NFPA 415: Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways – 1997 Edition. National Fire Protection Association, Inc., Technical Committee on Airport Facilities. NFPA. Quincy, Massachusetts. 1997.

Accessibility Codes and Guidelines

Current Codes Adopted by Athens-Clarke County

Americans with Disabilities Act (ADA) Accessibility Guidelines (ADAAG) for Buildings and Facilities. U.S. Architectural and Transportation Barriers Compliance Board. *The Federal Register*, United States Government Printing Office. Washington, DC. 1991 (and interim rules and interpretations since adoption).

Georgia Accessibility Code 120-3-20. (Formerly known as State of Georgia Handicapped Law). Empowered and amended by State of Georgia Official Code Title 30, Chapter 3. Atlanta, Georgia. 1997 and as revised.
and referenced portions of
ICC/ANSI A117.1-1998 Standard on Accessible and Usable Buildings and Facilities. International Code Council (ICC) and The American National Standards Institute (ANSI) A117.1 – 1992 originally, revised 1998. SBCCI.

Aviation Related Development – Regulations and Guidelines

Advisory Circular AC 150/5300-13: Airport Design. U. S. Department of Transportation (USDOT): Federal Aviation Administration. (FAA). FAA. Washington, DC. September 1989. Incorporating Changes 1-6, revised as of September 2000.

AC 150/5300-13, Appendix 5, Small Airport Buildings, Airplane Parking, and Tiedowns *– Change 4.* FAA. 1994.

AC 150/5300-9A Predesign, Prebid, and Preconstruction Conferences for Airport Grant Projects. FAA. 1985.

See also *NFPA 415: Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways* above.

2.5.3 Authorizing Agencies

Athens-Clarke County Airport Authority
Mr. Tim Beggerly, Airport Director. Athens-Ben Epps Regional Airport. 1010 Ben Epps Road, Athens, Georgia 30605.

Athens-Clarke County Planning Department
Ms. Julie Morgan, 120 West Dougherty Street, Athens, Georgia 30601.

Athens-Clarke County Building Inspections and Permits Department
Mr. Ken Hix, Director. 120 West Dougherty Street, Athens, Georgia 30601.

Athens-Clarke County Fire Marshall
Mr. John Pritchett, Fire Marshall. 700 College Avenue, Athens, Georgia 30601.

Georgia State Accessibility Law – Technical Issues
State Fire Marshall's Office, 620 West Tower, 2 Martin Luther King Jr. Drive, Atlanta, Georgia 30334

2.6 Additional Reference Materials

Athens-Ben Epps Airport, Athens-Clarke County Airport Authority, Master Plan Update – Final Technical Report. HNTB in association with Robinson, Fisher & Associates, Inc. Master Plan Update, including revisions to Airport Layout Plan sets, initiated in May of 1993 and completed in Fall of 1994, approved in 1995. HNTB Atlanta. 1994/1995.

Appendix VI

GENERAL AVIATION TERMINAL BUILDING CONCEPTUAL PROGRAM

Athens-Clarke County
Athens-Ben Epps Airport

Athens, Georgia

GENERAL AVIATION FACILITIES IMPROVEMENTS

CONCEPTUAL PROGRAM

Final Report

October 26, 2001

Prepared by

THE LPA GROUP INCORPORATED

OCTOBER 2001

TABLE OF CONTENTS

TABLE OF CONTENTS *(Continued...)*

TABLE OF CONTENTS *(Continued...)*

TABLES

FIGURES

CHAPTER 1: KEY DESIGN ISSUES

1.1 Facility Services

1.1.a Scope of Services

The basis of any General Aviation facility is to provide fueling, parking, and flight related services to independent, corporate, and charter pilots and their aircraft. At its most basic, the General Aviation facility is a fueling and resting stop for pilots. At its most developed, the General Aviation facility is a single source for planning, repair, marketing, flight services, and business meetings for pilots and passengers.

The General Aviation Terminal serves as the junction point where passengers meet their pilots and where pilots acquire certain services for their planes and passengers. Services provided at the General Aviation Terminal include vehicle parking for passengers and flight crews, waiting areas for crew and passengers, restrooms, line service for aircraft, parking or hangars for aircraft, flight planning facilities, community information and contacts, and food vending or concessions.

The Airport Advisory Committee simplified the basic services the General Aviation facility at Athens-Ben Epps Airport will offer by outlining the first four concerns of the passengers and flight crews arriving on the airside. Flight crews and passengers first look for restrooms, telephones, and ground transportation. The flight crew then looks for the line crew to handle fuel and catering for the aircraft.

In general, the General Aviation Terminal at Athens-Ben Epps Airport will offer customary services to general aviation pilots, their passengers, their aircraft, and their crew. In addition, the General Aviation Terminal will provide support services to business travelers. The terminal building program will also provide space for Airport Administration. Services and functional spaces identified from similar projects and from discussion with the Airport board are listed in Table 1.1, "List of Services". These individual spaces and functions are discussed in detail in Chapter 3 "Program Requirements".

Table 1.1 List of Services

Service or Space to be Provided at General Aviation Facilities
General Use - Site
Site - Airside - Aircraft Staging Ramp
Site - Airside - Taxiways / Hangar Access
Site - Airside - Aircraft Tie-Down Parking
Site - Airside - Line Service Ramp
Site - Airside - Covered Entry
Site - Landside - Access Road
Site - Landside - Vehicle Parking Lot
Site - Landside - Rental Car Parking
Site - Landside - Delivery / Loading Access
Site - Landside- Pick-Up / Drop-Off Lane
Site - Landside - Covered Entry
General Use - Building
Public - Main Lobby
Public - Control Center / Reception
Public - Control Center: Storage – Merchandise
Public - Control Center: Storage – Memorabilia
Public - Restrooms - Corridor / Water Fountain
Public - Restrooms - Men
Public - Restrooms - Women
Public - Atrium
Public - Observation Area
Public - Entry Vestibules
Passenger
Public - Telephone Booths
Public - Passenger Waiting
Public - Vending - Coffee Bar / Kitchenette / Catering
Public - Vending - Vending Machines
Public - Vending - Dining Area
Public - Supplies / Commissary / Sundries Display
Public - Local Interest Displays / Advertising
Public - Souvenir Shop
Business Traveler
Public - Conference Center
Public - Conference Center - Equipment Storage
Public - Conference Center - Kitchenette / Catering
Flight Crew
Flight Crew Flight Planning
Flight Crew Lounge
Flight Crew Restrooms
Flight Crew Shower
Flight Crew Quiet Room
Flight Crew Night Phone Exterior
Line Crew / Ground Employees
Line Crew Service Counter
Line Crew Work / Service Area
Line Crew Work Storage
Line Crew Locker Room
Line Crew Emergency Shower / Eyewash
Line Crew Operations Manager / Supervisor
Employee Restrooms - Additional
Employee Breakroom
Airport Administration
Airport Admin. – Reception
Airport Admin. – Administrative Assistant
Airport Admin. – Airport Manager
Airport Admin. – Plan File / Meeting Room
Airport Admin. – Filing / Copy Room
Airport Admin. – Storage
Airport Admin. – Other Offices
Miscellaneous Use Spaces
Charter Operations (FBO) Office
Other Tenant Space (offices)

1.1.b Scope of Operation

The General Aviation facility at Ben Epps Airport will provide:

a. Flight Crew Flight Planning support

b. Fueling services

   No heavy maintenance. Maintenance may be provided under contract with Fixed Base Operator (FBO) or others.

c. Transient aircraft parking spaces / tie downs only

   Hangar space is provided elsewhere on the Airport.

d. Flight Crew Lounge and other support spaces

e. Flight Crew / Traveler light supplies (maps, sundries class)

f. Passenger waiting facilities

g. Passenger / crew 'concierge' services –

   Telephones, rental car, community information, etc.

h. Meeting / Conference Facilities for the Business Traveler

i. Additional Functions at General Aviation Terminal.

   1) Airport Administration will be housed in the terminal
   2) Fixed Base Operator (FBO) <u>may</u> also be housed at the terminal in the future

The management and operations of the General Aviation facility and the fuel operations will be administered directly by Athens-Clarke County.

1.1.c Hours of Operation

Basic services [not including any Fixed Base Operators (FBO's), Business Conference Facilities, or Airport Administration] are expected to be available from 06:00 (6:00 a.m. ET) to 22:00 (10:00 p.m.) year round. When the General Aviation Terminal is not staffed, an after-hours phone accessible from the Airside must be provided to close out flight plans and allow the Flight Crew to contact ground transportation or acquire after hours service, if needed. Any future FBO office will set its own hours; at present, it is expected that those hours will match the General Aviation facility hours of operation. Conference Facilities should be available at all times when the reception / control area is staffed.

1.2 Use Groups

The services identified as key to the development of General Aviation facility at Athens Ben Epps Airport can be separated into several major headings:

- General Use Services;
- Passenger Services;
- Business Traveler Services;
- Flight Crew Services;
- Line Crew Services;
- Airport Administration Areas; and,
- Various support services.

1.3 Relationship to Adjacent Airport Functions

Commercial Passenger Facilities

The General Aviation facility at most airports typically serves a different segment of traveling public than the commercial facilities. However, operators located in the Commercial Terminal may also offer similar services to crew and passengers at the General Aviation Terminal (such as concessionaires, rental car companies, or commercial fuel). The Airport might also arrange for some services (such as conference rooms, some vending, or concessions) to be provided in only one terminal, provided that the General Aviation and Commercial Terminals were located to facilitate movement between the two. Depending on arrangement, it would be advantageous for both terminals to share landside improvements and facilities, notably parking, access road and terminal loop road, if feasible.

At Athens-Ben Epps, for the immediate future, a relatively close arrangement and orientation of the two terminals is expected. Airport Staff would like to locate the Airport Administration offices in the General Aviation Terminal. It is expected that in the near future, a new commercial terminal facility will be developed on the Airport, and most of the Airport Administrative functions will be relocated to that building at that time. However, it is anticipated that the Operations Manager will remain at the General Aviation facility after the Airport Administration has been relocated.

It is anticipated that rental car offices housed in Commercial Terminal may require spaces for parking rental cars in the General Aviation parking lot. Employees of the rental car companies will move the vehicles to and from the General Aviation Terminal. The Improvements Program does not currently anticipate any other overlay of office or services from the Commercial Terminal building.

Consideration in siting and size of facilities should be given to planned relocation of existing Commercial Flight terminal. The current preferred concept (pending completion and approval of the Master Plan) locates the new commercial terminal at a mid-field site across the airfield from its current location.

For airport planning purposes, the airfield operations are the primary organizing system. The relationship between the Terminal buildings is determined by Apron / Taxiway arrangement; frontage on the Apron and access to taxiways is always at a premium. Although also important to the overall layout, compared to the requirements for runway and taxiway layouts, access road and parking relationships are secondary.

Aircraft Operations Areas

The parking apron (or aprons) and staging area on the apron are part of the Aircraft Operations Area (AOA), which also include the taxiways leading to and from the apron. These areas should be as close as possible to the airside access of the General Aviation Terminal, and must be in line of sight of the Air Traffic Control Tower. Access to the AOA and apron parking will be primary controlling factors in the location and situation of the general aviation terminal. Non-essential services should be placed away from the active AOA areas where feasible, and therefore closer to landside.

Regulations for building heights and incursions into the Airport Operations Area are based off the location of the taxiways and runways. Specific requirements will need to be addressed when the building is located on the site, and should include consideration of typical aircraft parking.

Air Traffic Control Tower Operations
Scheduled operations at the Commercial Terminal and flight plans for General Aviation aircraft are coordinated for usage of the Airfield. For the most part, aside from line-of-sight requirements for the Air Traffic Control Tower (ATCT), this function has little impact on the spatial arrangement or building program of the General Aviation Facilities. Airfield Operations for all aircraft are coordinated through the Air Traffic Control Tower. A line of communication must be maintained between the General Aviation facility and Air Traffic Control. Equipment required and functions affected are detailed under Chapter 3 "Program Requirements".

Apron Usage
The General Aviation Terminal must be located adjacent to an adequate open area of the aircraft-parking apron. The terminal building should be located adjacent to the apron so that the facility is visible from the primary arrival runways. The aircraft will use the apron for temporary parking, staging, and overnight (tie-down) aircraft parking. It is recommended that separate areas be set aside for smaller personal or corporate aircraft and for occasional heavier commercial aircraft. Ideally, the apron for the General Aviation Terminal would be adjacent to other buildings or functions for General Aviation Aircraft – such as maintenance (by a FBO) or storage hangars. The tie-down parking need not be immediately in front of the facility, although this is typical.

Fixed Base Operators
Fixed base operators' (FBO's) facilities typically provide services and space for aircraft maintenance and repair. FBO's typically offer hangars or services for corporate flight activities or air charter. The apron parking area for General Aviation activities and for the FBO should be as close as possible for the convenience of pilots. FBO buildings are also typically located near the General Aviation Terminal buildings.

Hangar Operations
Hangars need not necessarily be located adjacent to the General Aviation Terminal or the General Aviation Apron, but should be relatively close by to facilitate airport operations. Currently and for the foreseeable future, hangars at Athens-Ben Epps are primarily T-hangar buildings and are relatively close to the proposed sites for the General Aviation facility.

Airport Rescue and Fire Fighting Operations
Currently a Crash and Fire Response (CFR) facility is located landside of the airport's security demarcation line; this is not an ideal layout. The Airport Rescue and Fire Fighting (ARFF) personnel respond to airside emergencies at the Airport – commercial and general aviation. The ARFF functions are currently staffed as needed by employees located at various locations on the Airport. The Line Crew at the General Aviation Terminal is expected to respond immediately when the ARFF is needed.

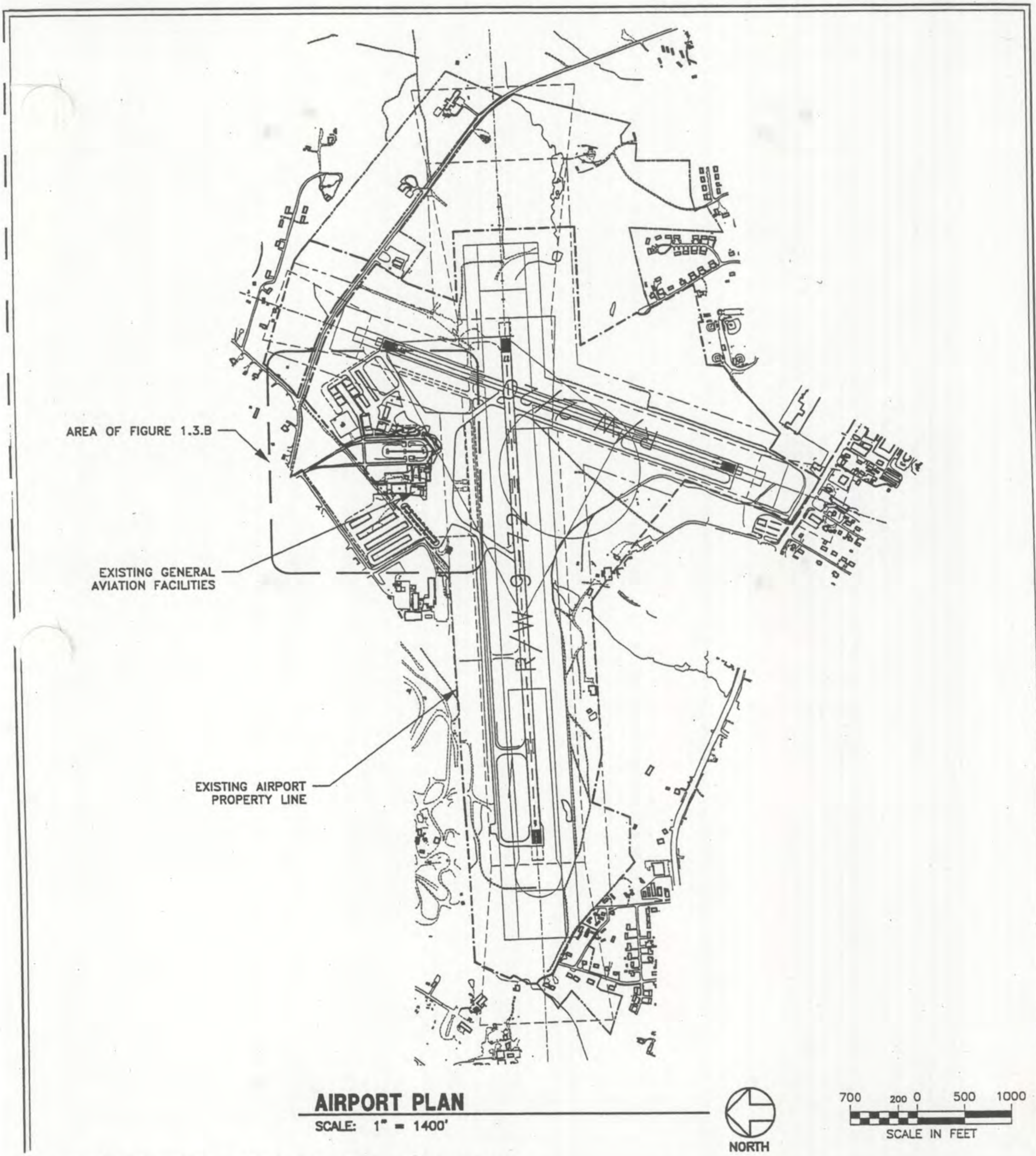
The current CFR facility will be replaced by the development of a future ARFF facility, according to the Master Plan. The General Aviation Terminal should be situated so that the Line Crew Work Area has direct access to the future ARFF. The preferred arrangement is for the Line Crew and the ARFF facility to be located on the Airside of the security demarcation line (Secure Identification Area (SIDA) line) and connected on a short, direct path.

Parking
Ideally, parking for passenger cars for expected passengers, based flight crew, visitors, and employees should be provided adjacent to the General Aviation Terminal. It may be acceptable, depending on the design, to share parking areas with the nearby commercial terminal functions. However, the total number of spaces required for all functions served must be balanced against the adjacency and functionality for the intended building served. If adequate parking can be provided elsewhere on the airport, but it is not close enough to the General Aviation Terminal, this will impose an inconvenience on passengers and visitors. At Athens-Ben Epps General Aviation, consideration should also be given to allowing adequate room in the parking arrangement for maneuvering and temporary parking of motor coaches (buses).

Access Road
An access road (or roads) from a public thoroughfare shall be provided for vehicular access for passengers, employees, and deliveries. Much of the airport access road should be able to serve the General Aviation access as well. Care should be taken in the location of any surface transportation to coordinate with expected future development at the Airport. The road should be designed to meet local standards and the Airport's standard requirements. The access road should handle traffic from passenger vehicles up to tractor-trailers (for deliveries) and touring motor coaches (large buses).

Future Development
The Airport is currently revising the Airport Master Plan. The Master Plan, and its associated Airport Layout Plan, will outline expected development at the airport into the twenty-year planning period. The Master Plan update is anticipated to be completed in 2002. The designers of the General Aviation Terminal should familiarize themselves with the Master Plan Documents when those documents have been completed, approved, and accepted by the Airport. All proposed improvements must be in keeping with the developments shown in the approved Master Plan. The recommendations in this document have been developed in conjunction with preliminary information used in updating the Master Plan. The exhibits included herein of the Airport Layout Plan are from the previous Master Plan revisions completed in 1994; generally speaking, improvements shown in the 1994 Master Plan update should be consistent with the upcoming revisions. Comments are included elsewhere in this document on critical impact areas, such as the location of the commercial terminal and the airport rescue and fire-fighting facility.

See Figures 1.3.a, 1.3 .b.



SOURCE: BASE MAPPING – HNTB ATLANTA – MASTER PLAN UPDATE 1994

THE LPA GROUP TRANSPORTATION CONSULTANTS

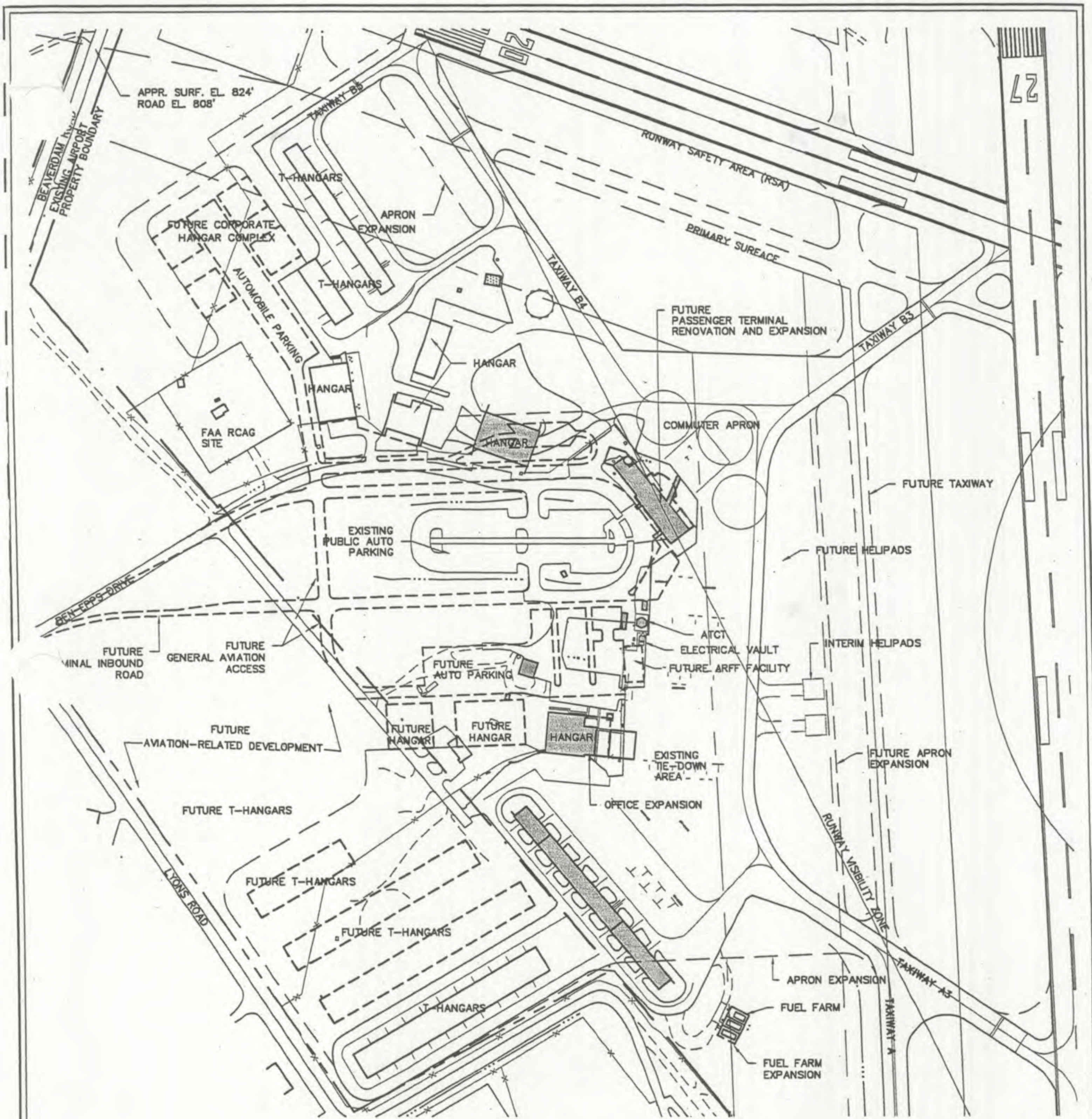
ATHENS-BEN EPPS AIRPORT
GENERAL AVIATION TERMINAL PROGRAMMING

AIRPORT LAYOUT PLAN - EXISTING

FIGURE 1.3 A

APRIL 2001

FIGURE 1.3 B



AIRPORT LAYOUT PLAN - TERMINAL AREA

SCALE: 1" = 300'

SOURCE: BASE MAPPING – HNTB ATLANTA – MASTER PLAN UPDATE 1994

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TRANSPORTATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
GENERAL AVIATION TERMINAL PROGRAMMING

AIRPORT LAYOUT PLAN - EXISTING

FIGURE 1.3 B

APRIL 2001

1.4 Security and Hazards

1.4.a Security Issues

Airfield Security

At present, Federal Aviation Regulation (FAR) Part 107, "Airport Security" (14 CFR Part 107) does not require the airside ramp at General Aviation Terminals to meet all of the requirements of FAR 107, as General Aviation does not serve scheduled air passenger service. However, Airport Security requirements have been increasing steadily over the last several years, and additional security requirements may be required in the future. In general, total separation or clear demarcation of the general aviation apron and the commercial service apron are important due to more stringent security requirements for commercial operations. In the future, the airport will move the commercial terminal and its associated activities across the airfield from its current location, separating it from the general aviation facilities. Until that time, the general aviation apron areas should maximize the separation through building orientation and pavement markings.

In addition, the Airport has instructed that the Airfield shall be a limited access area. Passage through or around the General Aviation Terminal must be restricted. Access to the Airfield shall be controlled either internally by visual or closed circuit monitoring, or by access card / code as determined by the current security plan and system at the Airport, or a combination of these two systems.

Any design should limit the amount of visual interference and should provide for the maximum observation possible of building areas and aircraft parking areas by the Line Crew and Airport personnel. Landscaping and decorative elements adjacent to the security fence and gates should be kept to a minimum.

Building Security

When the General Aviation Terminal is open for operations and staffed, passage through the building from landside to airside shall be restricted to authorized employees or users. Identification and verification shall be by visual observation at a minimum, mechanical or electronic controls may be required, in keeping with the current security plan for the Airport. After standard operating hours, the building shall be able to be secured.

Employee work areas shall be reasonably secured from public access. An open layout for most areas of the terminal will allow for observation, mainly from the control/reception area, of access to and from these areas.

1.4.b Hazards / Hazardous Materials

Airside Concerns

Fueling services use fuels that are flammable and explosive. Storage, control, and reclamation shall be as required by the office of the Fire Marshal for Athens-Clarke County Unified Government, and shall conform with National Fire Protection Association (NFPA) "Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways", NFPA 415, current edition. It is recommended that all fueling operations and storage be conducted at least 100 feet from the airside face of the General Aviation Terminal, in order to comply with the intent of NFPA 415. For additional reference, see Chapter 2 "Program Parameters / Guidelines".

The General Aviation Terminal does not offer more than immediate maintenance (pressure and fluids check, cleaning, minor adjustment) at this facility. Chemical and mechanical hazards that might result from these maintenance operations are expected to be similar to commercial or light industrial applications. No special hazards are expected. Additional maintenance may be provided by FBO or others on the Airport, but this is outside the scope of the General Aviation Terminal project.

The Line Crew stores some equipment on, or adjacent to, the Aircraft Parking/Staging Apron. Maintenance and repair of this equipment is assumed to be handled at some other location. No garage, hangar, or maintenance facility is currently considered in connection with the General Aviation Terminal.

Building Concerns
Material selection for the exterior of the terminal building should be careful to limit loose or exposed individual pieces or edges, due to the necessity of preventing debris from blowing onto the airfield and the greater than average wind and air blast conditions common to airports and airplane operations.

At present, in the interior of the building, the equipment and chemicals used are expected to be in keeping with business, small assembly, and light commercial usage. No special hazards are expected.

Depending on selected site, there may be electrical vaults or utility lines located beneath or immediately adjacent to the terminal building. Care should be taken to protect the building from exposure to fire and other hazards associated with these conditions, if they should occur.

Clearance / Setback / Height impacts of Airfield Operation Guidelines will vary with selected site and distance from active airport operations. These are discussed in Chapter 2 "Program Parameters / Guidelines."

Landside Concerns
Vehicular access and parking only are provided on the landside of the terminal facilities. The access road and passenger drop-off and pick-up should be situated to allow for clear visibility and easy turning. The critical design vehicle will include touring motor coaches (buses), and adequate clearances should be maintained. See comments above regarding utilities. No other special hazards are expected.

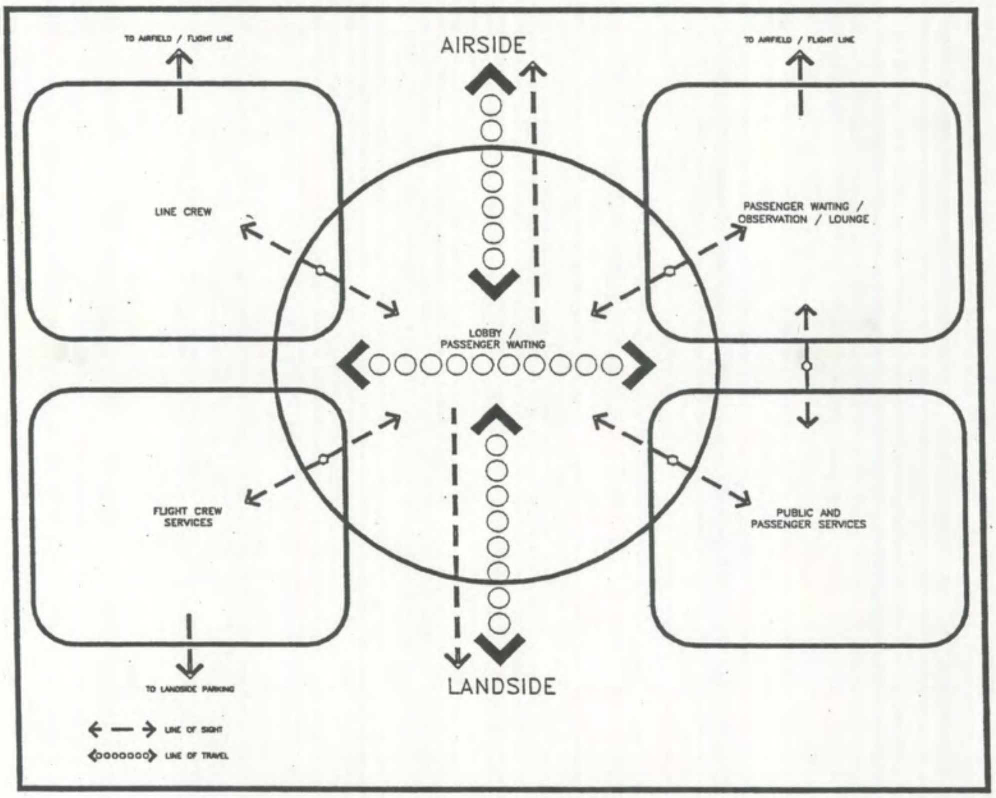
1.5 Ideal Terminal Flow

In plan, the requirements of a small terminal building, such as a General Aviation Terminal, are few and fairly simple. The building layout should be reflective of the basic simplicity of the building functions and generally be organized by direct functional relationships between the interior spaces/facilities and site facilities. The interior layout should address the configuration of the airfield and passenger and service driveways. Any development should consider future expansion when demand increases.

The terminal facility should provide aircraft loading apron or aircraft parking areas. Key issues for the design of any terminal building are to provide short and direct pedestrian routes for the traveling public from vehicular parking areas to passenger waiting areas or direct to aircraft parking areas. In addition, the design should provide views to the airfield operations from the waiting areas, control center, line crew area, and any other public gathering areas in the building.

The public lobby or passenger waiting area is the hub, or center, of all major circulation paths in the terminal building. Most routes will direct travelers to or from this space. Starting from this central area, an open plan with minimal partitioning will allow for better circulation, better views to the airfield and parking areas, and a more spacious appearance.

Figure 1.5 Schematic Idealized Terminal Layout



1.6 General Program Requirements

1.6.a Flight Handling

Operationally, when an airplane arrives for landing, the Line Crew is alerted and assists the crew in securing the plane and disembarking passengers. The Flight Crew leads their passengers into the General Aviation Terminal and to the Reception / Control Area.

At the Reception area, passengers can be directed to the restrooms, the waiting lounge, telephones, meeting and conference areas, or can get assistance in obtaining information, directions, and ground transportation. The Flight Crew then contacts the Line Crew for required aircraft services. From Reception, the Flight Crew can receive any messages or notices, be directed to a secluded waiting lounge and restrooms, or proceed to Flight Planning, or secure ground transportation or lodging. The Flight Crew should also be able to obtain flight maps, travel supplies, and use the vending/concessions, including restocking flight provisions or obtaining catering items.

If departing, passengers arriving by car should enter the building immediate to the Reception area, where they can be directed to the passenger-waiting lounge, a conference room, or to waiting aircraft. Crew arriving by car should enter the reception/control area, be able to quickly find the status of their aircraft and any waiting passengers, and obtain any final assistance in preparing their aircraft and passengers for departure.

Flight Planning should have current flight planning charts, a map for flight distances, computerized weather information and current flight planning data, telephones for direct access to the ATCT and weather/pilot flight information services, as well as a posting area for any Notices-to-Airmen or specific airport information.

1.6.b Airside – Apron, Aircraft Parking

Facilities to be included outside of the Terminal Building proper intended primarily to support the local and transient aircraft include adequate apron, tie-downs for aircraft parking, fuel storage and pumping equipment, and other equipment for aircraft service.

Aircraft Staging Ramp / Apron

For current and future demand at the General Aviation Facility, it is recommended to provide enough depth on the apron for two lanes of transient aircraft parking and allow taxi lanes for maneuvering. The current and future mix of aircraft should be evaluated to determine the typical aircraft size for design purposes. It is also recommended to include additional apron depth at these transient parking areas for occasional heavier commercial aircraft that may use the General Aviation facilities. The airport may want to provide separate tie-down areas for larger aircraft, to avoid mixing in with smaller aircraft. Once a site has been selected, if apron expansion is needed, soil conditions should be analyzed to determine subsurface conditions and appropriate pavement design.

Taxiways / Hangar Access

Currently and for the foreseeable future, hangars at Athens-Ben Epps are primarily T-hangar buildings and are relatively close to the proposed sites for the General Aviation facility. The proposed sites for the General Aviation Terminal should not have noticeable impact on the existing taxiways, unless the apron must be expanded and reconfigured to provide adequate aircraft parking. The aircraft apron and parking arrangements should allow clear paths for the expected aircraft to maneuver from the runways to transient parking positions, the staging ramp, the line service apron, and also to the nearby T-hangars. Primarily, this is an issue of siting the terminal building and adjacent facilities to be clear of the aircraft travel paths.

Aircraft Tie-Down Parking
Near the transient aircraft parking lanes and adjacent to the apron, an apron area should be provided for secured (tie-down) aircraft parking. This area will allow parking of non-based aircraft for extended periods. Coordinate with the airport for the preferred type of aircraft anchor. The tie-down anchor should be laid out for a number of various typical sizes of aircraft. The Airport currently has 72 tie-down spaces for local and transient parking. Preliminary estimates from the Master Plan forecasts indicate that the existing spaces will be adequate for the immediate and near future, assuming that additional hangars will become available to meet growing demand.

Line Crew Service Ramp
The airport currently provides only minor maintenance and service at the General Aviation Terminal – window cleaning, re-fueling, oil and fluid checks, lavatory cleaning, and so forth. This is anticipated to continue into the future. Additional services and maintenance for aircraft may be handled at other locations on the airport (by fixed base operators, generally). Current fueling operations are by pump fuel truck. This is the preferred method for the foreseeable future at Athens-Ben Epps Regional Airport.

1.6.c Landside – Passenger Parking / Drop Off, Site Access

Handicap Accessibility
The site facilities and the areas of the Terminal building for the traveling public shall be made accessible for persons with physical disabilities. As much as practicable, the employee areas shall be made accessible for the physically disabled to meet the requirements of the Americans with Disabilities Act Standards for Accessible Design and applicable amendments from the State of Georgia Handicapped Law. Some of the typical physical demands of the Line Crew are not compatible with all requirements of the those standards, and those functions will not be addressed by this program. It is the intent of the Airport to provide full accessibility at all public areas of the building and site, and as much as is possible to provide accessibility to all other areas of the building. Further elaboration of these requirements can be found in Chapter 2 "Program Parameters," Section 4, "Building Code Issues."

Site Access
The access road from Ben Epps Drive (or alternately from Lyons Road) should connect to the parking areas near the General Aviation Terminal and should provide for semi-tractor-trailer deliveries to the airside apron. Given the proposed location for the General Aviation Terminal and parking, the existing access road serving the airport facilities may need only to be extended to provide access to the facility. The design should provide as direct and clear connection from the public road to the General Aviation facility, which may make additional access road length or orientation more advantageous. Flow along airport access roads is generally preferred to be one-way, although it may not be necessary at facilities with lower traffic volume. The current layout at Athens-Ben Epps Commercial Terminal Facilities appears to be for two lanes of traffic. The vehicular access road to the General Aviation facility should be a minimum of 24 feet wide, if designed for two-way traffic; at least 15 feet if the road will be designed for one-way travel. The access roadway must be designed to accommodate the critical design vehicle, motor coaches.

Parking

Passenger use of the General Aviation Terminal as it relates to transportation to the Terminal is highly variable. Passengers arrive by personal car, public transportation, or are dropped off and/or picked up by a third party. The Terminal also currently has key clients whose passengers arrive and depart by motor coach (bus), and parking should be designed to accommodate these vehicles traveling through and temporarily parking on an occasional basis.

Parking should be sized to handle the peak parking demands generated by the peak month of activity at the General Aviation Terminal. It is probable that an estimate of this peak demand will suffice for planning purposes. Local zoning ordinances also require parking be provided based on the overall use and size of the terminal building. The greater estimate of demand, between the peak month calculations and the zoning requirements, should be used to determine the size of the parking lots. Parking should also be provided for the employees stationed at the General Aviation Terminal.

Rental Car Parking

The Airport would like to provide additional dedicated parking spaces for lease by rental car agencies operating at the Airport. These spaces should be located close to the Terminal Building, and should be able to be observed by the staff at the Control Center.

Loading and Delivery

The General Aviation Terminal will also frequently receive deliveries of supplies and materials. The largest of these may be delivered by semi-trailer truck. A clear access for such deliveries should be provided off the site access road. The Reception/Control Center operator should have a means of observing these deliveries, either by direct visual observation or through closed circuit monitoring if line-of-sight is not practical. Deliveries are preferred to be at or adjacent to the Line Crew work area . A gate along the Airside/Landside demarcation line should allow for passage of a semi-trailer with access to the Line Crew area.

Vehicle Access to Airside

Some pilots and passengers may also wish to drive their vehicles direct to waiting Aircraft. Provisions should be made to accommodate this traffic while maintaining the level of security delineated under the previous "Security and Hazards" section. The Airport Manager anticipates that some of this traffic will include up to three motor coaches at a time picking up or delivering passengers (i.e., football teams from the University of Georgia) to one or more aircraft. Motor coaches and delivery trucks should be able to use the same access to Airside. Means of observation of this activity should be provided to the Control Center / Reception in the Terminal. Any surface approach to or from the airside should provide access for these large vehicles.

Passenger Drop-Off/Pick-up / Landside Covered Entry

The parking lots should provide a connection to the landside entry of the General Aviation Terminal, and allow for circulation of drivers dropping off passengers at the entry. The critical design vehicle to establish the drop-off lane and canopy minimum standards is a motor coach for charter activities. The landside entry should include a covered entry, designed to provide clearance above the expected motor coach. Traffic flow through the covered entry should be designed for one-way traffic, for safety reasons.

1.6.d Building Functions / Capacity

The General Aviation Terminal at Athens-Ben Epps Airport will offer customary services to general aviation pilots, their passengers, their aircraft, and their crew. The General Aviation Terminal will provide additional support services to business travelers. The terminal building will also provide space for Airport Administration.

The anticipated maximum peak hour demand on the passenger facilities has been identified as up to 75 passengers on two planes when a football team is waiting at the Airport. It is anticipated that this peak capacity would be standing room only, as typical peaking demand would trend much lower, closer to 30 passengers on a plane, with some additional local waiting public. Line Crew and Control Center / Reception functions anticipate no more than a dozen employees in the near future. Airport Administration functions anticipate a few employees on a day-to-day basis, with occasional meetings of up to a dozen people at one time. The Conference Facilities have been requested to facilitate a larger group of people at one meeting. Additional information on individual areas, including staffing breakdown and code impacts on occupancy and use of building areas are detailed under Chapter 2 "Program Parameters & Guidelines" and Chapter 3 "Program Requirements".

1.6.e Storage and Support Services

Storage size requirements and additional information are included for individual spaces under Chapter 3 "Program Requirements." General comments and intent are discussed in the following section.

Exterior Storage
The Airport discussed providing an equipment shelter for the Line Crew accessible to the Line Crew Work area –to accommodate two fuel trucks, the equivalent of two pick-ups, one aircraft tug, and one aircraft power unit. The design parameters for this equipment shelter as a structure fall beyond the scope of this programming effort. The Airport may decide to consider covered storage in a future development project. The equipment noted above is anticipated to be stored during working hours on the exterior of the building near the Line Crew Service Ramp for use during facility service hours. The Airport requests that a screen wall towards the landside be erected to enclose a storage yard for this equipment and other typical equipment for the Line Crew. The Airport would prefer a masonry screen wall similar in treatment to the exterior of the proposed General Aviation Terminal. The storage yard should be some distance from the building proper.

Temporary storage for loading and deliveries is assumed to be provided on the apron immediately adjacent to the building or immediately inside the building. No other specific exterior storage is currently anticipated.

Interior Storage
Several separate types of materials to be stored are associated with the Public Lobby / Reception area. Immediately adjacent to Control Center / Reception Area, provisions should be made for office supplies, merchandise for traveler essentials, merchandise for souvenir or logo products, flight maps, advertising displays, and restocking for promotional materials (brochures).

The Vending Area storage will be impacted by the type of vending and the service arrangements the Airport adopts for the vending service provider. It is assumed that storage for Flight Crew supplies, coffee bar supplies (coffee, tea, sweeteners, napkins, etc.), and some general/kitchen type cleaning supplies should be provided in this area.

Equipment storage will be required in or near the Conference Center area. In the Conference Room itself, presentation materials and equipment will be stored. At the kitchenette area, cabinets should be provided for common provisions (coffee, cups, napkins, etc.).

General Aviation Administration will require one or more dedicated spaces for storage of some materials, as well as ancillary space in some rooms. Special provisions may need to be made for Airport planning documents (e.g., construction plan files) and record or archive storage. Office supplies will also be stored in the administrative area.

Support Spaces
These are areas of the building required to house building system components, and are directly affected by the size of the building and the type of systems required. Restrooms may be included in this category, but are discussed elsewhere in more detail. Electrical, mechanical, and fire pump rooms, communication closets, janitor closets and supply storage should be expected at convenient locations throughout the building. This grouping would also include stairs, elevators, and elevator mechanical rooms if a multi-story building solution is desired.

1.7 General Program Goals / Issues

Beyond the functional requirements of the building, the Athens-Ben Epps Airport has defined several areas that they would like to address in the improvements to the General Aviation Facilities. What are defined here as Program Goals reflect the image the Airport wants to portray to visitors to the Airport and the Region. Specific appearance criteria and building materials are discussed under Chapter 3 "Program Parameters" under the "Architectural Narrative" Section.

1.7.a Primary Users / Intent

The advisory committee stated that the first priority in the General Aviation Terminal was to provide ease of use and comfortable services for the pilots and their crew. Flight Crews are, therefore, the primary clients of the General Aviation Terminal.

The Flight Crew's passengers – the traveling public – were identified as the most important consideration for design and arrangement after the Flight Crew. The layout, clarity, and openness of the Terminal building were identified as key considerations in serving these users.

In reviewing the General Aviation Terminal in terms of the experience for these primary users, the Advisory Committee noted that Flight Crews and passengers are looking for three main things when they arrive at a terminal from the airside: restrooms, telephones, and ground transportation. The flight crew then look for the line crew to handle fuel and catering for the aircraft. This programmatic simplicity should be reflected in the layout of functions and spaces in the terminal building.

1.7.b Appeal to Business Travelers / Economic Development Opportunities

The Airport's Advisory Committee stressed their desire to attract more business travelers to the Airport and to use the General Aviation Facilities to promote the Airport, the city, and the region. As such, they referred to the General Aviation Terminal as "The Executive Terminal" to stress their intent to appeal to Business Travelers. The Board envisions the General Aviation Terminal serving as the "Economic Front Door" to Athens-Clarke County.

One limitation of the current facility is the lack of a functional meeting space and facilities for making group presentations. The committee identified improving these areas as key to the success of the General Aviation facility. Several goals were highlighted by the committee to specifically address image. The terminal building, facilities, and staff should present a 'First Class' image to traveling business people. To enhance the experience for business travelers holding meetings, and to enhance the efficiency of operations, the layout should separate Business Traveler functions from other functions where possible (private conference room, adequate aisle space in the lobby, private telephone booths, for example). To better accommodate various business travelers, the committee requested that the Conference Room be flexible for different types of meetings. The committee expressed the idea that a notable conference space would be essential to establishing the image of Athens-Ben Epps as a key destination for business decision makers.

1.7.c Facility Image / Statement

In order to position the General Aviation Facilities as a first-class destination, attention must be paid to the style and character of the facilities. The flight crew and passengers' experience of the General Aviation Terminal should reflect positively on the Airport and the City of Athens. The design and expression of the General Aviation Terminal should be unique to Athens. Several civic and historic buildings in the downtown area of Athens, notably the Classic Center convention facility, and buildings on or near the University of Georgia were cited as exemplary of the building 'expression' of Athens. Recent projects for the Athens-Clarke County Fire Department were also cited as representative of Athens built image.

Figure 1.7.c.1

Classic Center, Athens, Georgia. View towards plaza and main entries

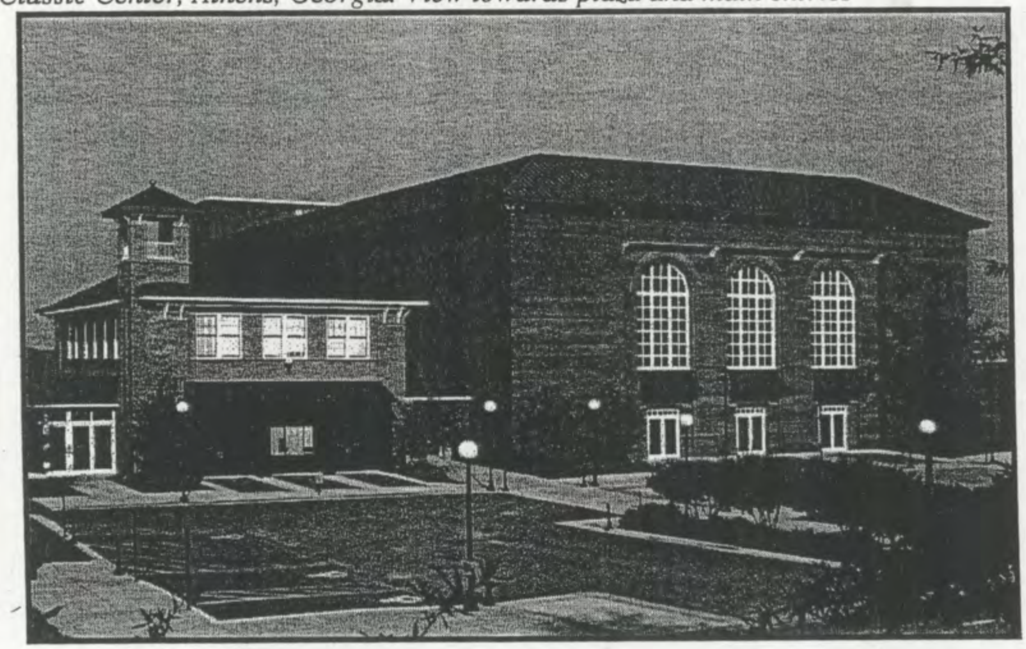


Figure 1.7.c.2

Classic Center, Athens, Georgia. Central courtyard.

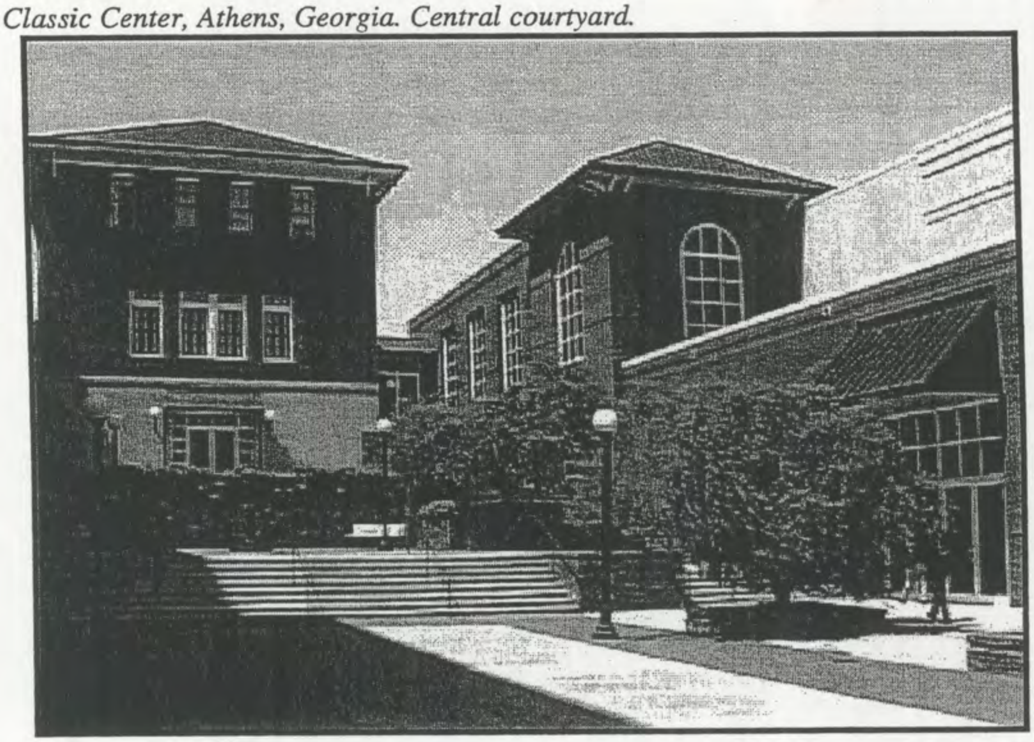


Figure 1.7.c.3

Fire Station No. 7, Athens, Georgia. View from roadway to equipment bays.

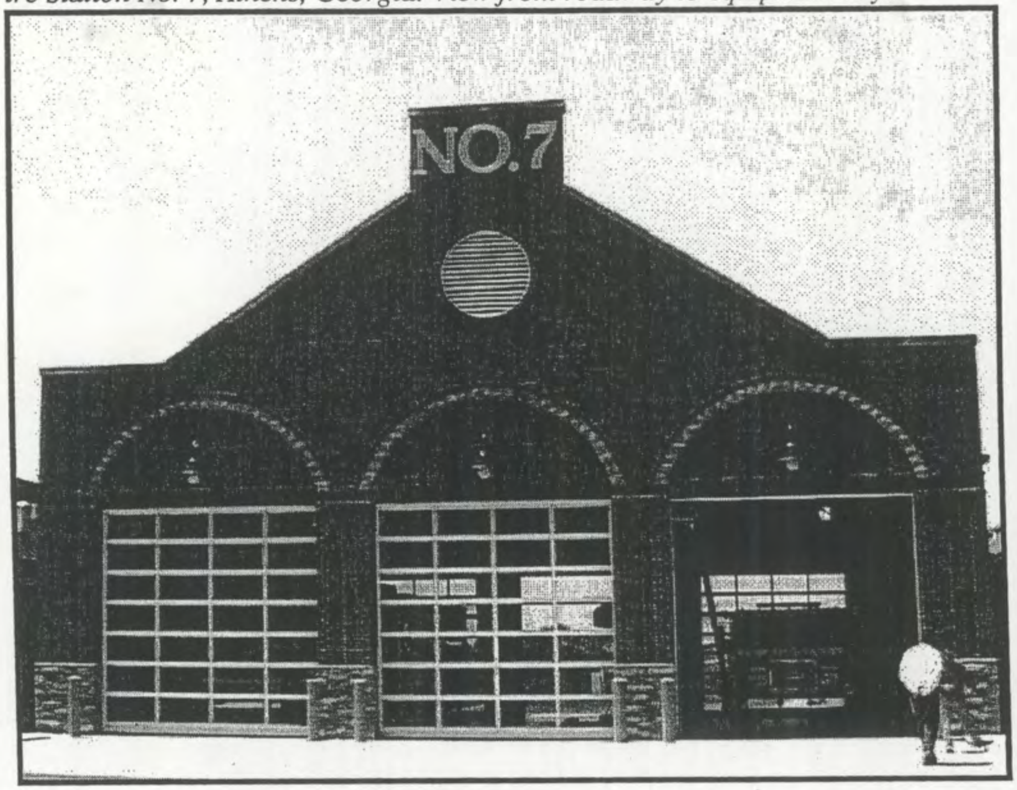


Figure 1.7.c.4

Fire Station No. 7, Athens, Georgia. View from parking towards Bell Tower.

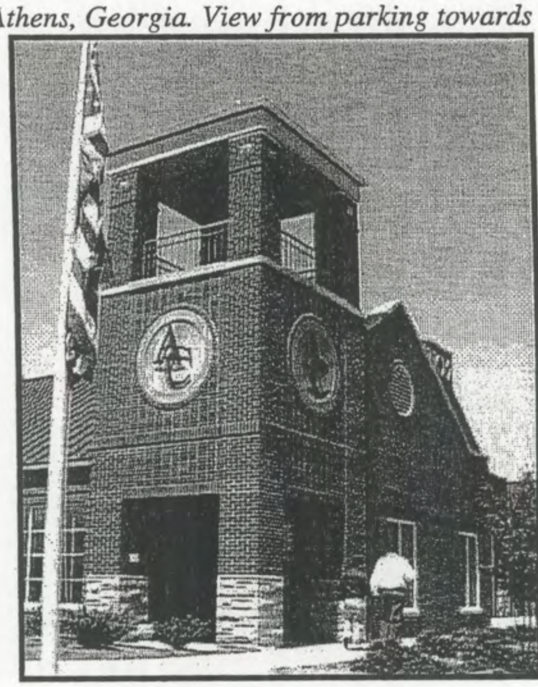


Figure 1.7.c.5

Fire Station No. 7, Athens, Georgia. View towards Training Center & Bell Tower.

The facility design and the traveler's experience should be hospitable to the traveler, and encourage return visits. The pilots on the Advisory Committee noted that in making flight plans they are more likely to plan a flight with stops at clean and pleasant terminals than at unfamiliar airports. For travelers, the lobby and the restrooms serve an important role in making a good first impression. The Advisory Committee stated emphatically that fliers return to clean, easy to use facilities.

1.7.d 'Open' Layout and Connections

In plan, the requirements of a small terminal building are fairly simple. The building layout should be reflective of the basic simplicity of the building functions and be organized by direct functional relationships between the interior spaces, facilities, and site facilities. The interior layout should address the configuration of the airfield and passenger driveways. Any development should consider future expansion when demand increases.

Key issues for the design of any terminal building are to provide short and direct pedestrian routes for the traveling public from the aircraft loading apron or aircraft parking areas (airside) to passenger waiting areas and to vehicular parking areas (landside), as well as to provide views to the airside operations from the waiting areas, control area, manager/line crew area, and any other public gathering areas in the building.

The lobby and passenger waiting room is the hub of all major circulation paths in the terminal building. Most entry and interior routes will direct travelers to or from this space. An open plan with minimal partitioning will allow for better circulation, better views to the airfield and parking areas, and a more spacious appearance.

The interior spaces should manifest clear arrangement and connection. Line-of-sight visibility between spaces makes for ease of direction, flow, and control from a central location. Division of spaces may be accomplished if line-of-sight observation can be maintained. The arrangement of functions and circulation should streamline the passenger and crew flow through the terminal building. Groupings of passenger areas and employee or service areas should be arranged to decrease cross traffic and limit interference on the personal space of travelers at the airport.

The Terminal must be efficient for the Operator, as well as for the passenger and crew. Most General Aviation Terminals are planned around the central waiting room at the center, and feature a central Control / Reception area at this hub area. Ideally, the General Aviation Terminal could be run by one person from the Control Center.

1.7.e General Program Issue Summary

Beyond the programmatic requirements, which are further delineated in the following chapters, the Advisory Committee indicated that the key issues to the success of the General Aviation Terminal Improvements were:

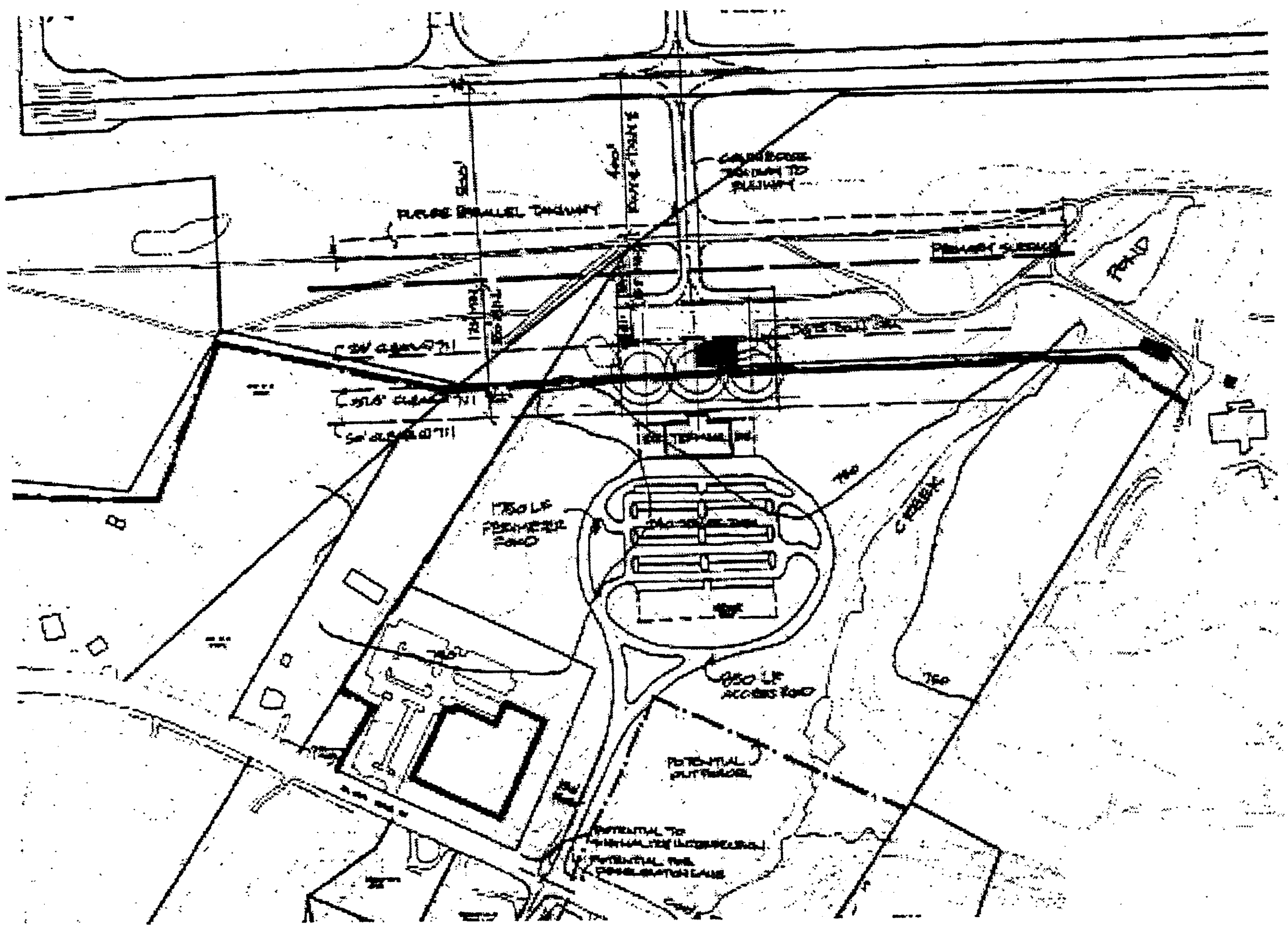
1) Pilots and Passengers come first
2) Executive Terminal in client service and building image
3) Positive and unique reflection of Airport, City of Athens and Clarke County
4) Openness of functional layout
5) Efficient flow of travelers from airside to landside

APPENDIX D

Remote Commercial Terminal Alternative Analysis "Midfield Site", December 1998

ATHENS-BEN EPPS AIRPORT
ATHENS, GEORGIA

REMOTE COMMERCIAL TERMINAL ALTERNATIVE ANALYSIS "MIDFIELD SITE"



Prepared by:

The LPA Group Incorporated

November 1998

MIDFIELD COMMERCIAL TERMINAL ALTERNATIVE ANALYSIS
Athens-Ben Epps Airport

TECHNICAL WHITE PAPER

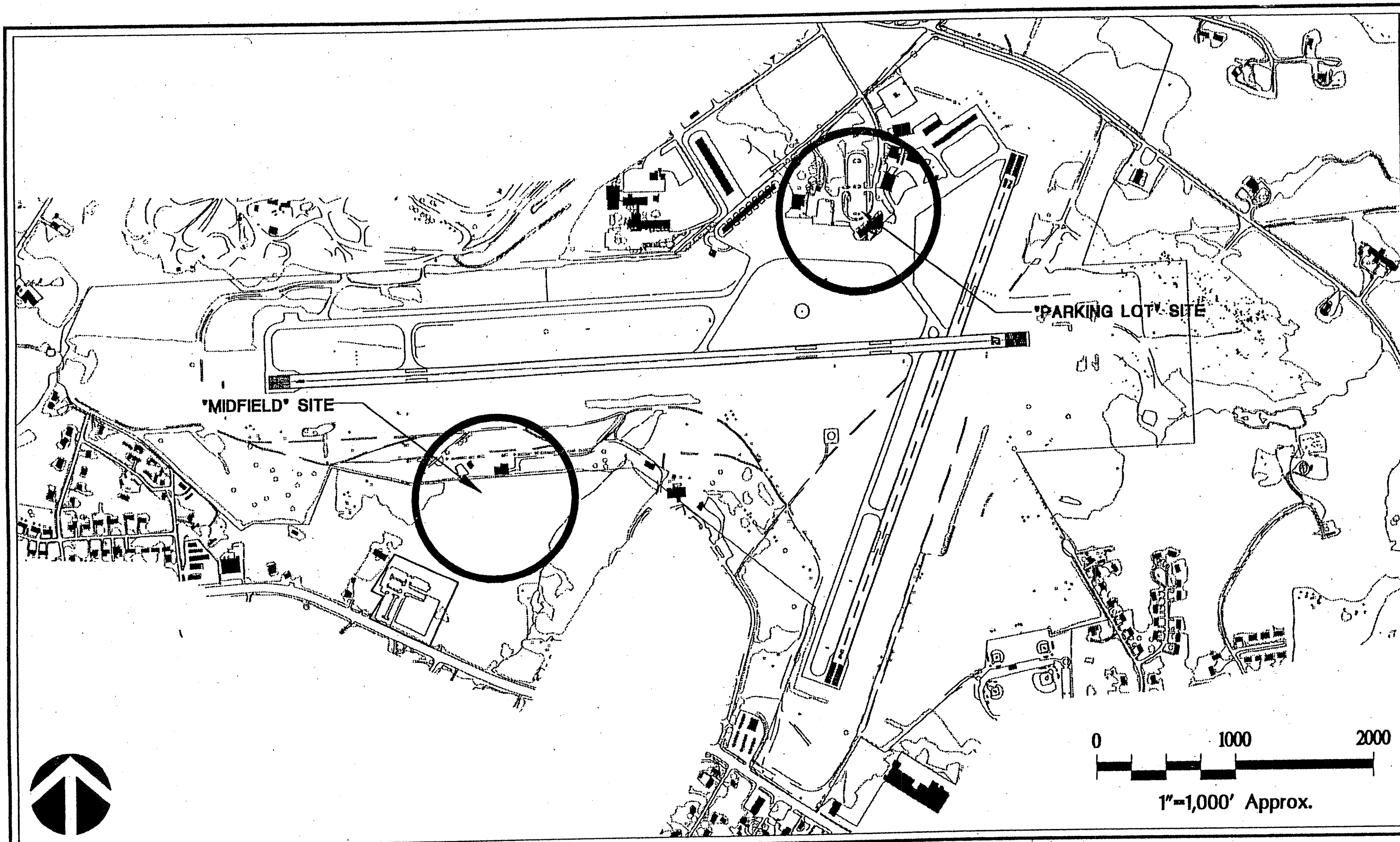
Following the completion of a feasibility analysis to construct a replacement commercial passenger terminal east of Runway 2-20, the Athens-Clarke County Unified Government requested further studies to be performed for an additional site. The additional site, herein referred to as the "Midfield Site", is located immediately south of Runway 9-27 near the extended runway midpoint (*reference Exhibit 1*). The LPA Group Inc. entered into a contract during October 1998 to study the site's feasibility of accommodating the future needs of a commercial passenger terminal building and all supporting infrastructure. This effort was similarly undertaken as a supplement to the on-going master plan update for Athens-Ben Epps Airport.

The subject site was previously considered as a part of the previous 1995 Master Plan Update. At the time, although believed to afford the airport many operational advantages, the Midfield Site was not selected primarily for construction cost reasons. The 1995 study evaluated a total of three concepts for the passenger terminal: 1) development of the existing site, 2) a site south and slightly west of the midpoint of Runway 09-27 , and 3) a site east of Runway 2-20. Of those sites, development of the existing site was recommended. The on-going master plan update, being performed by The LPA Group, has identified a now favored alternative to reconstruct a new terminal in the existing parking lot, herein referred to as the "Parking Lot Site".

Following are general notes and discussions which reflect The LPA Group's study and findings for the midfield alternative terminal location.

ASSUMPTIONS AND METHODOLGY

- The location of a midfield terminal affects taxi distances compared to the existing site (*reference Exhibit 2*). Aircraft taxi access to the proposed site is excellent for aircraft arriving on Runway 27 (*Category I precision end*) with optimal short taxi distances. However, although utilized less frequently, landings on Runway 9 would require considerable back taxiing to the midfield commercial terminal area. This is further complicated by the "missing" section of Taxiway A, south of the existing passenger terminal building.
- The midfield site is remote from the existing fuel farm, ATCT, administration offices, and ARFF station (*reference Exhibit 2*). Access for fueling would require trucks to either: 1) crossing of Runway 9-27 and Taxiway A, 2) construction of a partial perimeter access road around Runway 9-27, or 3) construction of a new fuel farm located adjacent to the midfield terminal site.
- Potential for security screening of charter aircraft passengers needs to be considered. The potential for Design Group III (*or larger*) aircraft providing

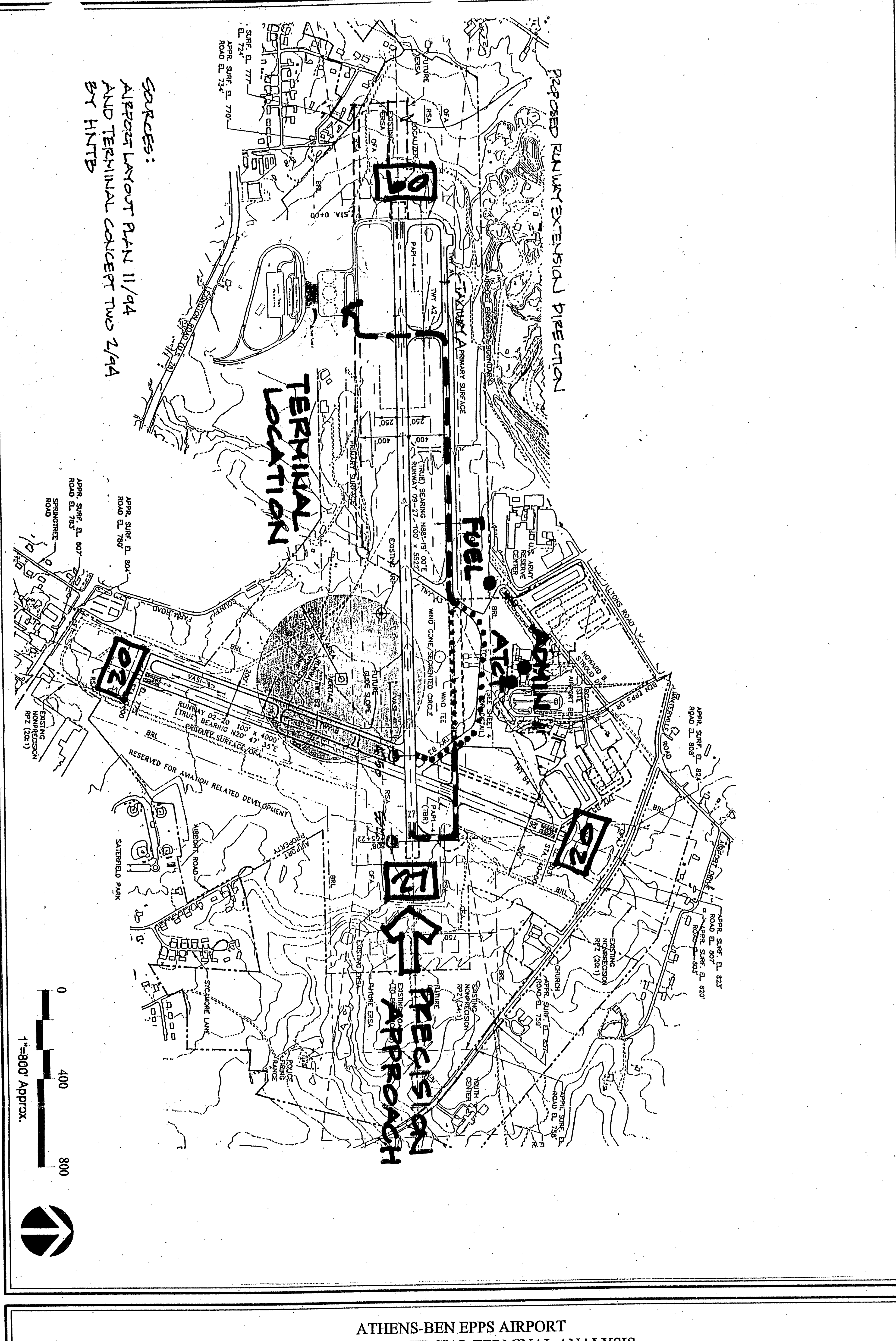


ATHENS-BEN EPPS AIRPORT
MIDFIELD COMMERCIAL TERMINAL ANALYSIS

AIRPORT SITE MAP

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 1



ATHENS-BEN EPPS AIRPORT
MIDFIELDCOMMERCIAL TERMINAL ANALYSIS

MIDFIELD SITE- TAXI PATH SCHEMATIC

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 2

commercial service and charter service needs to be considered for the alternative commercial terminal site.

- The ability to construct a full-length parallel taxiway on the south side of Runway 9-27 is restricted to the east by the current VORTAC critical area. Therefore, runway crossings to access the aircraft apron will be necessary. Based on current aircraft operational levels, this constraint should not present a significant concern as long as the tower is in operation. As activity increases over the long-term to the 100,000 annual operations level, mitigation measures should be implemented.

Assuming that the alternate location's difficulties and limitations are acceptable, we have proceeded with conceptual alternatives.

"MIDFIELD SITE" CONCEPT DEVELOPMENT & EVALUATION

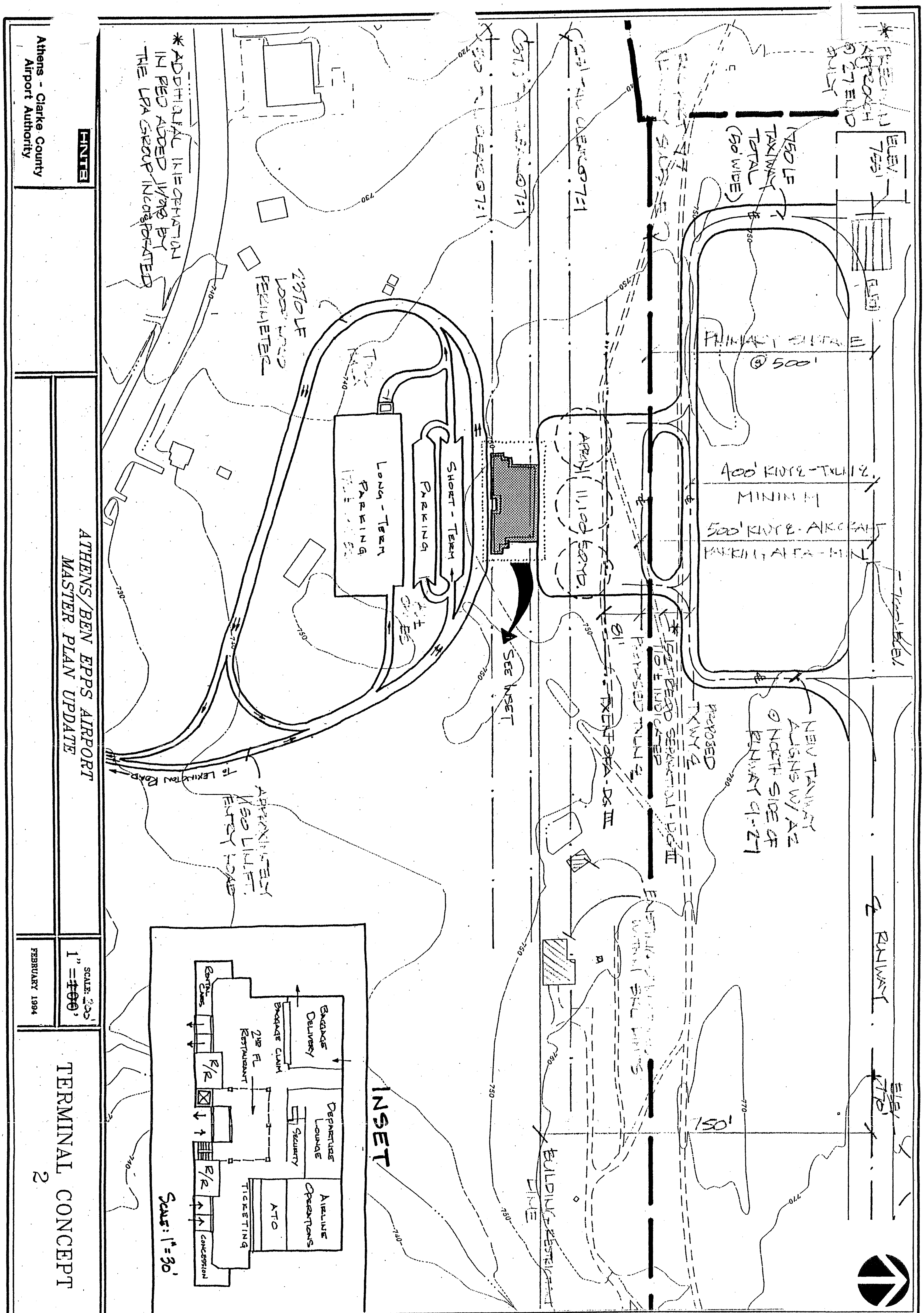
Concepts, beginning with the 1995 Master Plan (*Terminal Concept 2 by HNTB shown herein as Exhibit 3*) have been developed to illustrate significant design variables of the site south of Runway 9-27.

Significant issues include:

- Apron and taxiway development requirements;
- Terminal location and loop road / parking extents;
- Access road and site access location;
- Property acquisition requirements;
- Consideration of site conditions, especially topography; and,
- Effect on neighboring land uses:
  -Residential areas;
  -Governmental facilities; and,
  -Commercial areas.

Existing Site Conditions

Two base sheets indicating existing site conditions such as existing property limits, runway/taxiway conditions, Part 77 surfaces, existing adjacent development, and topography have been developed. These are used to illustrate existing constraints and to evaluate and analyze HNTB's previous Terminal Concept 2. The sources were mapping included in the ALP drawing set and additional mapping outside the Airport property limits obtained from the Planning Department of Athens-Clarke County. Discrepancies exist in the indication of exact property lines and descriptions as well as topography between the two sources (*reference Exhibit 4*). These should be resolved prior to further site development.

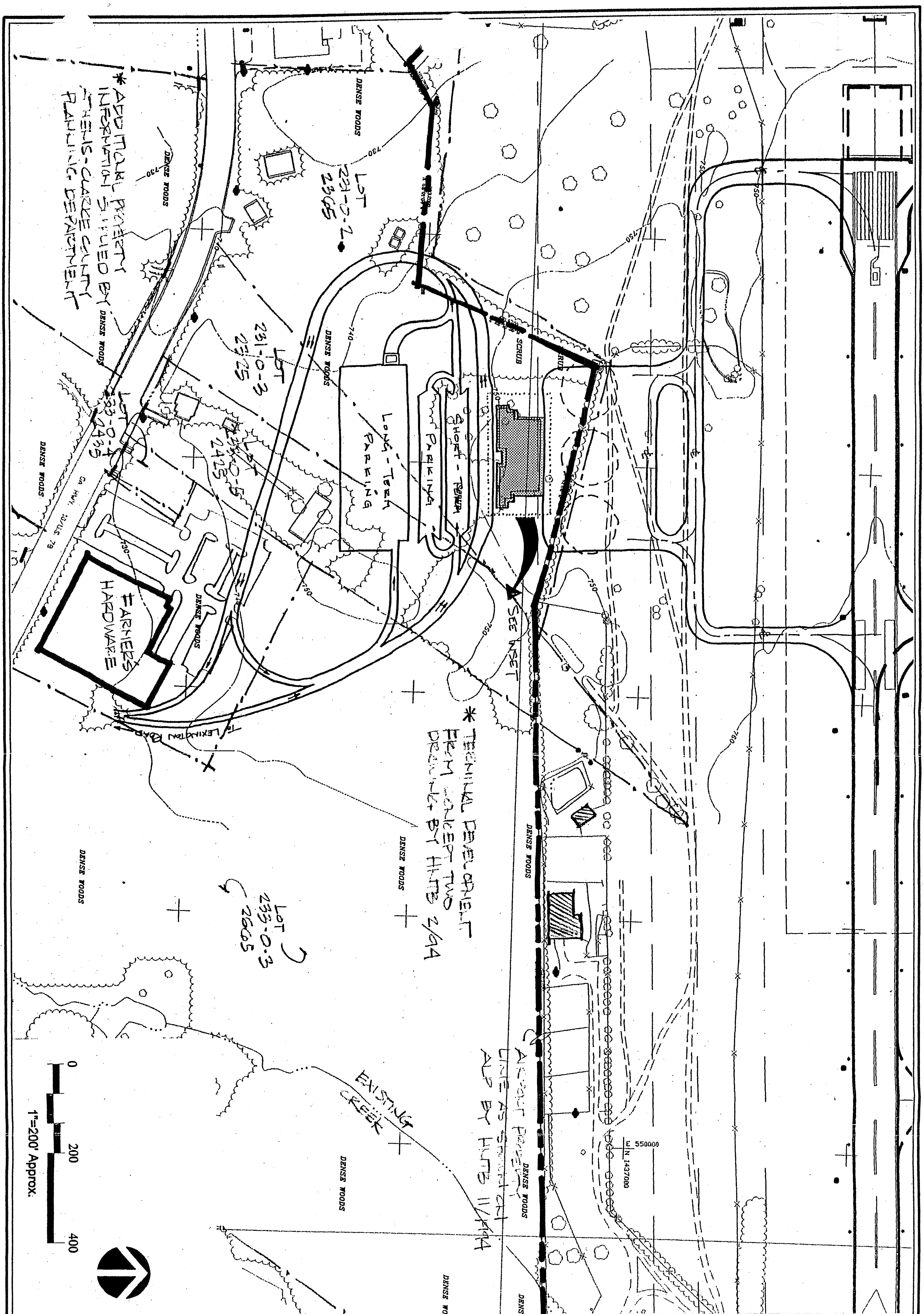


ATHENS-BEN EPPS AIRPORT
MIDFIELD COMMERCIAL TERMINAL ANALYSIS

HNTB CONCEPT 2-AIRFIELD REQUIREMENTS

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 3



ATHENS-BEN EPPS AIRPORT
MIDFIELD COMMERCIAL TERMINAL ANALYSIS

HNTB CONCEPT 2- PROPERTY REQUIREMENTS

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 4

Concept Evaluation

HNTB CONCEPT 2 – Terminal Concept 2 from the HNTB 1995 Master Plan (*shown in Exhibit 3 and 4*) was reviewed for compliance with current applicable design criteria and ability to meet demand requirements. The terminal building size and the aircraft apron size are appropriate. The total parking developed (*257 spaces*) exceeds the total projected demand of 240 spaces.

Significant concept strengths include:

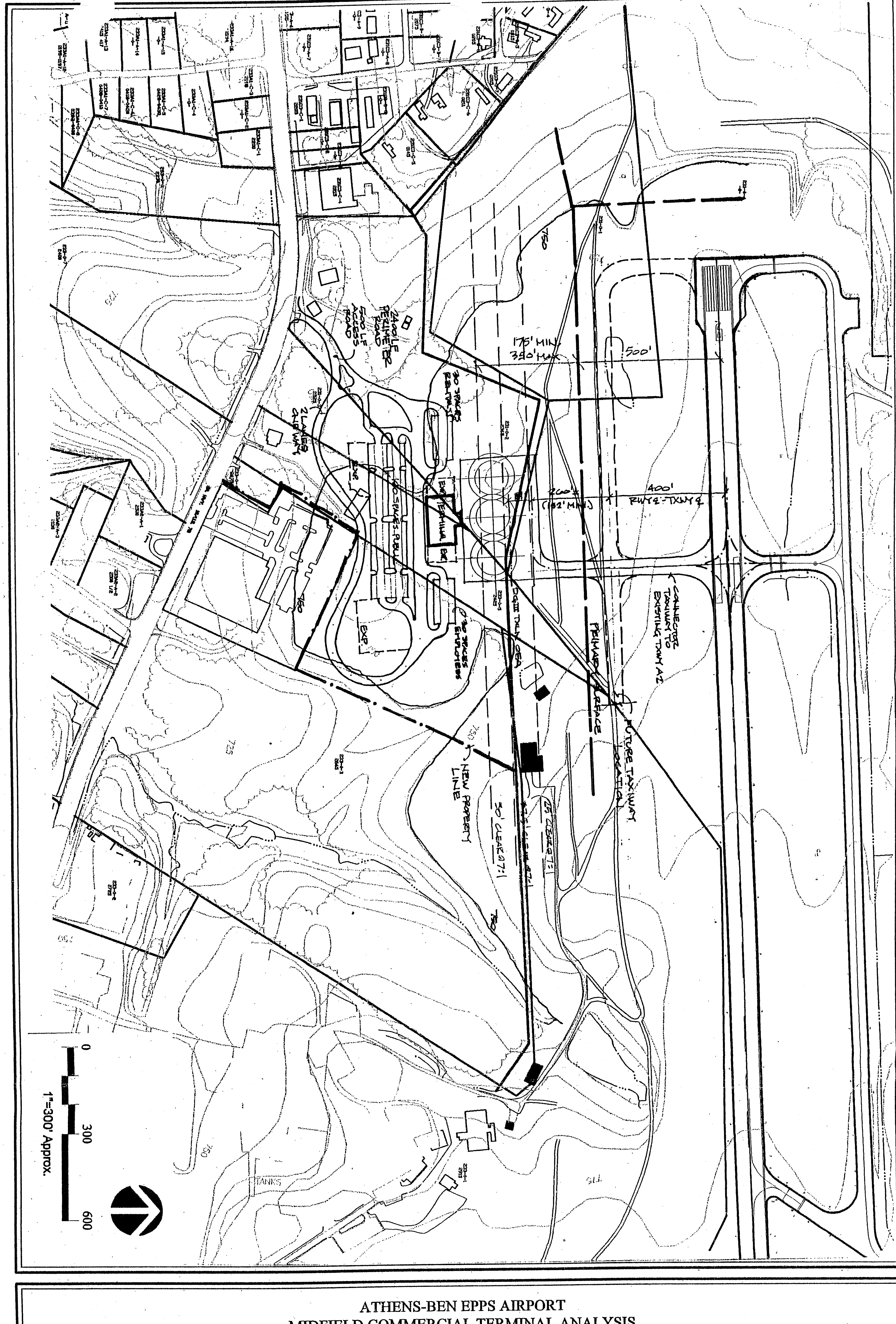
- Ability to meet projected demand requirements; and,
- The area of site development is concentrated on the highest ground and the access points are from the lower end of the runway slope.
- Location minimizes taxi distances from the most common runway approach end.

Significant concept weaknesses include:

- This location requires acquisition of numerous parcels of property. Even by adjusting the concept to allow for the development of Farmer's Hardware, the entry/exit road requires acquisition of commercial property at Lexington Road/Highway 78. Four different parcels would need to be acquired. Negotiations with property owners could be protracted and expensive.
- The separation of the proposed taxiway and apron taxilane needs to be increased to allow for use by Design Group III aircraft (*see Exhibit 3 and the Appendices for an excerpt from AC 150/5300-13*).
- The location of the aircraft parking apron may be to close to the runway, creating potential conflicts with Part 77 surfaces (*see Exhibit 3 and the Appendices for Part 77 excerpts and table of probable aircraft design criteria*). While some additional clearance is provided by allowing for a drop in elevation from the runway to the parking apron, to protect Runway 9-27 precision approach minima, the tail height of a 737 (*37'-4"*) should not violate the required clearances.

Additional concepts were developed by The LPA Group to explore ideas to correct the weaknesses noted above. All concepts use the terminal "footprint" developed for the "Parking Lot" Alternative since activity levels should be consistent at any location.

CONCEPT 1 - Concept One consolidates all development near the existing west end of Runway 9-27, as depicted in Exhibit 5. Property acquisition is limited to the area formed by an extension of the easternmost property line of the Farmer's Hardware development. This preserves the remaining frontage of the Beussee property for other development. However, the number of parcels to be affected remains unchanged from the HNTB concept. Access to the site is via a short access road connecting directly to Lexington Road (*Highway 78*). The apron access would be provided by an extension of Taxiway A2. Additional airside access by a future partial parallel taxiway with Design Group III criteria is shown south of Runway 9-27.



ATHENS-BEN EPPS AIRPORT
MIDFIELD COMMERCIAL TERMINAL ANALYSIS

MIDFIELD SITE CONCEPT 1

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 5

Significant strengths of Concept One:

- Reduces the area needed for property acquisition.
- Reduces taxiway development for initial development (*dual access points and a partial parallel taxiway to Runway 9-27 and Taxiway A seem excessive based on current and projected level of commercial operations*).
- Part 77 surfaces and taxiway/taxilane separations have been adjusted to accommodate Design Group III aircraft.
- Area of development remains in the more favorable topography similar to the HNTB concept.
- The length of the entry/exit access road has been reduced from 1,150 linear feet to 500 linear feet.

Significant weaknesses of Concept One:

- Impact of traffic, lighting, and taxiing noise on residences to the west of the development may need to be mitigated in some manner.
- Layout of the terminal area is significantly constrained by the Farmer's Hardware development.
- Significant site development is still located in unfavorable topography.

CONCEPT 2 - Concept Two consolidates all of the future passenger terminal development within the Beussee property limits. This should simplify property acquisition. The commercial frontage (*except for a 150-foot right-of-way*) could be left as an out-parcel or the property could be retained for other airport/County use. The site access would be provided by an access road perpendicular to the existing Shady Brook Drive entrance point. Apron location and access is similar to Concept One, shifted slightly east. The future taxiway access has been modified to reflect Design Group III criteria and appropriate clearances are shown.

Significant strengths of Concept Two include:

- Impact to adjacent residences is reduced.
- Negotiations for property acquisition will be simplified as only one property is affected. Adjacency to the existing County developments could have future mutual benefits.
- Consolidation of parking requirements reduces the area of landside site development by approximately one-third.
- Loop road perimeter is further reduced from 2,350 linear feet to 1,750 linear feet. The change in access points increases the length of the entry/exit road from 500 feet to approximately 850 feet.

ATHENS-BEN EPPS AIRPORT
MIDFIELD COMMERCIAL TERMINAL ANALYSIS

MIDFIELD SITE CONCEPT 2

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EXHIBIT 6

CRITERIA	HNTB TERM. CONCEPT 2	CONCEPT 1	CONCEPT 1
Taxi Distance	4	4	3
Access to Fuel and Maintenance	2	2	2
Ability to Accomodate Group III Aircraft	1	3	3
Apron Development Requirements	2	2	2
Taxiway Development Requirements	2	4	3
Loop Road Length	4	4	5
Entry / Exit Road Length	3	5	4
Site Accessibility	4	4	5
Topography / Earthwork Requirements	4	3	2
Effect on Residential Uses	3	3	5
Effect on Commercial Uses	2	4	3
Effect on Governmental Uses	3	3	5
Land Acquisition Requirements	1	1	2
Future Expandability / Flexibility	4	3	4
TOTAL	**39**	**45**	**48**

ATHENS-BEN EPPS AIRPORT
MIDFIELD COMMERCIAL TERMINAL ANALYSIS

MIDFIELD CONCEPT ANALYSIS CHART

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 7

Significant weaknesses include:

- Significant landside development occurs in unfavorable topography.
- Additional taxiway development to access existing Taxiway A may be necessary.

Additional comparisons of the relative strengths and weaknesses of the three proposed developments are shown in the presented in Exhibit 7.

In addition to a cursory analysis of strengths and weaknesses, Exhibit 7 - Comparative Concept Analysis Chart, presents a detailed evaluation matrix of various operational, design, and development cost factors. This screening process serves in a similar manner as previously studies for the "Remote Site" to isolate one specific alternative against which to measure the currently preferred "Parking Lot Site" concept advanced in the on-going master plan process. Detailed cost estimates for each alternative were not included, as a part of this preliminary screening. The analysis presented in the evaluation matrix recommends that Concept 2 be advanced in the analysis. Exhibit 8 presents the final version of this concept.

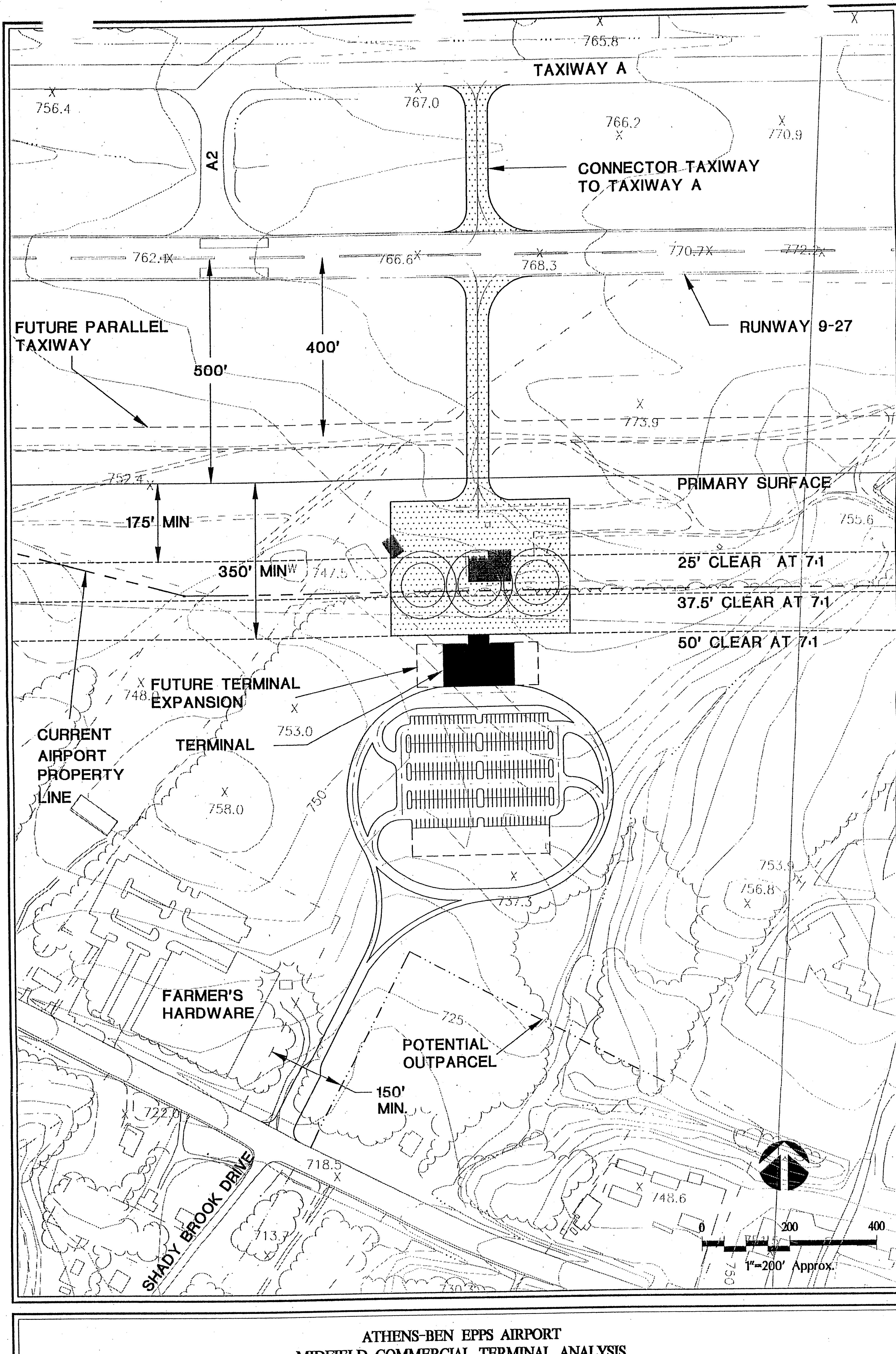
"PARKING LOT SITE" CONCEPT MODIFICATION & EVALUATION

As part of the ongoing Master Plan Update, the preferred "Parking Lot Site" concept involves development of a new terminal building on the existing site in the current parking lot area. As previously noted in the analysis performed for the "remote site", this concept is a smaller part of an overall terminal area development plan which has been previously approved by the Unified Government. The approved plan however, did not consider the merits of a remote relocation of the commercial passenger terminal facilities. An initial development phase for the "Parking Lot Site" terminal area program representative of the passenger terminal construction element has been developed for the purposes of concept comparison (*reference Exhibit 9*). This phase of construction compares equitably to the concepts previously analyzed for the midfield site. The "Parking Lot Site" and the "Midfield Site" are comparable facilities, in terms of size and function. The following narrative compares the features of the "Parking Lot Site" development to the Midfield Concept Two. The comparison is based on operational criteria, design criteria, and development cost criteria.

Operational Criteria

Taxi distances - The "Parking Lot Site" is accessible from Taxiway "A", which parallels Runway 9-27 (*the only commercially operational runway*). Access to the parking apron is available from either end of Runway 9-27, and an exit taxiway (*A2*) is available. Access to the commercial apron is available by parallel taxiway despite the missing segment from Taxiway "A3" to "B3".

The "Midfield Site" is also accessible by Taxiway "A", which parallels Runway 9-27 or from the runway by direct exit to the proposed connector taxiway east of Taxiway "A2" (*reference Exhibit 2*) for aircraft capable of holding short. Aircraft



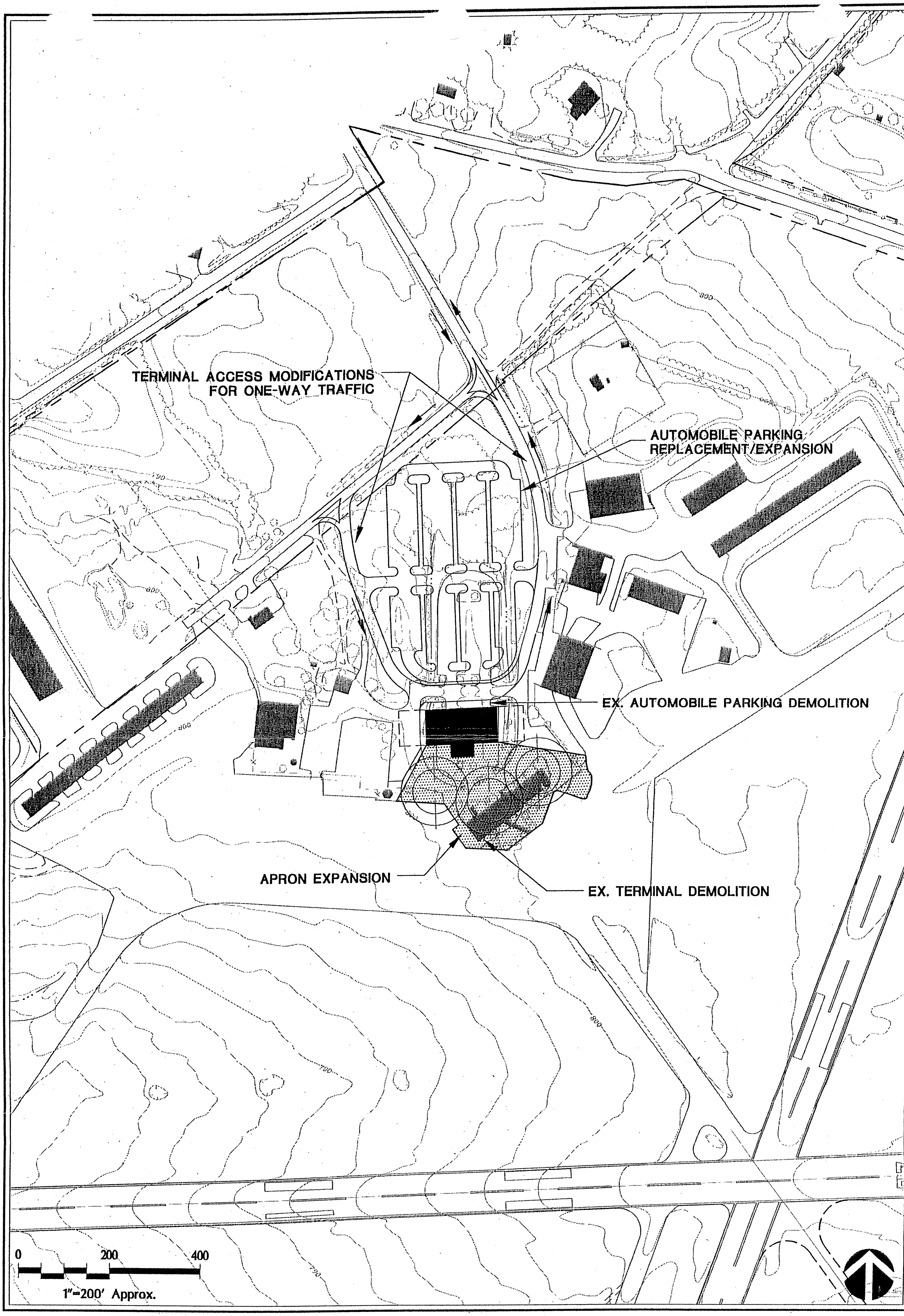
ATHENS-BEN EPPS AIRPORT

MIDFIELD COMMERCIAL TERMINAL ANALYSIS

RECOMMENDED "MIDFIELD" SITE CONCEPT

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 8



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ATHENS-BEN EPPS AIRPORT
MIDFIELD COMMERCIAL TERMINAL ANALYSIS

MODIFIED "PARKING LOT" CONCEPT

EXHIBIT 9

taxi access to the proposed site is excellent for aircraft arriving on Runway 27 (*precision end*) with optimal short taxi distances. However, arrivals on Runway 9 require considerable back taxiing to the commercial terminal area. This is further complicated by the missing segment of Taxiway "A". Since the most common approach is to the 27 end , a short and efficient taxi path will reach the "Midfield Site" apron. A proposed 1000-foot extension to Runway 9 may increase the need for and utility of a parallel taxiway south of the runway to provide access for the midfield commercial apron.

Access to Fuel and Maintenance - The "Parking Lot Site" is located near the existing fuel farm and the limited maintenance facilities near the existing terminal, north side of Runway 9-27. The "Midfield Site" apron is approximately 2,200 feet away from these facilities. Access by fuel trucks to the new apron site would be via the runway/taxiway system because no secure perimeter road exists. Alternatives would be to develop additional fuel facilities to support commercial operations or construct a west side secure perimeter road.

Ability to Accommodate Group III Aircraft - The "Parking Lot Site's" apron is accessible by taxiways with a 400-foot separation, which is suitable for aircraft of Group III (*and Group IV*) as indicated in AC 150/5300-13. Adequate area for taxilane Object-Free Areas (*OFA's*) for Group III aircraft are available on the existing apron. Some tie-down spaces may need to be relocated.

The "Midfield Site" requires a connector taxiway to Taxiway "A" to facilitate a runway crossing. Additionally as previously discussed, a new partial parallel taxiway to accommodate Design Group III aircraft, would be desirable as operations increase or as the runway length is expanded. The "Midfield Site" apron has been designed to accommodate the Group III requirements.

Runway Crossing Traffic - Access to the "Parking Lot Site" Runway 27 arrivals requires no runway crossing. Access for aircraft arriving on Runway 9 requires crossing Runway 2-20. All access to the "Midfield Site" requires crossing Runway 9-27, and potentially also Runway 2-20 if the full length of the runway is needed. A future parallel south of Runway 9-27 may reduce, but not eliminate this crossing traffic.

Construction Phasing Requirements - Phasing of construction is a significant issue at the "Parking Lot Site". The building location within the existing parking lot allows new construction while the terminal remains accessible. A coordinated schedule of site improvements to replace the road and parking is required. Demolition of the existing building and apron in-fill will complete the process; however, the construction sequence will impact commercial operations throughout the building program.

Construction phasing is much less of an issue at the "Midfield Site". Some construction operations could affect the use of Runway 9-27 and Taxiway "A" during construction of the connecting taxiway to the new apron. Otherwise, a logical sequence of construction would allow all improvements to be occupied and operational at the same time. Coordination of the utility extensions with on-site development will be required

An overview of the comparison of Operational Factors is contained in the Comparative Concept Analysis Chart presented in Exhibit 10.

Design Criteria

Site Accessibility - The existing Airport terminal and proposed "Parking Lot Site" development are accessed by Winterville Road via Lexington Road (*Highway 78*). Proposed improvements may create a more direct link to the Airport from the Athens Loop (*Highway 10*) by extension of Athena from Olympic Drive.

The "Midfield Site" would be accessed by a new private road directly off of Lexington Road. This site is potentially highly visible from Highway 78. The new road would be in perpendicular alignment with Shady Brook Drive across Highway 78. Traffic improvements such as deceleration lanes and/or signalization at the intersection could be accommodated when and if the traffic volume warrants.

Part 77/Safety Criteria - The height clearances and primary surface locations for each site are shown on their respective illustrations. Both sites comply with criteria for object free areas. The apron for the "Midfield Site" should be carefully reviewed during design. The apron should be built as close as prudent to Runway 9-27 to minimize earthwork requirements while providing the necessary clearances. The aprons should allow for parking of aircraft with total tail heights up to approximately 37.5 feet, which allows for a reasonable range of design Group III aircraft (*see the Probable Aircraft Design Criteria table in the Appendix*). The "Parking Lot Site" has some ability to handle larger/taller aircraft from the Design Group IV category.

Site Security and Separation - A key issue in security is the ability to prevent unauthorized persons from entering the air operations area (*AOA*). Requirements of FAR Part 107 must be met for passenger service. Public charters (*those in which any part of the cost is borne directly or indirectly by individual passengers*) must also meet these requirements.

The "Parking Lot Site" would offer security by improving the definition of the commercial service apron from adjacent general aviation uses and business aircraft uses. The area from the tower west and from Sonny's north would be outside of the commercial operations area.

The "Midfield Site" maximizes the securability of the commercial apron by total removal of the commercial activity from other Airport uses. However, neither FAR part 107 nor the FAA "Recommended Security Guidelines for New Airport Construction and Major Renovations" dictate such a total separation of uses.

Future Expandability / Flexibility - The "Parking Lot Site" has reasonable room for expansion of the building and vehicular parking. Some airside limitations result from adjoining uses. Room for growth of all elements is present at the "Midfield Site". Any limitations on expansion are largely due to topography constraints. The existing pond and creek could become a constraint to major expansion in the future.

Effect on Residential Uses - Development at the "Parking Lot Site" does not create any changes for residential uses. Development at the midfield site may create effects on the residents of the small subdivision area to the west. These effects could include engine noise from taxiing and spillover from apron lighting. Due to the fact that this area is over 2000 feet from the proposed apron and is near a heavily traveled highway, the impacts are believed to be minimal. Construction of a parallel taxiway from the current end or proposed extension of Runway 9 could create more significant effects on this residential area.

Effect on Governmental Uses - Development at the "Parking Lot Site" does not have any effect on governmental uses. Development at the "Midfield Site" will create displacement of two existing farm structures, increase public traffic adjacent to the County Farm area, and require site grading and development in close proximity to the existing county complex.

However, beneficial effects from locating public facilities on adjacent land and controlling development in the immediate area of the County Farm could result. The proposed development leaves adequate buffering between adjacent uses and a portion of the property required (*identified as "potential out parcel " on Exhibit 8*) could be made available for other County uses.

Effect on Commercial Uses - Development at the "Parking Lot Site" has no effect on commercial uses. The "Midfield Site" affects and is affected by the adjacent commercial use, principally Farmer's Hardware. The added traffic impact is appropriately handled by Highway 78. It appears desirable for the County to use the entire property required as opposed to permitting further commercial development on the Highway 78 frontage. This would displace some developable land on a commercial corridor.

An overview of the comparisons of Design Criteria is shown in the Comparative Concept Analysis Chart presented in Exhibit 10.

Development Cost Criteria

Apron Development Requirements - The "Parking Lot Site" requires development of approximately 6,300 square yards of apron to in-fill the previous terminal location. The "Midfield Site" requires development of approximately 11,100 square yards for the apron's parking and maneuvering taxilanes.

Taxiway Development Requirements - No addition taxiways are required for access to the "Parking Lot Site". The "Midfield Site" requires at least a connector taxiway to Runway 9-27, approximately 500 feet in length, and to Taxiway "A", approximately 300 feet in length. As discussed in the operational criteria, a partial parallel taxiway (*1,600 feet in length to the Runway 9 end*) with appropriate separation may also be desirable in the future.

Loop Road Length - The "Parking Lot Site" development has a loop road length of 2,300 linear feet. This allows for terminal parking and other use parking to be combined. The "Midfield Site" loop road is 1,750 linear feet.

Entry /Exit Road Length - The "Parking Lot Site" requires 800 linear feet of road to connect the loop to Winterville Road. The "Midfield Site" requires 850 linear feet of road to connect the loop to Lexington Road/Highway 78. The road construction at the "Midfield Site" is more difficult due to the topography constraints.

Parking Development Requirements - The "Parking Lot Site" must develop the 240 spaces forecast in the 20-year demand as well as spaces dislocated by the loop road (*at Sonny's and Georgia Flight*) and the apron (*near the Air traffic Control Tower*). Some of the required parking already exists with minor reconfiguration required. The "Midfield Site" requires the same 20-year demand parking, however, no other parking displacements occur. All parking at the "Midfield Site" is new construction.

Demolition Costs - The "Parking Lot Site" requires demolition of the existing 7,866 square foot terminal building and portions of the existing loop road and parking. Demolition at the "Midfield Site" is limited to clearing and grubbing of the development area.

Topography / Earthwork Requirements - The "Parking Lot Site" is relatively flat, with most earthwork requiring regrading or cutting of the site. Apron and parking in some areas are developed on previously paved areas. On the other hand, accommodation of existing terrain was a key element in developing concepts for the "Midfield Site". Development area is limited due to the drop-off from Runway 9-27 toward the property line to the south. At some portions of the site, 15-20 feet of fill will be required. The amount of grade differential that can be made up in the slope of the taxiway and apron is limited. Roads and parking are more flexible in their ability to accommodate the current sloping topography.

Land Acquisition Requirements - The "Parking Lot Site" requires no additional land acquisition. The "Midfield Site" requires the purchase of the remaining portion of the Beussee tract, approximately 38.5 acres. The cost of this property acquisition is a major consideration in the decision analysis of a relocation to the "Midfield Site".

Leaseable Space Loss - The "Parking Lot Site" requires demolition of the existing terminal. The current building leases out 277 square feet to the Weather Service, 2,307 square feet to the Georgia Flight Academy, and 594 square feet for travel agent offices. The terminal building program and concept includes replacement space for the travel agent offices. The Weather Service could move to the new General Aviation Terminal. No replacement space for Georgia Flight Academy lease area is included.

The "Midfield Site" development would leave the existing terminal in place. Therefore, the existing 3,178 square feet leased remains in use and approximately 2,600 square feet of additional space would be available for leasing. Some renovations would be required to the existing terminal prior to leasing.

Utility Corridor Extension - The existing terminal site requires modification to utilities (*water, sewer, power, and communications*). Upgrades may be shared by all existing facilities, the new terminal , and other planned improvements. This spreads the costs to various projects and tenants.

Development of the "Midfield Site" would require extending utilities from Lexington Road to the site development area. Adequate capacity for water and sewer should be available for the proposed development at the "Midfield Site".

An overview of the comparison of Development Cost Criteria is shown in the Comparative Concept Analysis Chart presented in Exhibit 10.

CONCLUSIONS & FINDINGS

The evaluation comparing the current recommended passenger terminal site and the "Midfield Site" south of Runway 9-27 is shown in Exhibit 10. The tabulation of all ratings point to marginal advantages (*scoring of 86 versus 81*) afforded the County with the "Parking Lot Site".

In addition to subjective evaluation previously presented, The LPA Group prepared detailed cost estimates for the "Parking Lot Site" and the "Midfield Site". Those costs were grouped into major construction packages for funding analysis reasons and are presented in Tables 1 and 2, together with the estimated funding eligibility breakdowns. The Local (*Sponsor*) responsibility portion may be financed through user fees, airport revenues, County funds, governmental bond issues, long-term loans, SPLOST allocations, or private investment. The preliminary estimates result in a total cost differential between the "Parking Lot Site" and the "Midfield Site" of approximately $2.3 million dollars. The amount of the "Midfield Site" total cost for which the Local government would be responsible for is approximately $2.35 million. The difference in Local share between the "Parking Lot Site" and the "Midfield Site" is much less at roughly $1 million.

The cost differential between the two analyzed sites could potentially be offset through SPLOST or other creative financing methods. A great deal of the cost variance is a result of earthwork requirements and necessary property acquisition. Operationally, very few advantages exist for one site over the other. A remote site will afford the County the intangible merits of convenient landside access, a desirable new front door appeal for arriving passengers, as well as long-range expandability for commercial aviation and general aviation to the south and north of Runway 9-27, respectively.

It should be pointed out that several construction initiatives (i.e., fuel farm, partial parallel taxiway, etc.) may be considered to strengthen the operational aspects of the "Midfield Site", but at the result of considerable cost. Two long-term advantages of the "Midfield Site", which are non-existent at the "Parking Lot Site" would be the availability of commercial properties for sublease along Lexington and the potential for considering paid parking at the commercial terminal. Airport revenues realized from the automobile parking facilities may range from $75,000-200,000 annually, depending on lot utilization and fee structure. This aspect alone may outweigh the difference in construction cost.

OPERATIONAL CRITERIA	PARKING LOT SITE	MIDFIELD SITE
Taxi Distance	5	3
Access to Fuel and Maintenance	5	2
Ability to Accomodate Group III Aircraft	5	4
Runway Crossing Traffic	4	3
Construction Phasing Criteria	2	5
SUBTOTAL (Operational Criteria)	21	17
DESIGN CRITERIA		
Site Accessibility	3	5
Site Security / Traffic Separation	2	5
Part 77 / Safety Criteria	5	5
Future Expandability / Flexibility	3	4
Effect on Residential Uses	5	5
Effect on Governmental Uses	5	5
Effect on Commercial Uses	5	3
SUBTOTAL (Design Criteria)	28	32
DEVELOPMENT COST CRITERIA		
Apron Development Requirements	4	2
Taxiway Development Requirements	5	3
Loop Road Length	3	5
Entry / Exit Road Length	5	4
Parking Development Requirements	3	1
Demolition Costs	1	5
Topography / Earthwork Requirements	5	2
Land Acquisition Requirements	5	2
Leasable Space Loss	2	5
Utility Corridor Extension	4	3
SUBTOTAL (Development Cost Criteria)	37	32
TOTAL ALL CRITERIA	86	81

ATHENS-BEN EPPS AIRPORT
MIDFIELD COMMERCIAL TERMINAL ANALYSIS

COMPARATIVE CONCEPT ANALYSIS CHART

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 10

TABLE 1

PRELIMINARY ENGINEER'S ESTIMATE
PASSENGER TERMINAL CONCEPT - "PARKING LOT SITE"
ATHENS-BEN EPPS AIRPORT

AIRFIELD TOTAL			**$341,958**
	FEDERAL	90%	**$307,762**
	STATE	0%	**$0**
	LOCAL	10%	**$34,196**
	TOTAL	100%	**$341,958**
PASSENGER TERMINAL & SITE PREP TOTAL			**$2,857,375**
	FEDERAL	varies	**$1,952,857**
	STATE	0%	**$0**
	LOCAL	varies	**$904,518**
	TOTAL	N/A	**$2,857,375**
UTILITIES TOTAL			**$34,925**
	FEDERAL	90%	**$31,433**
	STATE	0%	**$0**
	LOCAL	10%	**$3,493**
	TOTAL	100%	**$34,925**
ENTRANCE ROAD TOTAL			**$126,191**
	FEDERAL	90%	**$113,572**
	STATE	0%	**$0**
	LOCAL	10%	**$12,619**
	TOTAL	100%	**$126,191**
PARKING LOT & SITE PREP TOTAL			**$367,837**
	FEDERAL	0%	**$0**
	STATE	0%	**$0**
	LOCAL	100%	**$367,837**
	TOTAL	100%	**$367,837**
TOTAL PROGRAM			**$3,728,286**
	FEDERAL		**$2,405,624**
	STATE		**$0**
	LOCAL		**$1,322,662**
	TOTAL		**$3,728,286**

Source: The LPA Group analysis, 1998.

TABLE 2

PRELIMINARY ENGINEER'S ESTIMATE
PASSENGER TERMINAL CONCEPT - "MIDFIELD SITE" (ALT. D)

ATHENS-BEN EPPS AIRPORT

AIRFIELD TOTAL		**$1,099,202**
FEDERAL	90%	**$989,281**
STATE	0%	**$0**
LOCAL	10%	**$109,920**
TOTAL	100%	**$1,099,202**
PASSENGER TERMINAL & SITE PREP TOTAL		**$2,541,981**
FEDERAL	varies	**$1,669,003**
STATE	0%	**$0**
LOCAL	varies	**$872,978**
TOTAL	N/A	**$2,541,981**
UTILITIES TOTAL		**$125,730**
FEDERAL	90%	**$113,157**
STATE	0%	**$0**
LOCAL	10%	**$12,573**
TOTAL	100%	**$125,730**
ENTRANCE ROAD TOTAL		**$115,280**
FEDERAL	90%	**$103,752**
STATE	0%	**$0**
LOCAL	10%	**$11,528**
TOTAL	100%	**$115,280**
PARKING LOT & SITE PREP TOTAL		**$1,255,777**
FEDERAL	0%	**$0**
STATE	0%	**$0**
LOCAL	100%	**$1,255,777**
TOTAL	100%	**$1,255,777**
LAND ACQUISITION TOTAL		**$897,255**
FEDERAL	90%	**$807,530**
STATE	0%	**$0**
LOCAL	10%	**$89,726**
TOTAL	100%	**$897,255**
TOTAL PROGRAM		**$6,035,225**
FEDERAL		**$3,682,723**
STATE		**$0**
LOCAL		**$2,352,502**
TOTAL		**$6,035,225**

Source: The LPA Group analysis, 1998.

APPENDIX A

FAA Guidelines AC 5300-13, Airport Design

Table 2-3. Taxiway and taxilane separation standards

ITEM	DIM 1/	AIRPLANE DESIGN GROUP I	II	III	IV	V	VI
Taxiway Centerline to:							
Parallel Taxiway/ Taxilane Centerline	J	69 ft 21 m	105 ft 32 m	152 ft 46.5 m	215 ft 65.5 m	267 ft 81 m	324 ft 99 m
Fixed or Movable Object 2 and 3/	K	44.5 ft 13.5 m	65.5 ft 20 m	93 ft 28.5 m	129.5 ft 39.5 m	160 ft 48.5 m	193 ft 59 m
Taxilane Centerline to:							
Parallel Taxilane Centerline		64 ft 19.5 m	97 ft 29.5 m	140 ft 42.5 m	198 ft 60 m	245 ft 74.5 m	298 ft 91 m
Fixed or Movable Object 2 and 3/		39.5 ft 12 m	57.5 ft 17.5 m	81 ft 24.5 m	112.5 ft 34 m	138 ft 42 m	167 ft 51 m

1/ Letters correspond to the dimensions on figure 2-1.

2/ This value also applies to the edge of service and maintenance roads.

3/ Consideration of the engine exhaust wake impacted from turning aircraft should be given to objects located near runway/taxiway/taxilane intersections.

The values obtained from the following equations may be used to show that a modification of standards will provide an acceptable level of safety. Refer to paragraph 6 for guidance on modification of standards requirements.

Taxiway centerline to parallel taxiway/taxilane centerline equals 1.2 times airplane wingspan plus 10 feet (3 m);

Taxiway centerline to fixed or movable object equals 0.7 times airplane wingspan plus 10 feet (3 m);

Taxilane centerline to parallel taxilane centerline equals 1.1 times airplane wingspan plus 10 feet (3 m); and

Taxilane centerline to fixed or movable object equals 0.6 times airplane wingspan plus 10 feet (3 m).

AHN

(2) Fifteen feet for any other public roadway.

(3) Ten feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) Twenty-three feet for a railroad.

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

§ 77.25 Civil airport imaginary surfaces.

The following civil airport imaginary surfaces are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach existing or planned for that runway end.

(a) Horizontal surface—a horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

(1) 5,000 feet for all runways designated as utility or visual;

(2) 10,000 feet for all other runways.

The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

(b) Conical surface—a surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

(c) Primary surface—a surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway: but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of a primary surface is:

(1) 250 feet for utility runways having only visual approaches.

(2) 500 feet for utility runways having nonprecision instrument approaches.

(3) For other than utility runways the width is:

(i) 500 feet for visual runways having only visual approaches.

(ii) 500 feet for nonprecision instrument runways having visibility minimums greater than three-fourths statute mile.

(iii) 1,000 feet for a nonprecision instrument runway having a nonprecision instrument approach with visibility minimums as low as three-fourths of a statute mile, and for precision instrument runways.

The width of the primary surface of a runway will be that width prescribed in this section for the most precise approach existing or planned for either end of that runway.

(d) Approach surface—a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.

(1) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:

(i) 1,250 feet for that end of a utility runway with only visual approaches;

(ii) 1,500 feet for that end of a runway other than a utility runway with only visual approaches;

(iii) 2,000 feet for that end of a utility runway with a nonprecision instrument approach;

(iv) 3,500 feet for that end of a nonprecision instrument runway other than utility, having visibility minimums greater than three-fourths of a statute mile;

(v) 4,000 feet for that end of a nonprecision instrument runway, other than utility, having a nonprecision instrument approach with visibility minimums as low as three-fourths statute mile; and

(vi) 16,000 feet for precision instrument runways.

(2) The approach surface extends for a horizontal distance of:

(i) 5,000 feet at a slope of 20 to 1 for all utility and visual runways;

(ii) 10,000 feet at a slope of 34 to 1 for all nonprecision instrument runways other than utility; and,

(iii) 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways.

(3) The outer width of an approach surface to an end of a runway will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.

(e) Transitional surface—these surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

§ 77.27 [Revoked]

§ 77.28 Military airport imaginary surfaces.

(a) *Related to airport reference points.* These surfaces apply to all military airports. For the purposes of this section a military airport is any airport operated by an armed force of the United States.

(1) *Inner horizontal surface*—a plane is oval in shape at a height of 150 feet above the established airfield elevation. The plane is constructed by scribing an arc with a radius of 7,500 feet about the centerline at the end of each runway and interconnecting these arcs with tangents.

(2) *Conical surface*—a surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.

(3) *Outer horizontal surface* — a plane, located 500 feet above the established airfield elevation, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.

(b) *Related to runways.* These surfaces apply to all military airports.

(1) Primary surface—a surface located on the ground or water longitudinally centered on each runway with the same length as the runway. The width of the primary surface for runways is 2,000 feet. However, at established bases where substantial construction has taken place in accordance with a previous lateral clearance criteria, the 2,000-foot width may be reduced to the former criteria.

(2) *Clear zone surface*—a surface located on the ground or water at each end of the primary surface, with a length of 1,000 feet and the same width as the primary surface.

(3) *Approach clearance surface*—an inclined plane, symmetrical about the runway centerline extended, beginning 200 feet beyond each end of the primary surface at the centerline elevation of the runway end and extending for 50,000 feet. The slope of the approach clearance surface is 50 to 1 along the runway centerline extended until it reaches an elevation of 500 feet above the established airport elevation. It then continues horizontally at this elevation to a point 50,000 feet from the point of beginning. The width of this surface at the runway end is the same as the primary surface, it flares uniformly, and the width at 50,000 is 16,000 feet.

(4) *Transitional surfaces*—these surfaces connect the primary surfaces, the first 200 feet of the clear zone surfaces, and the ap-

ATHENS-BEN EPPS AIRPORT
Master Plan Update
Probable Aircraft Design Criteria

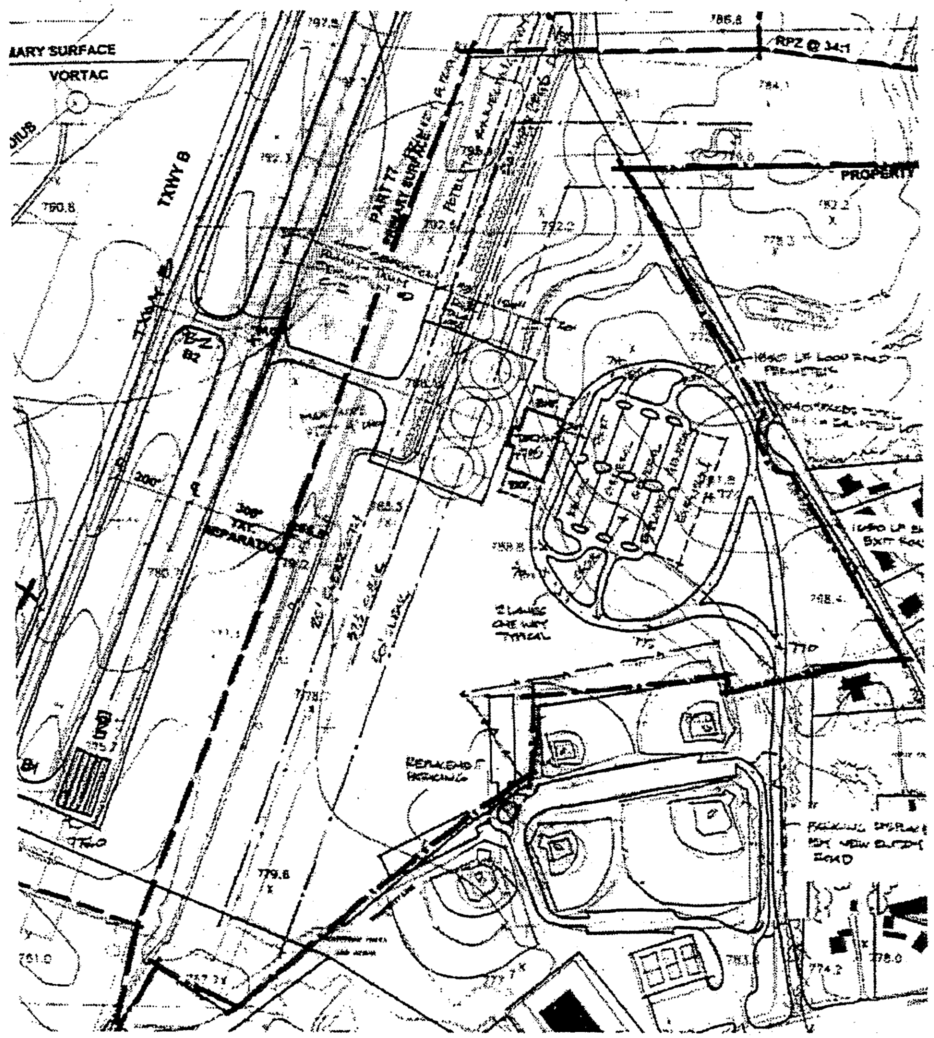
AIRCRAFT	APPROACH CATEGORY	DESIGN GROUP	WING SPAN	LENGTH	HEIGHT	PASSENGERS
Jetstream 31	B	II	52'-0"	47'-1.5"	17'-6"	19
Beech 1900 D	B	II	57'-10.75"	57'-10"	14'-6"	19
Saab 340	B	II	70'-6"	60'-8"	22'-8"	34
Dash 8	A	III	90'	84'-3"	24'-6"	35
Convair 580	B	III	105'-3"	81"-6"	29'-2"	52
Boeing 737	C	III	94'-4"	109'-7"	37'-4"	100-150
CRJ-100	B	II	69'-7"	87'-10"	20'-9"	50+
MD-88	C	III	106'-9"	140'-1.5"	30'-3"	142
DC-9	C	III	93'-3.6"	119'-3.6"	27'-9"	90-139
Gulf IV	D	II	77'-10"	88'-4"	24'-10"	14-19
Gulf V		III	93'-6"	96'-5"	25'-10"	13-19

APPENDIX C

Remote Commercial Terminal Alternative Analysis, September 1998

ATHENS-BEN EPPS AIRPORT
ATHENS, GEORGIA

REMOTE COMMERCIAL TERMINAL ALTERNATIVE ANALYSIS



Prepared by:
The LPA Group Incorporated

September 1998

REMOTE COMMERCIAL TERMINAL ALTERNATIVE ANALYSIS
Athens-Ben Epps Airport

TECHNICAL WHITE PAPER

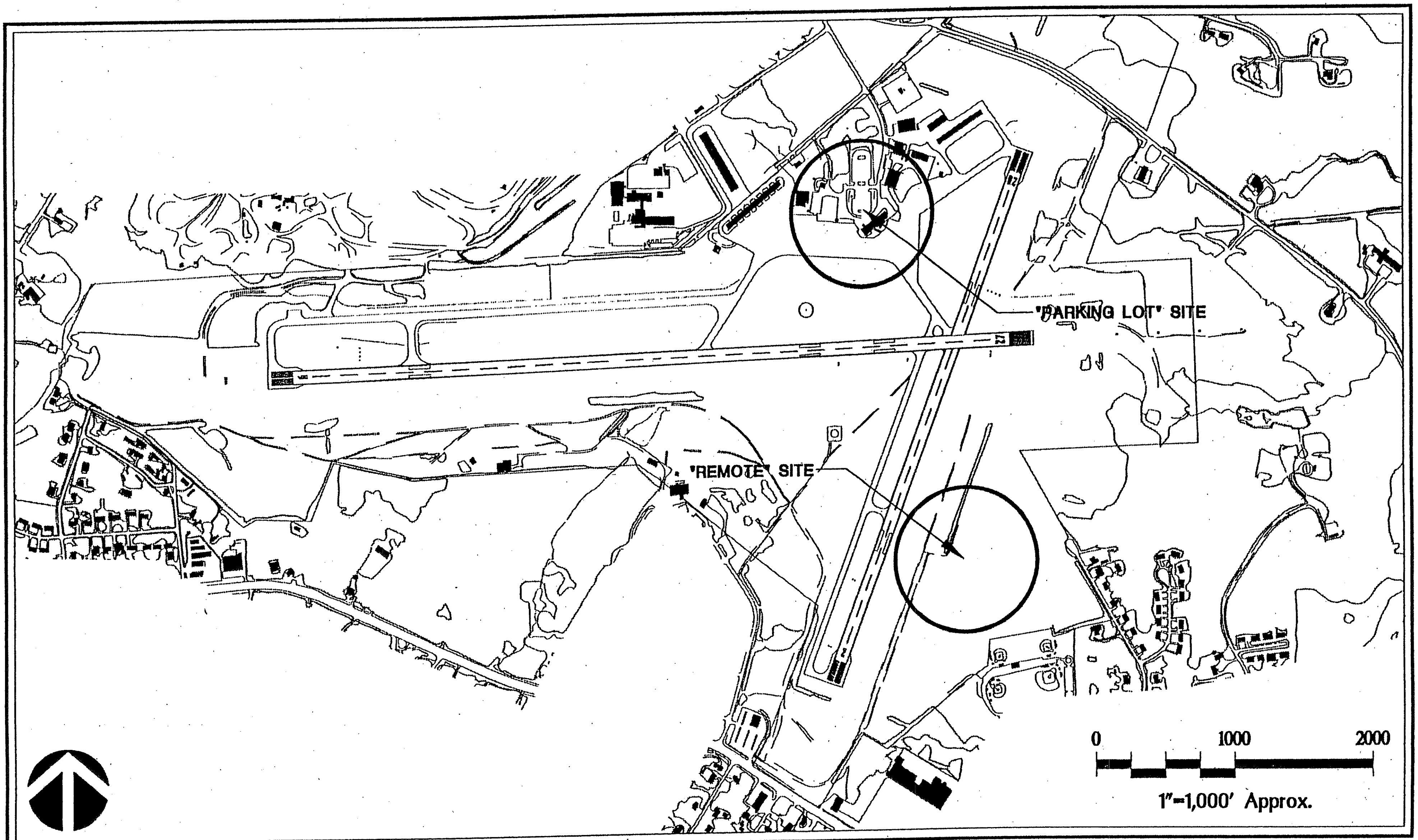
In August 1998, the Athens-Clarke County Unified Government contracted with The LPA Group Inc. to study the feasibility of relocating the existing commercial passenger terminal building to a new site east of and immediately adjacent to Runway 2-20 (*reference Exhibit 1*). This effort was undertaken as a supplement to the on-going master plan update for Athens-Ben Epps Airport.

The site studied as a part of this analysis has been the subject of two previous master planning efforts in the mid 1980's and most recently in 1995. The master plan performed in the mid 1980's recommended relocating the existing passenger terminal to the same general area considered herein. The 1995 evaluated three concepts for the passenger terminal: 1) the existing site, 2) a site south and slightly west of the midpoint of Runway 09-27 , and 3) a site east of Runway 2-20. Of those sites, the site east of Runway 2-20 earned the lowest rating.

Following are general notes and discussions which reflect The LPA Group's study and findings for the remote alternative terminal location.

ASSUMPTIONS AND METHODOLGY

- The location of the terminal alternative requires additional taxi distance compared to the existing site (*reference Exhibit 2*).
- Runway 2-20 and Taxiway B are not suitable for commercial aircraft operations (*greater than Design Group II*). The runway-taxiway separation is not adequate for aircraft other than small Design Group I aircraft (*See probable aircraft design criteria and separation standards from AC 150/5300-13*). Tower control could shut down Runway 2-20 during commercial operation times, however operations would be dependent on the existence of and hours of operation of the tower.
- The alternate site is remote from the existing fuel farm, ATCT, administration offices, and ARFF station.
- Potential for security screening of charter aircraft passengers needs to be considered. The potential for Design Group III (*or larger*) aircraft for commercial service or charter service from the commercial terminal needs to be considered.
- Satterfield Park is not believed to be a constraint.

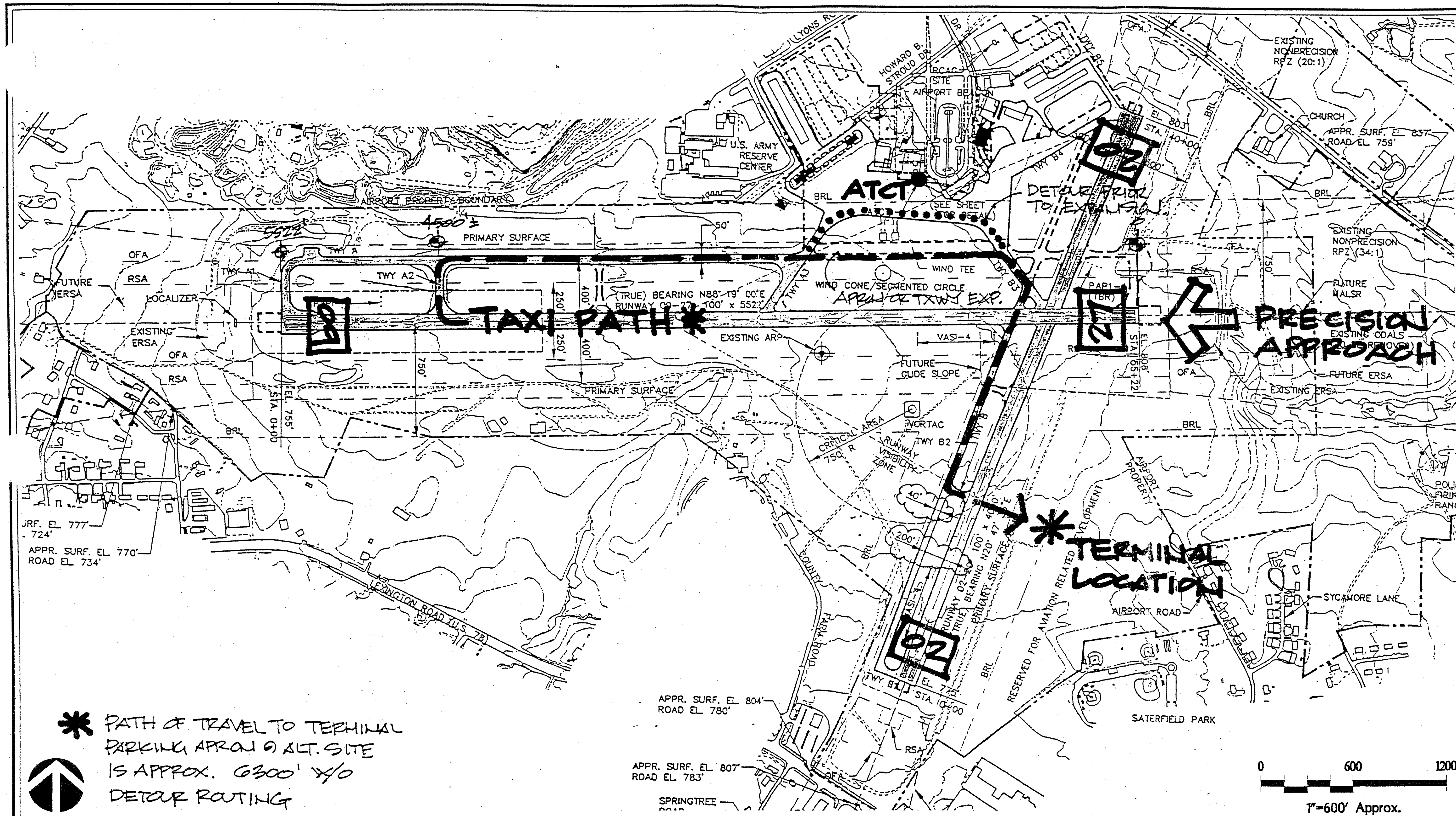


ATHENS-BEN EPPS AIRPORT
REMOTE COMMERCIAL TERMINAL ANALYSIS

AIRPORT SITE MAP

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 1



✱ PATH OF TRAVEL TO TERMINAL PARKING APRON @ ALT. SITE IS APPROX. 6300' W/O DETOUR ROUTING

ATHENS-BEN EPPS AIRPORT
REMOTE COMMERCIAL TERMINAL ANALYSIS

"REMOTE SITE" TAXI PATH SCHEMATIC

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 2

"REMOTE SITE" CONCEPT DEVELOPMENT & EVALUATION

Concepts, beginning with the 1995 Master Plan (*Terminal Concept 3 by HNTB*) were developed to illustrate significant design variables of the site east of Runway 2-20.

Significant issues include:

- Apron and taxiway development requirements;
- Terminal location and loop road / parking extents;
- Access road and site access location;
- Property acquisition;
- Consideration of site conditions, especially topography; and,
- Effect on neighboring land uses:
  - Residential areas;
  - Park (*recreation field*) facilities; and,
  - Commercial areas.

Existing Site Conditions

A base sheet indicating existing site conditions such as property limits, runway / taxiway conditions, Part 77 surfaces, existing adjacent development, and topography has been developed. The sources were mapping included in the ALP drawing set and additional mapping outside the Airport property limits obtained from the Planning Department of Athens-Clarke County. Discrepancies exist in the indication of topography between the two sources, which was resolved as best as possible, but should be augmented with more detailed survey data prior to future site development.

Concept Evaluation

HNTB CONCEPT 3 – Terminal Concept 3 from the 1995 Master Plan by HNTB (*reference Exhibit 3*) was reviewed for compliance with applicable design criteria and ability to meet demand requirements. The terminal building size and the aircraft apron size are appropriate. The total parking developed (*300 spaces*) exceeds the total projected demand of 240 spaces.

Significant concept strengths include:

- Ability to meet projected demand requirements;
- Location minimizes taxi distances; and,
- Minimal impacts on adjacent residential and recreational uses.

Significant concept weaknesses include:

- Parking location requires acquisition of approximately 3.4 acres of property. The entry / exit road requires acquisition of commercial property at Lexington Road / Highway 78.
- Significant portions of development of the site (*landside*) require up to 20 feet of earthwork fill, due to topography.

Significant concept weaknesses include:

- Additional costs to replace parking at the recreational complex may be unacceptable.
- Significant landside development occurs in unfavorable topography (*Exhibit 6, Concept 2A indicates how the concept could be adjustable to minimize earthwork*).

CONCEPT 3 - Concept 3 (*reference Exhibit 7*) works within the Airport property limits; however, the airport access point requires acquisition of a part of or the whole commercial property on Lexington Road. The site development has been reoriented to the direction of access. Apron access remains at crossover Taxiway B2. Future taxiway access with Design Group III requirements is similar to Concept 2.

Significant concept strengths include:

- Development is concentrated on the highest portion of the site.
- Loop road perimeter and access road length is similar to Concept 2.
- Taxi distances remain unchanged from Concepts 1 and 2 (*Concept 3A, Exhibit 8, indicates how taxi distance could be minimized. Decreasing taxiway costs should be less than the resulting increase of the entry / exit road.*)
- Impacts to residential and recreational land uses adjacent to the Airport are minimized.

Significant concept weaknesses include:

- Further expansion of the site is limited due to the reorientation of site development.
- Costs of acquiring the commercial site at Lexington Road may be significant. The access point will be at a curb cut next to a shopping center, not at a controlled or signalized road intersection.

In addition to a cursory analysis of strengths and weaknesses, Exhibit 9 presents a detailed evaluation matrix of various operational factors. This initial screening process was intended to isolate one specific alternative against which to measure the currently recommended "Parking Lot Site" concept from the master plan update. As a result detailed cost estimates for each alternative were not included. The analysis presented in the evaluation matrix recommends that Concept 2A be advanced in the analysis.

"PARKING LOT SITE" CONCEPT MODIFICATION & EVALUATION

As part of the ongoing Master Plan Update, the selected "Parking Lot Site" concept includes development of a new terminal building on the existing site in the current parking lot area. Through various concept refinement efforts, a total terminal area plan has been approved by the Unified Government. The LPA Group subsequently has identified a phase of the total terminal area program representative of the passenger terminal construction (*reference Exhibit 10*). This phase of construction compares

- The length of the loop road perimeter and of the entry / exit road increases development costs.

Additional concepts were developed to correct weaknesses associated with the HNTB Concept 3. Some elements of the concepts may be combined (*i.e., site developed for Concept One could use the access point of Concept Three, etc*). All concepts use the terminal building "footprint" developed for the existing terminal site since activity levels should be consistent at any location.

CONCEPT 1 - Concept 1 uses the existing Airport property limits. Access to the site is by extension of Airport Road. The apron access is by extension of Taxiway B2. Additional access by a parallel taxiway with Design Group II criteria is shown (*reference Exhibit 4*).

Significant concept strengths include:

- Eliminates the need for property acquisition.
- Reduces taxiway development for initial development (*Dual crossovers to Taxiway B seem excessive based on current and projected level of commercial operations*).
- Area of development is moved to more favorable topography than the HNTB concept.
- The perimeter of the loop road has been reduced from 3,050 linear feet to 2,350 linear feet. The length of the entry / exit access road has been reduced from 3,000 linear feet to 650 linear feet.

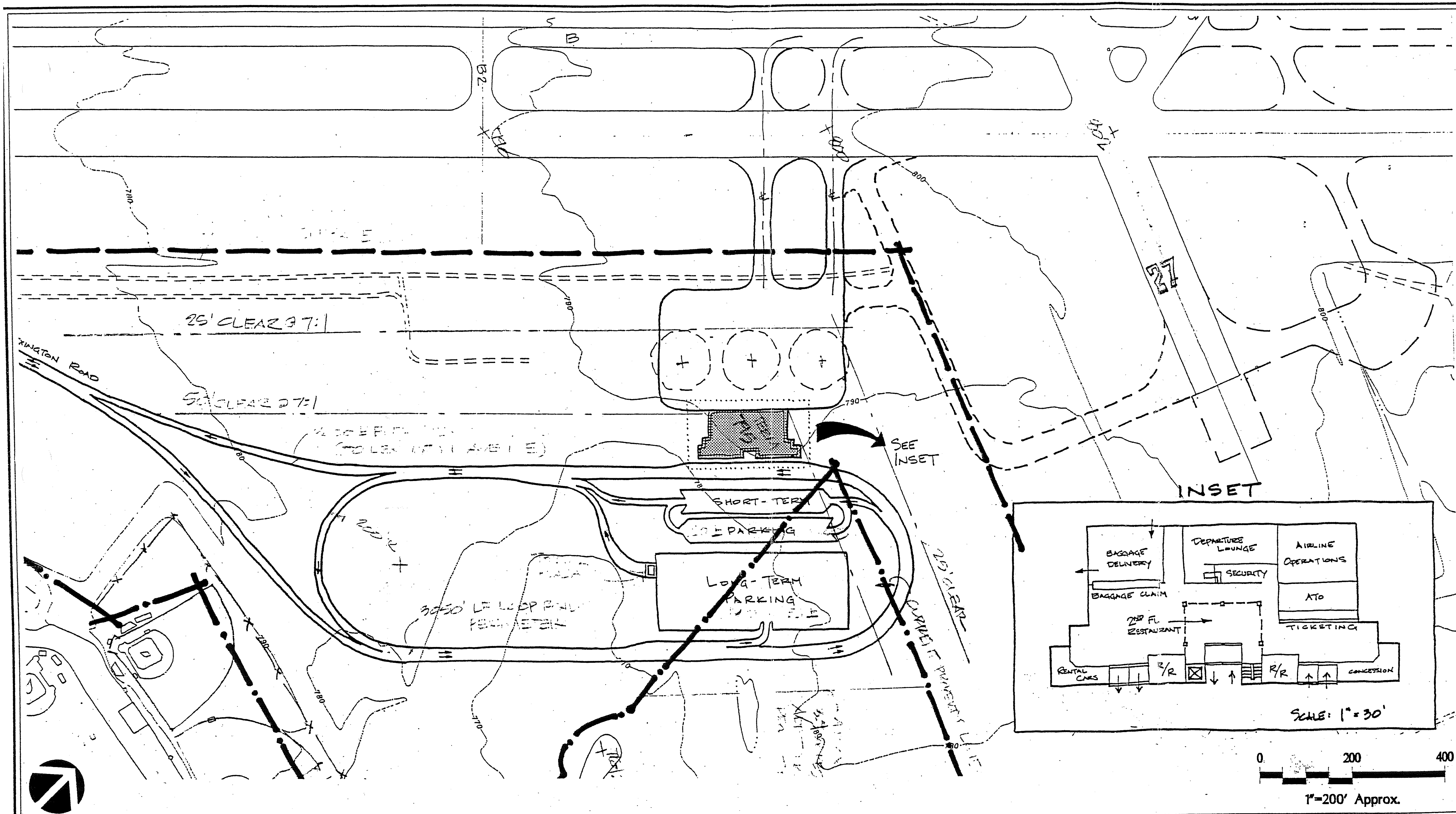
Significant concept weaknesses include:

- Taxi distance was increased by approximately 400 feet.
- Impact of traffic on residences along Airport Road may be unacceptable without screening / buffering or purchase of the affected properties.
- Significant site development is still located in unfavorable topography.

CONCEPT 2 - Concept 2 (*reference Exhibit 5*) works within the Airport property limits; however, the site access is via County property at the recreational complex (*Satterfield Park*). Apron location and access is similar to Concept 1. The future taxiway access has been modified to reflect Design Group III criteria.

Significant concept strengths include:

- Impact to adjacent residences is greatly reduced.
- Consolidation of parking requirements reduces the area of the site development (*landside*) by approximately one-third.
- Loop road perimeter is further reduced from 2,350 linear feet to 1,850 linear feet. The change in access points increases the length of the entry / exit road from 650 feet to 1,650 feet. This may be more acceptable and cost effective than use of the Airport Road extension.

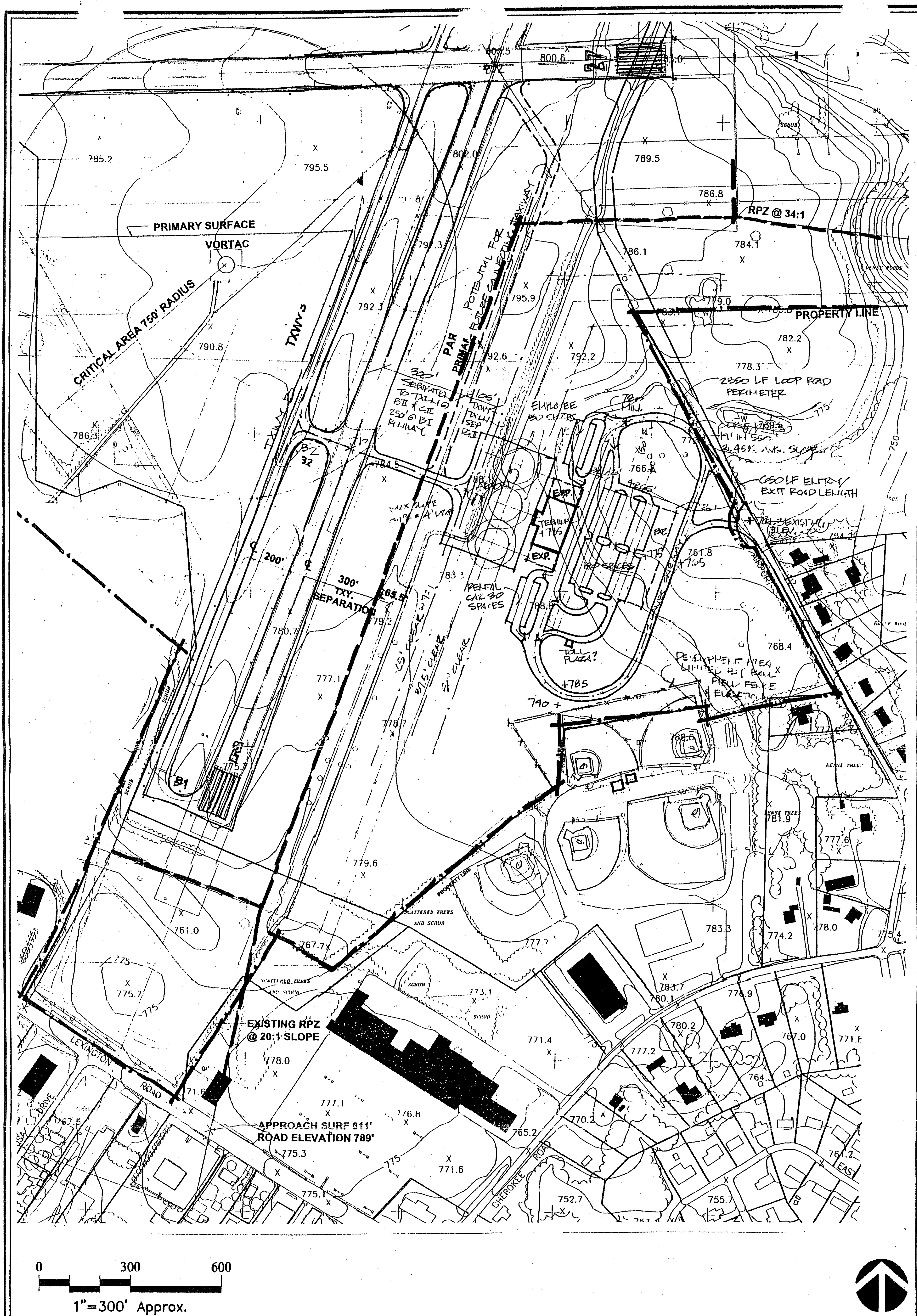


ATHENS-BEN EPPS AIRPORT
REMOTE COMMERCIAL TERMINAL ANALYSIS

HNTB TERMINAL CONCEPT 3

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 3

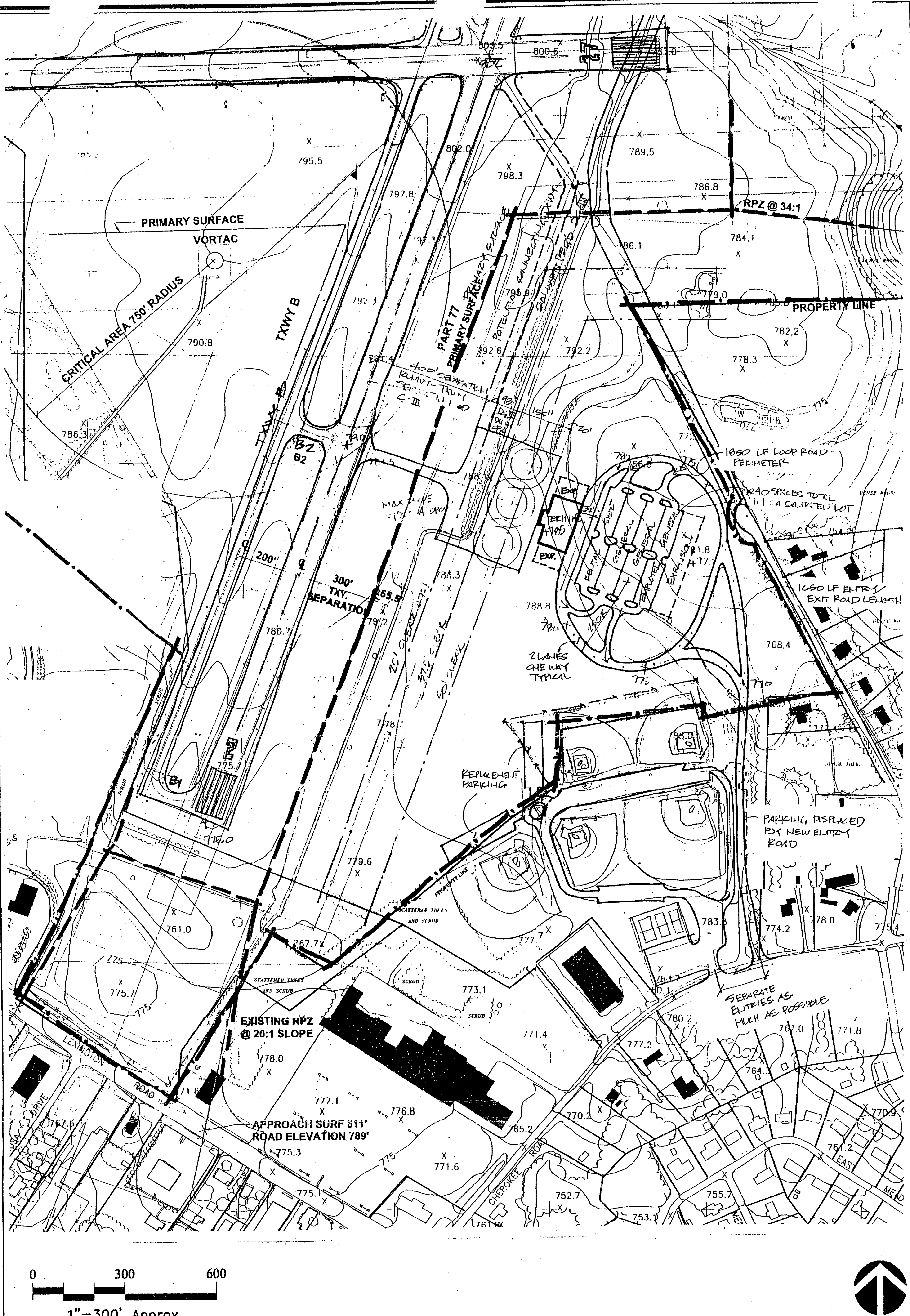


ATHENS-BEN EPPS AIRPORT
REMOTE COMMERCIAL TERMINAL ANALYSIS

ALTERNATE SITE CONCEPT 1

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 4



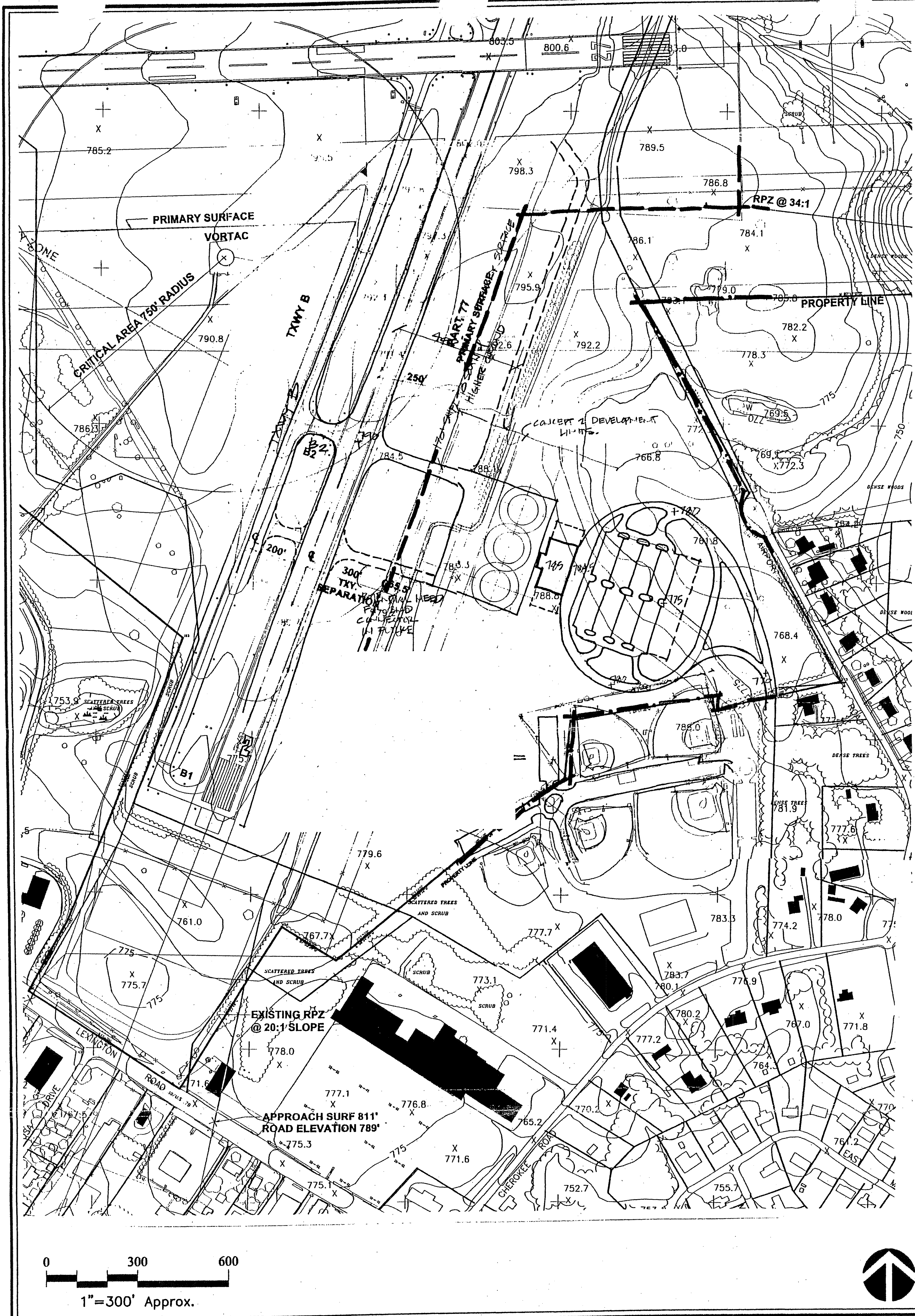
ATHENS-BEN EPPS AIRPORT

REMOTE COMMERCIAL TERMINAL ANALYSIS

ALTERNATE SITE CONCEPT 2

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 5



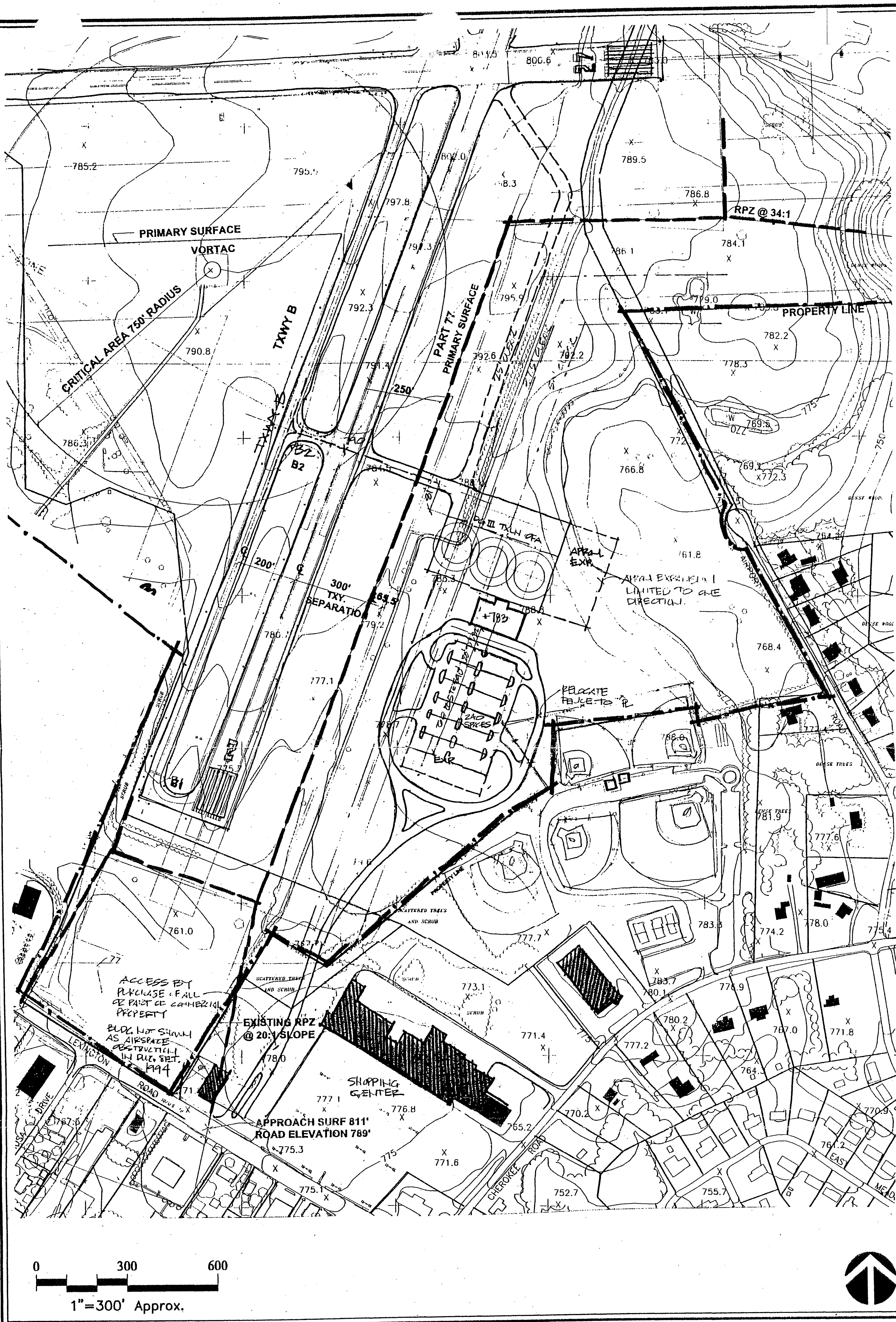
ATHENS-BEN EPPS AIRPORT

REMOTE COMMERCIAL TERMINAL ANALYSIS

ALTERNATE SITE CONCEPT 2A

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 6

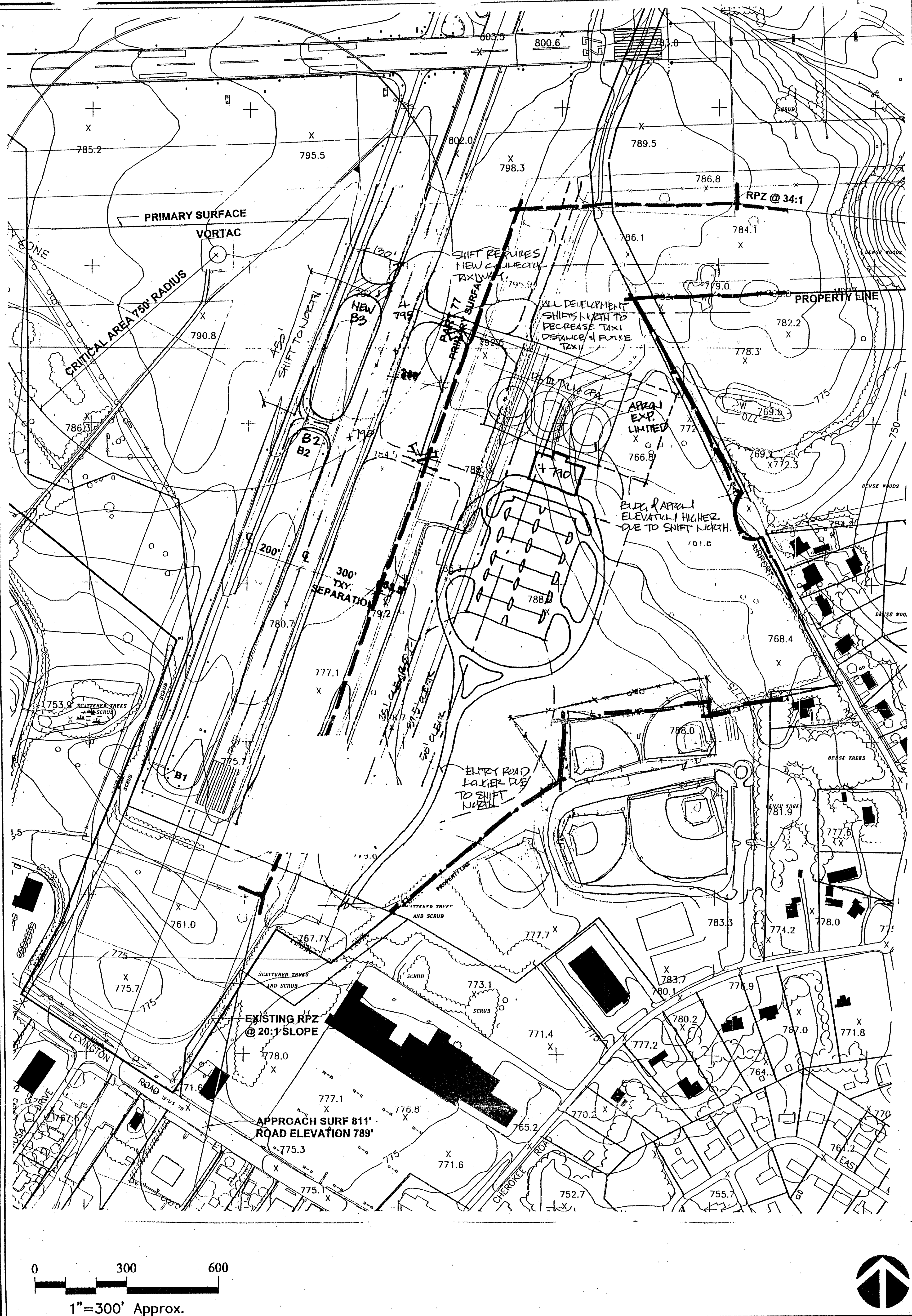


ATHENS-BEN EPPS AIRPORT
REMOTE COMMERCIAL TERMINAL ANALYSIS

ALTERNATE SITE CONCEPT 3

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 7



ATHENS-BEN EPPS AIRPORT

REMOTE COMMERCIAL TERMINAL ANALYSIS

ALTERNATE SITE CONCEPT 3A

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EXHIBIT 8

CRITERIA	HNTB CONCEPT	CONCEPT 1	CONCEPT 2	CONCEPT 2A	CONCEPT 3	CONCEPT 3A
Taxi Distance	2	1	1	1	1	2
Access to Fuel and Maintenance	1	1	1	1	1	1
Ability to Accomodate Group III Aircraft	2	1	2	2	2	2
Apron Development Requirements	2	3	3	3	3	3
Taxiway Development Requirements	4	2	3	3	3	4
Loop Road Length	1	3	4	4	4	4
Entry/Exit Road Length	1	5	3	3	2	1
Site Accessibility	4	5	4	4	4	4
Topography/Earthwork Requirements	1	2	3	4	4	3
Effect on Residential Uses	3	1	2	3	4	4
Effect on Recreational Uses	4	3	2	2	3	4
Effect on Commercial Uses	2	5	5	5	2	2
Land Acquisition Requirements	1	2	5	5	3	3
Future Expandability/Flexibility	5	4	4	4	2	2
TOTAL	**33**	**38**	**42**	**44**	**38**	**39**

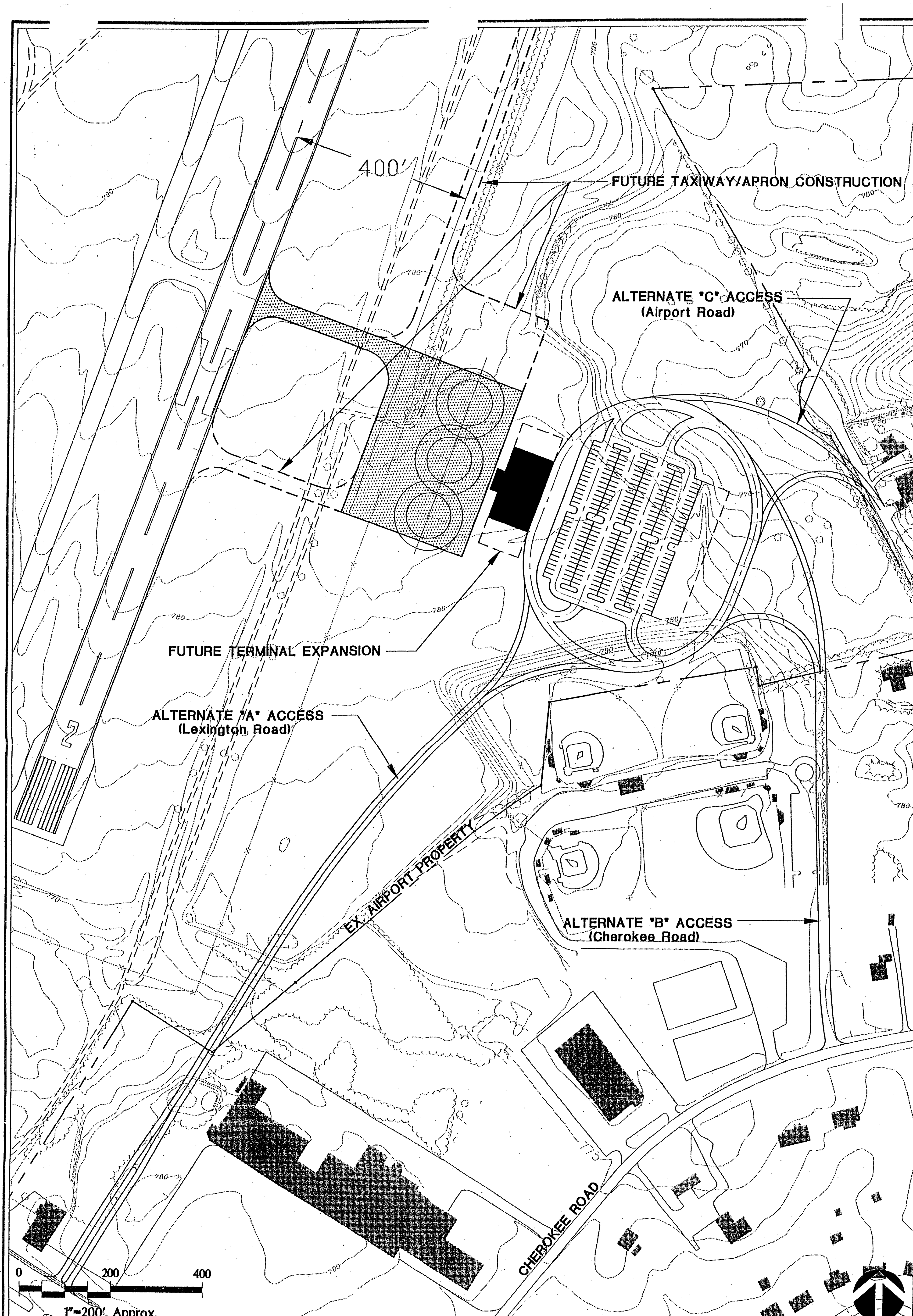
SYMBOL LEGEND POOR (1) FAIR (2) GOOD (3) VERY GOOD (4) EXCELLENT (5)

ATHENS-BEN EPPS AIRPORT
REMOTE COMMERCIAL TERMINAL ANALYSIS

"REMOTE SITE" CONCEPT ANALYSIS CHART

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 9



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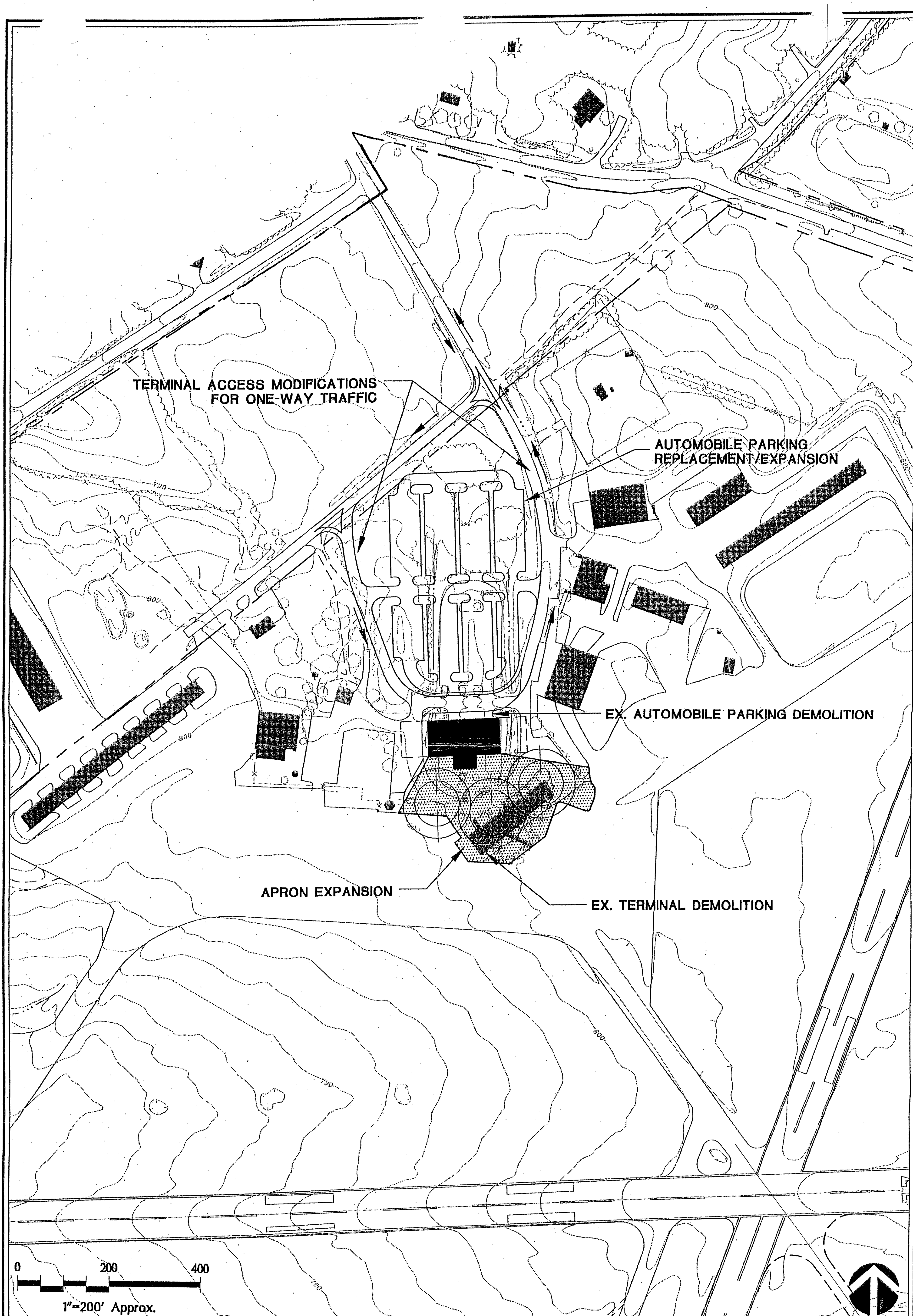
ATHENS-BEN EPPS AIRPORT
REMOTE COMMERCIAL TERMINAL ANALYSIS

RECOMMENDED "REMOTE SITE" CONCEPT

EXHIBIT 10



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ATHENS-BEN EPPS AIRPORT
REMOTE COMMERCIAL TERMINAL ANALYSIS

MODIFIED "PARKING LOT" CONCEPT

EXHIBIT 11

OPERATIONAL CRITERIA	PARKING LOT SITE	REMOTE SITE
Taxi Distance	5	1
Access to Fuel and Maintenance	5	1
Ability to Accomodate Group III Aircraft	5	2
Runway Crossing Traffic	4	2
Construction Phasing Criteria	2	4
SUBTOTAL (Operational Criteria)	21	10
DESIGN CRITERIA		
Site Accessibility	3	4
Site Security / Traffic Separation	2	5
Part 77 / Safety Criteria	5	5
Future Expandability / Flexibility	3	4
Effect on Residential Uses	5	3
Effect on Recreational Uses	5	3
Effect on Commercial Uses	5	4
SUBTOTAL (Design Criteria)	28	28
DEVELOPMENT COST CRITERIA		
Apron Development Requirements	4	3
Taxiway Development Requirements	5	2
Loop Road Length	3	4
Entry / Exit Road Length	5	3
Parking Development Requirements	3	3
Demolition Costs	1	4
Topography / Earthwork Requirements	5	3
Land Acquisition Requirements	5	3
Leasable Space Loss	2	5
Utility Corridor Extension	4	1
SUBTOTAL (Development Cost Criteria)	37	31
TOTAL ALL CRITERIA	**86**	**69**

ATHENS-BEN EPPS AIRPORT
REMOTE COMMERCIAL TERMINAL ANALYSIS

COMPARATIVE CONCEPT ANALYSIS CHART

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 12

equitably to the concepts previously analyzed for the remote site, and thus permits direct comparison. The "Parking Lot Site" and the "Remote Site" are comparable facilities, in terms of size and function. The following narrative compares the features of the "Parking Lot Site" development to the preferred "Remote Site" development (*Exhibit 11*). The comparison is based on three categories; Operational Criteria; Design Criteria; and, Development Cost Criteria.

Operational Criteria

Taxi distances - The "Parking Lot Site" is accessed from Taxiway A, which parallels Runway 9-27 (*the only commercial operational runway*). Access to the parking apron is available from either end of Runway 9-27, and a bypass taxiway (*A2*) is available.

The "Remote Site" is accessed by Taxiway B, which parallels Runway 2-20. Runway 2-20 is not currently designed for commercial operations, nor is it easily modified for their use. The runway to taxiway separation is not suitable for commercial operations. This will require temporary closure of Runway 2-20 by the tower or construction of a new partial taxiway on the east side of Runway 2-20, with adequate separation distances for commercial aircraft. As illustrated in Exhibit 2, the most common approach (*to the 27 end*) requires a long and circuitous taxi path to reach the alternative site apron.

Access to Fuel and Maintenance - The "Parking Lot Site" is located near the existing fuel farm and the limited maintenance facilities located on the north side of Runway 9-27. The "Remote Site" apron is approximately 2,000 feet away from these facilities. Access to the "Remote Site" apron by fuel trucks would be via the runway / taxiway systems because no perimeter road exists.

Ability to Accommodate Group III Aircraft - The "Parking Lot Site's" apron is accessible by taxiways with a 400-foot separation, which is suitable for aircraft of Group III and larger as indicated in AC 150/5300-13. Adequate area for taxilane Object-Free Areas (*OFA's*) for Group III aircraft are available on the existing apron. Some tie-down spaces may need to be relocated. The "Remote Site" requires a new partial parallel taxiway, previously discussed, to accommodate Design Group III aircraft. The "Remote Site" apron has been designated to accommodate the Group III requirements.

Runway Crossing Traffic - Access to the "Parking Lot Site" from the usual commercial approach (*27 end*) requires no runway crossings. Access from the 9 end requires crossing Runway 2-20. All access to the "Remote Site" requires crossing Runway 2-20, as well as Runway 9-27.

Construction Phasing Requirements - Phasing of construction is a significant issue at the "Parking Lot Site". The building location within the existing parking lot allows new construction while the terminal remains accessible. A coordinated schedule of site improvements to replace the road and parking is required. Demolition of the existing building and apron in-fill will complete the process; however, the construction sequence will affect commercial operations throughout the building program.

Construction phasing is less of an issue at the "Remote Site". Some construction operations could affect the use of Runway 2-20. Otherwise, a logical sequence of construction would allow all improvements to be occupied and operational at the same time.

An overview of the comparison of operational factors is contained in the Comparative Concept Analysis Chart depicted in Exhibit 12.

Design Criteria

Site Accessibility - The existing Airport terminal and proposed "Parking Lot Site" development are accessed via Winterville Road from Lexington Road (*Highway 78*). Proposed improvements may create a more direct link to the Airport in the future from the Athens Loop (*Highway 10*) by extension of Athena from Olympic Drive.

The "Remote Site" would be accessed by a dedicated road segment from Lexington Road, Cherokee Road, or Airport Road. This site is somewhat more visible and more directly accessible from Highway 78.

Site Security and Separation - A key issue in security is the ability to prevent unauthorized persons from entering the Air Operations Area (*AOA*). Requirements of FAR Part 107 must be met for passenger service. Public charters (*those in which any part of the cost is borne directly or indirectly by individual passengers*) must also meet these requirements.

The "Parking Lot Site" would offer security by improving the definition of the commercial service apron from adjacent general aviation uses and business aircraft uses. The area from the tower west and from Sonny's north would be outside of the commercial operations area.

The "Remote Site" maximizes the securability of the commercial apron by total removal of the commercial activity from other Airport uses. However, neither FAR part 107 nor the FAA "Recommended Security Guidelines for New Airport Construction and Major Renovations" dictate such a total separation of uses.

Part 77 / Safety Criteria - The height clearances and primary surface locations for each site were carefully considered during the development of each respective layout. Both sites comply with criteria for object-free areas. The aprons allow for parking of aircraft with total heights up to approximately 35 feet, allowing for a reasonable mix of Design Group III aircraft.

Future Expandability / Flexibility - The "Parking Lot Site" has reasonable room for expansion of the building and parking. Some airside limitations result from adjoining general aviation uses. Room for growth of all elements is present at the "Remote Site". The critical limitation to expansion is keyed to topographic constraints.

Effect on Residential Uses - Development at the "Parking Lot Site" does not create any changes for residential uses. Development at the "Remote Site" may impact the residents along Airport Road and areas to the east, depending on the access alternative chosen. These effects include engine noise from taxiing and run-up operations, spillover light emissions from apron lighting, and increased automobile traffic in the vicinity.

Effect on Recreational Uses - Development at the "Parking Lot Site" does not appear to have an impact on recreational uses. Development at the "Remote Site" may create displacement and relocation of parking and access roads, increase adjacent traffic, and require site grading and development in close proximity to the existing recreational fields, depending on the access alternative chosen.

Effect on Commercial Uses: Development at the "Parking Lot Site" has no effect on commercial uses. Assuming that the "Remote Site" access is by the route indicated on Alt. B or C, no commercial impacts are created by this development; however, Alt. A would require R.O.W. acquisition (*easement or fee simple*) for the airport entrance road.

An overview of the comparisons of Design Criteria is shown in the Comparative Concept Analysis Chart.

<u>Development Cost Criteria</u>

Apron Development Requirements - The "Parking Lot Site" requires development of approximately 6,300 square yards of apron to in-fill the previous terminal location. The "Remote Site" requires development of approximately 11,000 square yards of new pavement for parking and maneuvering taxilanes.

Taxiway Development Requirements - No additional taxiways are required for access to the "Parking Lot Site". The "Remote Site" requires at least a connector taxiway to Taxiway B (*in alignment with Taxiway B2*), approximately 300 feet in length. As discussed in the operational criteria, a partial parallel taxiway (*1,450 feet in length*) with appropriate separation may also be needed in the future to prevent temporary closure of Runway 2-20 while commercial aircraft taxi to the terminal. The partial parallel taxiway would also be necessary during an air traffic control tower closure to prevent permanent closure of Runway 2-20.

Loop Road Length - The "Parking Lot Site" development has a new loop road length of 850 linear feet, while the remainder of the loop utilizes existing road geometry. This allows for terminal parking and other use parking to be combined. The "Remote Site" loop road measures 1,700 linear feet.

Entry /Exit Road Length: The "Parking Lot Site" does not require a new entry / exit road during the initial phase of development, rather minor enhancements to the turn geometry. The "Remote Site" requires 1,850, 1,350, and 650 linear feet of new road for Alternate A, B, and C, respectively to connect the loop to the chosen access point. It should be noted that Alternate C may require an overlay and nominal widening of Airport Road.

Parking Development Requirements - The "Parking Lot Site" must develop the 240 spaces forecast in the 20-year demand as well as spaces dislocated by the apron (*near the FAA tower*). The "Remote Site" requires the same 20-year demand parking. Access Alternate B, may require the potential replacement of recreation lot parking displaced by the entry / exit road.

Demolition Costs - The "Parking Lot Site" requires demolition of the existing 7,866 square foot terminal building and portions of the existing loop road and parking. Demolition at the "Remote Site" may only be limited to an automobile parking area at Satterfield Park and limited clearing and grubbing of the development area.

Topography / Earthwork Requirements: The "Parking Lot Site" is relatively flat, with most earthwork requiring re-grading or cutting of the site. Apron and automobile parking in some areas are developed on previously paved areas. On the other hand, accommodation of existing terrain was a key element in developing concepts for the "Remote Site". Development area is limited due to the drop-off from Runway 2-20 toward the existing airport property line. At some portions of the site, 10 to 15 feet of fill will be required. The amount of grade differential that can be made up in the slope of the taxiway and apron is limited. Roads and parking are somewhat more flexible in their ability to accommodate sloping topography.

Land Acquisition Requirements - The "Parking Lot Site" requires no additional land acquisition. The "Remote Site" assumes use of the access points shown on Exhibit 10. Access Alternate A may require either an easement or fee simple R.O.W. purchase to tie into Lexington Road. Alternate B may impact the eastern parking area of Satterfield Park to provide access via Cherokee Road. The park is currently owned by the County, lending consideration to a land swap or mutual use agreement between the park facility and the Airport. Alternate C, which would route traffic immediately adjacent to residential development, may necessitate the acquisition and relocation of approximately 10 residences in the future.

Leaseable Space Loss - The "Parking Lot Site" requires demolition of the existing terminal. The current building leases out 2,307 square feet to the Georgia Flight Academy and 594 square feet for travel agent offices. The terminal building program and concept includes replacement space for the travel agent offices. No replacement space for Georgia Flight Academy lease area is included.

The "Remote Site" development would leave the existing terminal in place. Therefore, the existing 2,901 square feet leased remains in use and approximately 2,600 square feet of additional space would be available for leasing. Some renovations would be required to the existing terminal prior to leasing.

Utility Corridor Extension - The existing terminal site requires modification to utilities (*water, gas, power, and communications*) and the future connection to County sewer. Upgrades can be shared by all existing facilities, the new terminal, and other planned improvements. This spreads the costs to various projects and tenants.

Development of the "Remote Site" would require establishing and/or extending utilities from Cherokee Road or Highway 78 to the site in most instances.

An overview of the comparison of Development Cost is shown in the Comparative Concept Analysis Chart depicted in Exhibit 12.

CONCLUSIONS & FINDINGS

The evaluation comparing the current recommended passenger terminal site and the site east of Runway 2-20 is shown in Exhibit 12. The tabulation of all ratings suggests significant advantages (*scoring of 86 versus 69*) associated with the "Parking Lot Site".

In addition to subjective evaluation, The LPA Group prepared detailed cost estimates for the "Parking Lot Site" and the "Remote Site" (*including Access Alternates A, B, and C*). Those costs were grouped into major construction packages for funding analysis reasons and are presented in Tables 1-4 along with the estimated funding eligibility breakdowns. The Local (*Sponsor*) responsibility portion may be financed through user fees, airport revenues, County funds, governmental bond issues, long-term loans, SPLOST allocations, or private investment. The preliminary estimates result in a total cost differential between the "Parking Lot Site" and the "Remote Site" of $1.1 - 1.2 million dollars. The Local difference is considerably less at roughly $500,000.

The cost differential between the two sites analyzed does not appear to warrant a concept selection; however, when reviewing the intangible factors presented in the evaluation matrix, the advantages of the "Parking Lot Site" are apparent. It should be pointed out that several construction initiatives (i.e., fuel farm, Group III taxiway, secure perimeter road, etc.) may be considered to facilitate a balance among the sites, but at the result of considerable cost.

TABLE 1

PRELIMINARY ENGINEER'S ESTIMATE
PASSENGER TERMINAL CONCEPT - "PARKING LOT SITE"
ATHENS-BEN EPPS AIRPORT

AIRFIELD TOTAL			**$341,958**
	FEDERAL	90%	**$307,762**
	STATE	0%	**$0**
	LOCAL	10%	**$34,196**
	TOTAL	100%	**$341,958**
PASSENGER TERMINAL & SITE PREP TOTAL			**$2,857,375**
	FEDERAL	varies	**$1,952,857**
	STATE	0%	**$0**
	LOCAL	varies	**$904,518**
	TOTAL	N/A	**$2,857,375**
UTILITIES TOTAL			**$34,925**
	FEDERAL	90%	**$31,433**
	STATE	0%	**$0**
	LOCAL	10%	**$3,493**
	TOTAL	100%	**$34,925**
ENTRANCE ROAD TOTAL			**$126,191**
	FEDERAL	90%	**$113,572**
	STATE	0%	**$0**
	LOCAL	10%	**$12,619**
	TOTAL	100%	**$126,191**
PARKING LOT & SITE PREP TOTAL			**$367,837**
	FEDERAL	0%	**$0**
	STATE	0%	**$0**
	LOCAL	100%	**$367,837**
	TOTAL	100%	**$367,837**
TOTAL PROGRAM			**$3,728,286**
	FEDERAL		**$2,405,624**
	STATE		**$0**
	LOCAL		**$1,322,662**
	TOTAL		**$3,728,286**

Source: The LPA Group analysis, 1998.

TABLE 2

PRELIMINARY ENGINEER'S ESTIMATE
PASSENGER TERMINAL CONCEPT - "REMOTE SITE" (ALT. A)

ATHENS-BEN EPPS AIRPORT

AIRFIELD TOTAL		**$806,516**
FEDERAL	90%	**$725,864**
STATE	0%	**$0**
LOCAL	10%	**$80,652**
TOTAL	100%	**$806,516**
PASSENGER TERMINAL & SITE PREP TOTAL		**$2,971,363**
FEDERAL	varies	**$2,055,447**
STATE	0%	**$0**
LOCAL	varies	**$915,917**
TOTAL	N/A	**$2,971,363**
UTILITIES TOTAL		**$157,861**
FEDERAL	90%	**$142,075**
STATE	0%	**$0**
LOCAL	10%	**$15,786**
TOTAL	100%	**$157,861**
ENTRANCE ROAD TOTAL		**$241,485**
FEDERAL	90%	**$217,337**
STATE	0%	**$0**
LOCAL	10%	**$24,149**
TOTAL	100%	**$241,485**
PARKING LOT & SITE PREP TOTAL		**$779,428**
FEDERAL	0%	**$0**
STATE	0%	**$0**
LOCAL	100%	**$779,428**
TOTAL	100%	**$779,428**
TOTAL PROGRAM		**$4,956,654**
FEDERAL		**$3,140,723**
STATE		**$0**
LOCAL		**$1,815,931**
TOTAL		**$4,956,654**

Note: These costs do not reflect ROW or Fee Simple acquisition for access to Lexington Road.

Source: The LPA Group analysis, 1998.

TABLE 3

PRELIMINARY ENGINEER'S ESTIMATE
PASSENGER TERMINAL CONCEPT - "REMOTE SITE" (ALT. B)

ATHENS-BEN EPPS AIRPORT

AIRFIELD TOTAL			**$806,516**
	FEDERAL	90%	**$725,864**
	STATE	0%	**$0**
	LOCAL	10%	**$80,652**
	TOTAL	100%	**$806,516**
PASSENGER TERMINAL & SITE PREP TOTAL			**$2,971,363**
	FEDERAL	varies	**$2,055,447**
	STATE	0%	**$0**
	LOCAL	varies	**$915,917**
	TOTAL	N/A	**$2,971,363**
UTILITIES TOTAL			**$141,097**
	FEDERAL	90%	**$126,987**
	STATE	0%	**$0**
	LOCAL	10%	**$14,110**
	TOTAL	100%	**$141,097**
ENTRANCE ROAD TOTAL			**$179,109**
	FEDERAL	90%	**$161,198**
	STATE	0%	**$0**
	LOCAL	10%	**$17,911**
	TOTAL	100%	**$179,109**
PARKING LOT & SITE PREP TOTAL			**$779,428**
	FEDERAL	0%	**$0**
	STATE	0%	**$0**
	LOCAL	100%	**$779,428**
	TOTAL	100%	**$779,428**
TOTAL PROGRAM			**$4,877,514**
	FEDERAL		**$3,069,497**
	STATE		**$0**
	LOCAL		**$1,808,017**
	TOTAL		**$4,877,514**

Note: These costs do not reflect ROW or Fee Simple acquisition for access to Cherokee Road.

Source: The LPA Group analysis, 1998.

TABLE 4

PRELIMINARY ENGINEER'S ESTIMATE
PASSENGER TERMINAL CONCEPT - "REMOTE SITE" (ALT. C)

ATHENS-BEN EPPS AIRPORT

AIRFIELD TOTAL			**$806,516**
	FEDERAL	90%	**$725,864**
	STATE	0%	**$0**
	LOCAL	10%	**$80,652**
	TOTAL	100%	**$806,516**
PASSENGER TERMINAL & SITE PREP TOTAL			**$2,971,363**
	FEDERAL	varies	**$2,055,447**
	STATE	0%	**$0**
	LOCAL	varies	**$915,917**
	TOTAL	N/A	**$2,971,363**
UTILITIES TOTAL			**$156,464**
	FEDERAL	90%	**$140,818**
	STATE	0%	**$0**
	LOCAL	10%	**$15,646**
	TOTAL	100%	**$156,464**
ENTRANCE ROAD TOTAL			**$188,358**
	FEDERAL	90%	**$169,522**
	STATE	0%	**$0**
	LOCAL	10%	**$18,836**
	TOTAL	100%	**$188,358**
PARKING LOT & SITE PREP TOTAL			**$779,428**
	FEDERAL	0%	**$0**
	STATE	0%	**$0**
	LOCAL	100%	**$779,428**
	TOTAL	100%	**$779,428**
TOTAL PROGRAM			**$4,902,129**
	FEDERAL		**$3,091,650**
	STATE		**$0**
	LOCAL		**$1,810,478**
	TOTAL		**$4,902,129**

Note: These costs do not reflect Fee Simple acquisition & relocation of homes along Airport Road.

Source: The LPA Group analysis, 1998.

Appendix V

COMMERCIAL TERMINAL ALTERNATIVE ANALYSIS

Table of Contents

APPENDICES

A FAA Guidelines AC 5300-13, Airport Design

B Design Aircraft

C Remote Commercial Terminal Alternative Analysis, September 1998

D Remote Commercial Terminal Alternative Analysis “Midfield Site”, December 1998

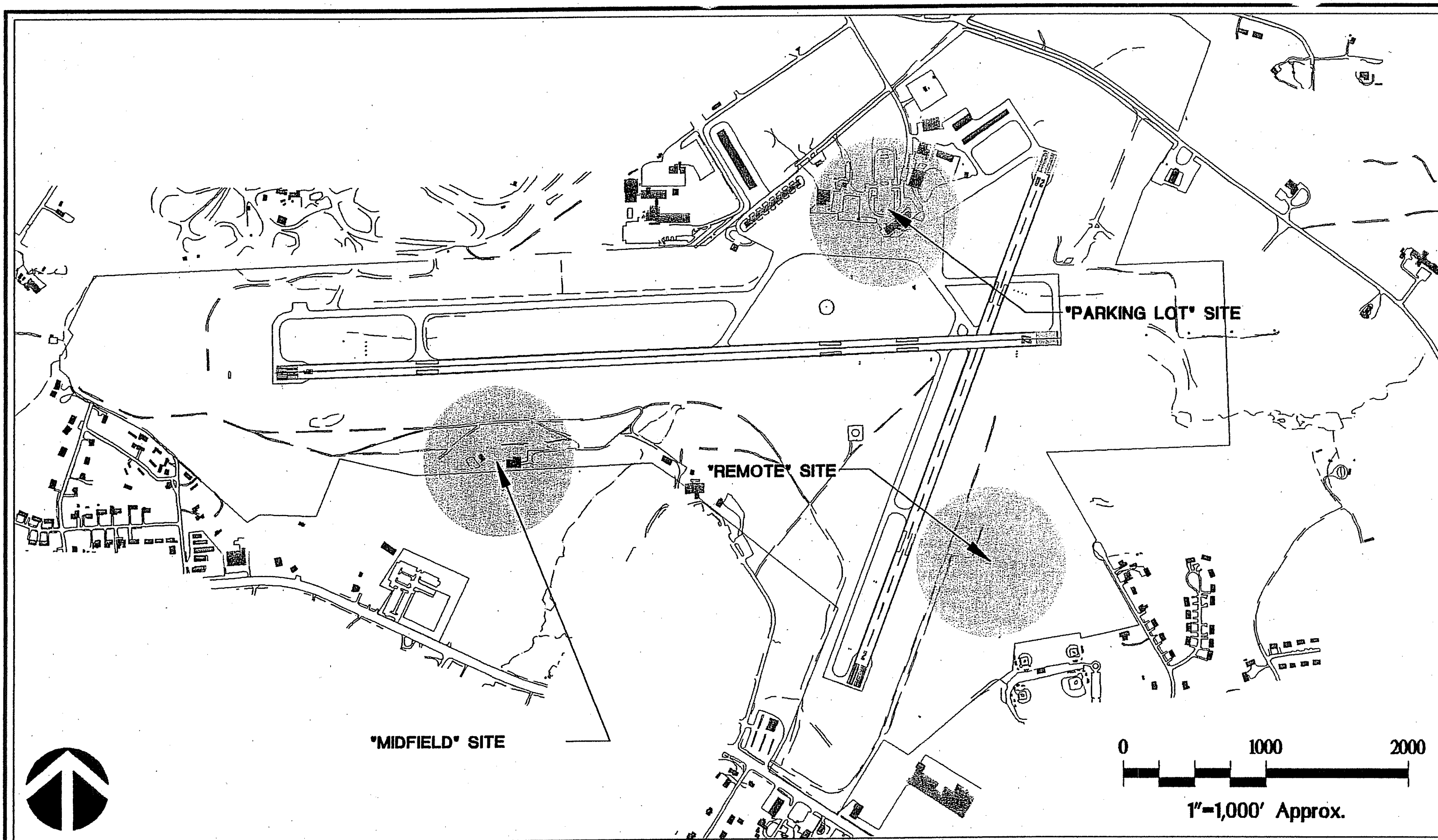
List of Exhibits

1. INTRODUCTION

As a supplement to the ongoing master plan update at Athens-Ben Epps Airport, the Athens-Clarke County Unified Government contracted with The LPA Group to conduct alternative analyses for the relocation of the existing commercial passenger terminal to alternative sites adjacent to the airport's runways. The terminal alternative analyses examined two general sites previously identified in the 1995 Master Plan Update together with a favored alternative identified within the ongoing master plan update. The sites include: (1) the "Remote Site", a site east of Runway 2-20; (2) the "Midfield Site", a site south and slightly west of the midpoint for Runway 9-27; and, (3) the "Parking Lot Site", positioned in the main parking lot northwest and adjacent to the existing commercial terminal. *(See Exhibit 1.)*

LPA's analysis developed preferred concepts that maximized the utilization of each site, factoring operational, design and development cost criteria and site conditions. *(See Appendices C and D.)* The preferred concept for each site is used for evaluation within this report. This report provides a summary comparative analysis of the preferred concepts, while addressing additional "qualitative" criteria. Additional qualitative criteria address the long-term impacts of each site beyond the 20-year planning period.

The original terminal alternative analysis reports are enclosed as Appendices C and D to this summary report. The original reports include the various site concepts evaluated and a comprehensive listing of the methodology and assumptions employed to derive the preferred concepts. Preferred concepts for each site accommodate future demand requirements of a commercial passenger terminal building and supporting infrastructure. Certain values presented in this summary report may differ from values presented in the original reports. Values presented, herein, represent the most recent and accurate accounting and measures.



ATHENS-BEN EPPS AIRPORT
COMMERCIAL TERMINAL ALTERNATIVES ANALYSIS

AIRPORT SITE MAP

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 1

2. COMPARATIVE SITE ANALYSIS

The sites presented, herein, represent a preferred concept determined by evaluating the strengths and weaknesses of developed alternatives for each site. The condition of existing sites was a significant issue in the evaluation, particularly with respect to topography. This initial site selection process isolated one specific alternative *(the "Remote Site" and the "Midfield Site")* against the recommended "Parking Lot Site" concept from the ongoing master plan update. An estimation of the program cost and funding for each preferred concept alternative was also made. Details of the assumptions and methodology used in the preferred concept determination may be found in Appendices C and D of this report.

2.1 Site Conditions

A base sheet indicating existing site conditions such as property limits, runway/taxiway conditions, Part 77 surfaces, existing adjacent development, and topography was developed. Data sources included in the ALP drawing set and additional mapping outside the Airport property limits obtained from the Planning Department of Athens-Clarke County. Discrepancies exist between the two sources and should be augmented with more detailed survey data prior to future site development.

2.2 Strengths and Weakness

The preferred Remote and Midfield sites were determined based on issues such as:

- Apron and taxiway development requirements;
- Terminal location and loop road / parking extents;
- Access road and site access location;
- Property acquisition;
- Consideration of site conditions, especially topography; and,
- Effect on neighboring land uses:
  - Residential areas;
  - Park (*recreation field*) facilities; and,
  - Commercial areas.

2.2.1 Remote Site

The preferred concept works within the Airport property limits; however, the site access is via County property at the recreational complex (*Satterfield Park*). The apron location is illustrated in Exhibit 2. Apron access is provided by an extension of Taxiway B2. The future taxiway access has been modified to reflect Design Group III criteria. Three alternate ground access routes *(A, B, and C)* were developed for this concept.

Significant strengths include:

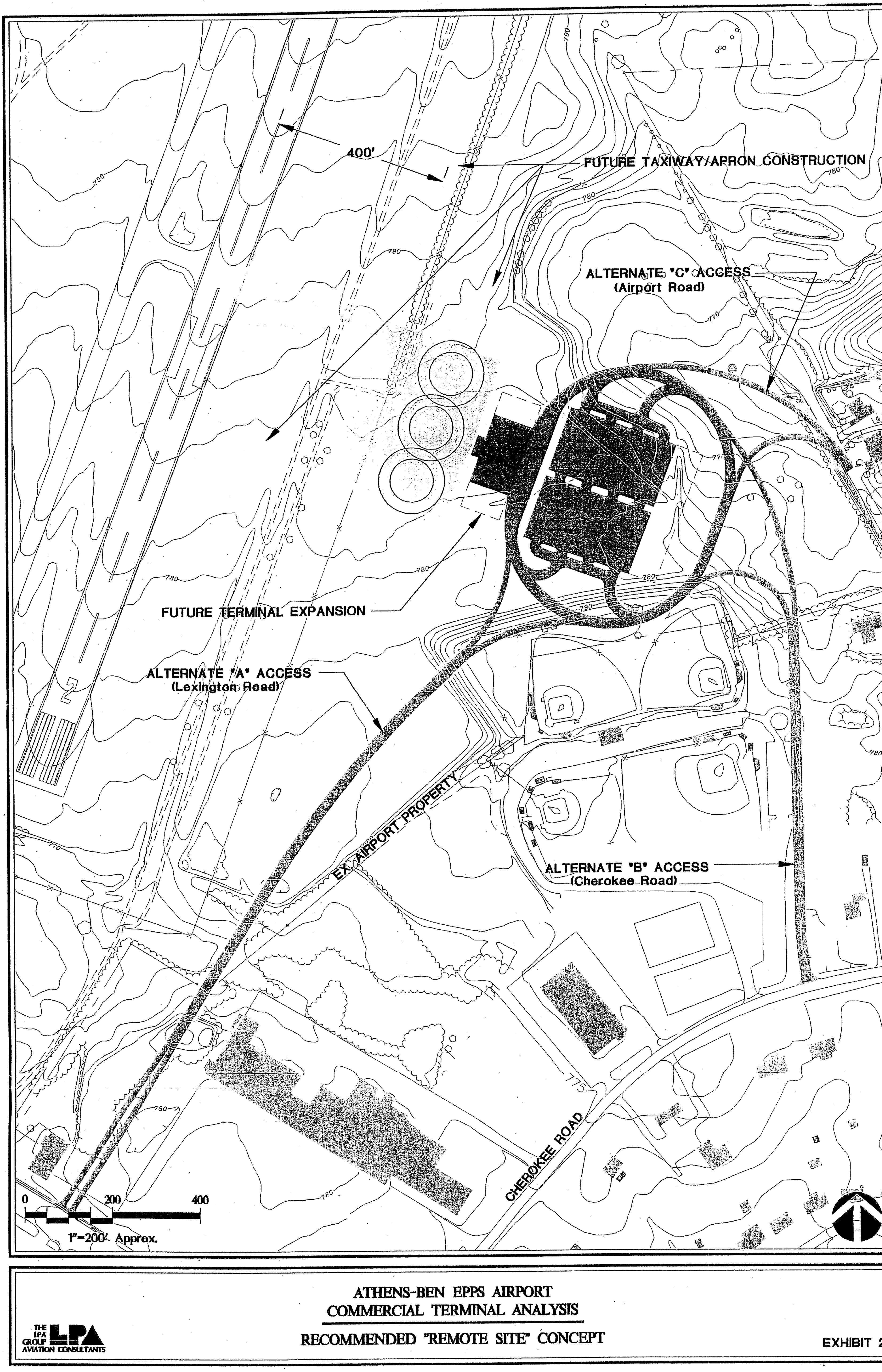
- Consolidation of parking requirements reduces the area of the site development (*landside*) by approximately one-third.
- Loop road perimeter is further reduced from 2,350 linear feet to 1,850 linear feet. The change in access points increases the length of the entry/exit road from 650 feet to 1,650 feet. This may be more acceptable and cost effective than use of the Airport Road extension.

Significant weaknesses include:

- Additional costs to replace parking at the recreational complex may be unacceptable.
- Significant landside development occurs in unfavorable topography.
- Impact on adjacent Park and residential land uses.

2.2.2 Midfield Site

The preferred concept consolidates all of the future passenger terminal development and simplifies property acquisition. The commercial frontage (*except for a 150-foot right-of-way*) could be left as an out-parcel, or the property could be retained for other airport/County uses. The site access would be provided by an access road perpendicular to the existing Shady Brook Drive entrance point. The apron location and access are depicted in Exhibit 3. The future taxiway access has been modified to reflect Design Group III criteria and appropriate clearances.

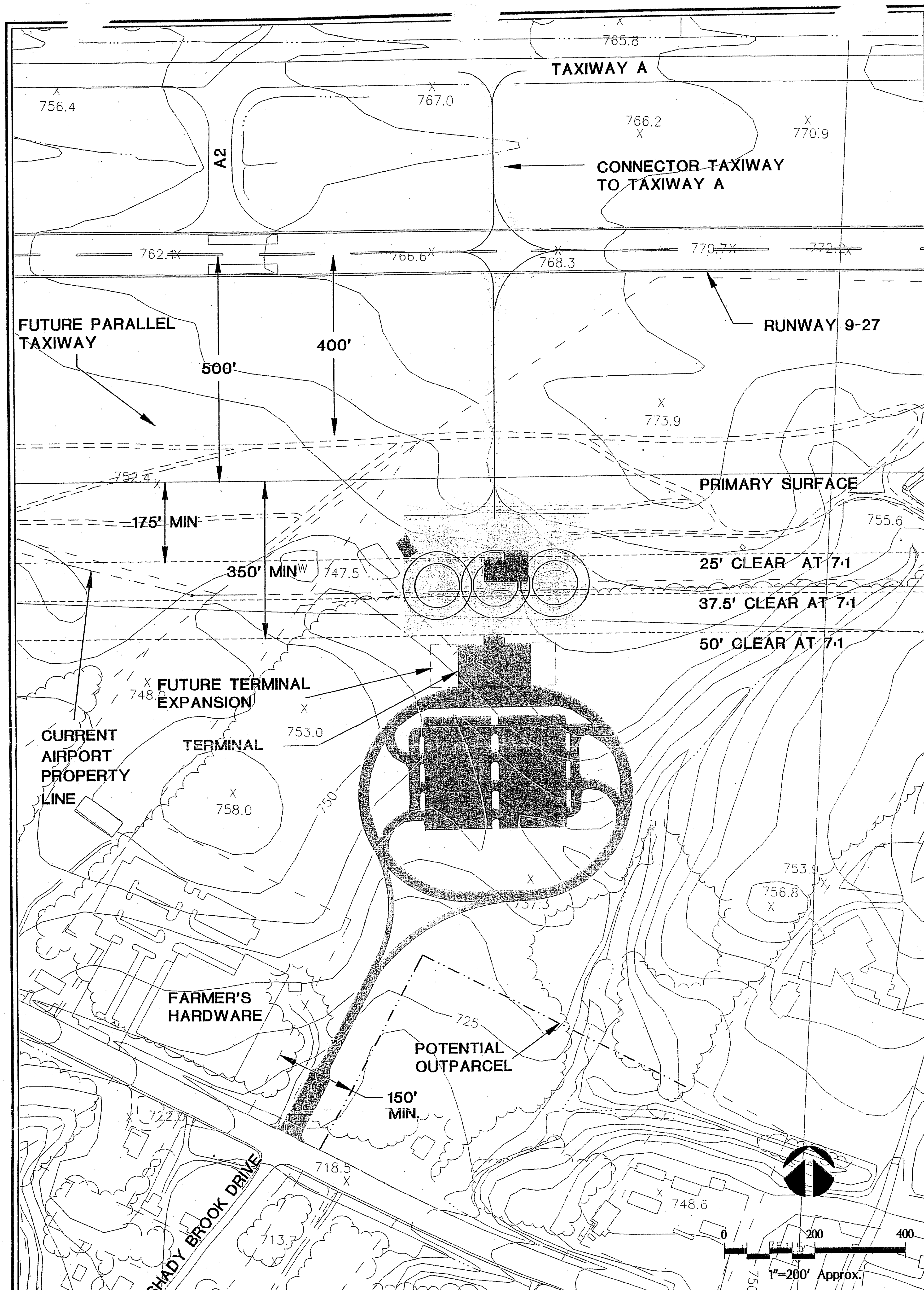


THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
COMMERCIAL TERMINAL ANALYSIS

RECOMMENDED "REMOTE SITE" CONCEPT

EXHIBIT 2



ATHENS-BEN EPPS AIRPORT

COMMERCIAL TERMINAL ANALYSIS

RECOMMENDED "MIDFIELD" SITE CONCEPT

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 3

Significant strengths include:

- Impact to adjacent residences is reduced.
- Negotiations for property acquisition will be simplified as only one property is affected. Adjacency to existing County developments/functions could have future mutual benefits.
- Consolidation of parking requirements reduces the area of landside site development by approximately one-third.
- Loop road perimeter is further reduced from 2,350 linear feet to 1,750 linear feet. The change in access points increases the length of the entry/exit road from 500 feet to approximately 850 feet.
- Increases Airport's revenue producing property.
- Increases the expansion flexibility for general aviation north of Runway 9-27.

Significant weaknesses include:

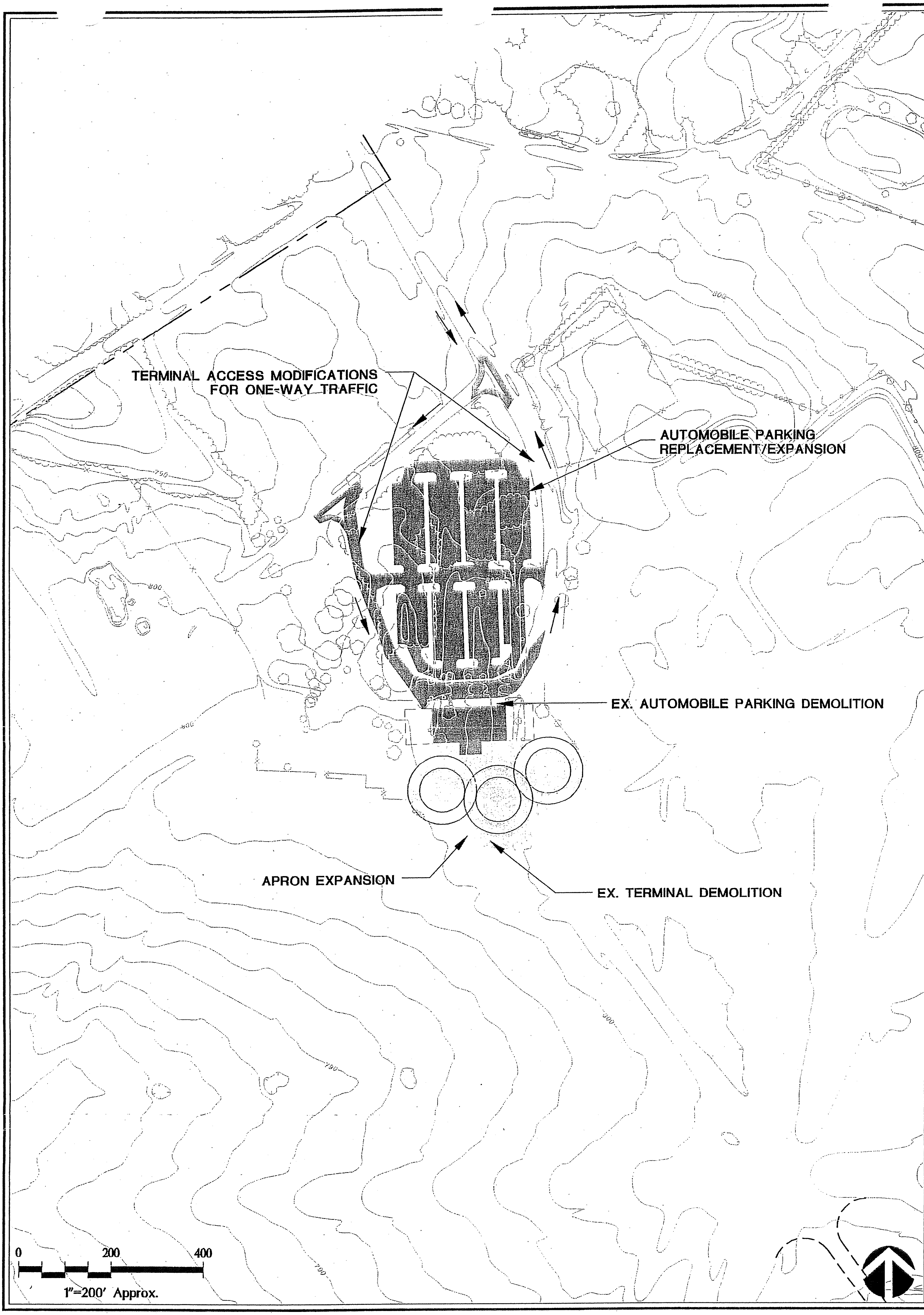
- Significant landside development occurs in unfavorable topography.
- Additional taxiway development to access existing Taxiway A may be necessary.
- Logistics of aircraft servicing (i.e., fueling) may be complicated in the near-term.

2.2.3 Parking Lot Site

This development site was recommended from the alternatives development phase of the ongoing airport master plan. The preferred concept includes development of a new terminal building on the existing site in the current parking lot area as depicted in Exhibit 4. Through various concept refinement efforts, the Unified Government approved a total terminal area plan in 1998.

Significant strengths include:

- Little or no impact on adjacent residential, recreational, and commercial uses.
- Landside development costs related to earthwork are greatly reduced.
- No additional property acquisition is required.
- No additional taxiway development is necessary.
- Loop road length requires only an additional 850 feet.



ATHENS-BEN EPPS AIRPORT
COMMERCIAL TERMINAL ANALYSIS

MODIFIED "PARKING LOT" CONCEPT

THE LPA GROUP
AVIATION CONSULTANTS

EXHIBIT 4

Significant weaknesses include:

- Loss of leaseable space when the existing terminal is demolished.
- Constrains long-term expansion of general aviation, corporate facilities, and commercial passenger terminal.
- Fails to provide the airport with an easily identified and dedicated entrance to the commercial terminal.

2.3 Program Cost and Funding

The LPA Group prepared detailed cost estimates for the "Parking Lot Site," the "Midfield Site," and the "Remote Site." Those costs were grouped into major construction packages for funding analysis reasons and are presented in Tables 1 - 4 of Appendix C, and Tables 1 and 2 of Appendix D. The estimated funding eligibility breakdowns are also provided. Preliminary estimates for the site alternatives follow:

TABLE 1
TOTAL PROGRAM COST– COMMERCIAL TERMINAL ALTERNATIVES
PRELIMINARY ENGINEER'S ESTIMATE
(millions)

	"Remote Site"	"Parking Lot Site"	"Midfield Site"
FEDERAL	$3.07 – $3.14	$2.41	$3.68
STATE	$0	$0	$0
LOCAL	$1.81 – $1.82	$1.32	$2.35
TOTAL:	$4.88 – $4.96	$3.73	$6.04

Source: *The LPA Group, Inc analysis 1998*

The preliminary estimates result in a total cost differential between the "Parking Lot Site" and the "Remote Site" of $1.1 - 1.2 million dollars. The cost differential between these two sites analyzed does not appear to warrant a concept selection. Several construction initiatives (i.e., fuel farm, Group III taxiway, secure perimeter road, etc.) may be considered to facilitate a balance among the sites, but at the result of considerable cost. A similar comparison between the "Parking Lot Site" and the "Midfield Site" results in a total cost differential of approximately $2.3 million dollars. A great deal of the cost variance is a result of earthwork requirements and necessary property acquisition.

The local share of program costs may be financed through user fees, airport revenues, County funds, governmental bond issues, long-term loans, SPLOST allocations, or private investment. The local share for the "Parking Lot Site" is approximately $1.32 million. The local share of the "Midfield Site" and "Remote Site" total costs are approximately $2.35 and $1.82 million respectively. The difference in local share between the "Parking Lot Site" and the "Midfield Site" is roughly $1 million. The cost differential between the "Midfield" and the "Parking Lot" sites could potentially be offset through SPLOST or other creative financing methods. It should be pointed out that several construction initiatives (i.e., fuel farm, partial parallel taxiway, etc.) may be considered to strengthen the operational aspects of the "Midfield" site to the "Parking Lot Site", but at the result of considerable cost.

The difference between the "Parking Lot Site" and the "Remote Site" is considerably less at roughly $500,000. The cost differential between the two sites analyzed does not appear to warrant a concept selection; however, when reviewing the intangible factors, the advantages of the "Parking Lot Site" are apparent. It should be pointed out that several construction initiatives (i.e., fuel farm, Group III taxiway, secure perimeter road, etc.) may be considered to facilitate a balance among the sites, but at the result of considerable cost.

Long-term advantages of the "Midfield Site," not available with the "Parking Lot Site" may outweigh the difference in construction cost. Advantages of the "Midfield Site" include the ability to lease commercial properties along Lexington Road and incorporating revenue producing parking at the commercial terminal. Airport revenues realized from the automobile parking facilities may range from $75,000-200,000 annually, depending on lot utilization and fee structure.

3. EVALUATION

For the purpose of evaluation, The LPA Group identified a phase of the total terminal area program *(per airport master plan)* representative of the passenger terminal construction (*reference Exhibit 4*). This phase of construction compares equitably to the concepts previously analyzed for the remote site and midfield sites, and thus permits direct comparison. The "Parking Lot Site," "Remote Site," and "Midfield Site" are comparable facilities, in terms of size and function.

The features of the "Parking Lot Site" development were compared with the preferred "Remote Site" and "Midfield Site" developments. The comparison was based on four categories: Operational Criteria; Design Criteria; Development Cost, and Qualitative Criteria.

3.1 Operational Criteria

The operational criteria that follow were selected to assess the impact of site alternatives on the safety and efficiency of airfield operations.

3.1.1 Taxi Distances

The "Parking Lot Site" is accessed from Taxiway A, which parallels Runway 9-27 (*the only commercial operational runway*). Access to the parking apron is available from either end of Runway 9-27, and a bypass taxiway (*A2*) is available.

The "Remote Site" is accessed by Taxiway B, which parallels Runway 2-20. Runway 2-20 is not currently designed for commercial operations, nor is it easily modified for commercial use. The runway to taxiway separation is not suitable for commercial operations. This will require temporary closure of Runway 2-20 by the tower or construction of a new partial taxiway on the east side of Runway 2-20, with adequate lateral separation distances for larger commercial aircraft. The most common approach (*to the Runway 27 end*) would require a long and circuitous taxi path to reach the alternative site apron.

The "Midfield Site" is accessible by Taxiway "A", which parallels Runway 9-27 or from the runway by direct exit to the proposed connector taxiway east of Taxiway "A2" for aircraft capable of holding short. Aircraft taxi access to the proposed site is excellent for aircraft arriving on Runway 27 (*precision end*) with optimal short taxi distances. However, arrivals on Runway 9 require considerable back taxiing to the commercial terminal area. This is further complicated by the curved segment of Taxiway "A" south of the existing terminal. Since the most common approach is to the Runway 27 end, a short and efficient taxi path will reach the "Midfield Site" apron. A proposed 1000-foot extension to Runway 9 may alter the need for and utility of a parallel taxiway south of the runway to provide access for the midfield commercial apron.

3.1.2 Access to Fuel and Maintenance

The "Parking Lot Site" is located near the existing fuel farm and the limited maintenance facilities located on the north side of Runway 9-27.

The center of the "Remote Site" apron is approximately 2,853 feet away from these facilities. Access to the "Remote Site" apron by fuel trucks would be via the runway/taxiway systems because no perimeter road exists.

The center of the "Midfield Site" apron is approximately 2,200 feet away from these facilities. Similarly, access by fuel trucks to the new apron site would be via the runway/taxiway system because no secure perimeter road exists. Alternatives would be to develop additional fuel facilities to support commercial operations or construct a west side secure perimeter road.

3.1.3 Ability to Accommodate Group III Aircraft

The "Parking Lot Site" apron is accessible by taxiways with a 400-foot runway to taxiway separation, which is suitable for aircraft of Group III and larger as indicated in AC 150/5300-13, Airport Design. Adequate area for taxilane Object-Free Areas (*OFA's*) for Group III aircraft are available throughout the existing apron. Some tie-down spaces may need to be relocated.

The "Remote Site" requires a new partial parallel taxiway to accommodate Design Group III aircraft. The "Remote Site" apron has been configured to accommodate the Group III requirements, from the standpoint of lateral separation from the runway.

The "Midfield Site" requires a connector taxiway to Taxiway "A" to facilitate a runway crossing. Additionally as previously discussed, a new partial parallel taxiway to accommodate Design Group III aircraft and reduce runway crossings, would be desirable as operations increase or as the runway length is expanded. The "Midfield Site" apron has also been designed to accommodate the Group III requirements.

3.1.4 Runway Crossing Traffic

Access to the "Parking Lot Site" from the primary approach *(Runway 27 end)* requires no runway crossings. Access to/from the Runway 9 end requires only crossing Runway 2-20.

All access to the "Remote Site" requires crossing Runway 2-20, as well as Runway 9-27.

All access to the "Midfield Site" requires crossing Runway 9-27 and potentially Runway 2-20 if the full length of the runway is needed. A future parallel taxiway south of Runway 9-27 may reduce, but not eliminate this crossing traffic.

3.1.5 Construction Phasing Requirements

Phasing of construction is a significant issue at the "Parking Lot Site." The building location within the existing parking lot allows for new construction while the terminal remains accessible. A coordinated schedule of site improvements to replace the road and parking is required. Demolition of the existing building and apron in-fill will complete the process; however, the construction sequence will impact commercial operations throughout the building program.

Construction phasing is less of an issue at the "Remote Site" and "Midfield Site." In the case of the "Remote Site" some construction operations could affect the use of Runway 2-20. With the "Midfield Site", construction of the connection taxiway to the new apron could affect the use of Runway 9-27 and Taxiway "A." Both sides would require coordination of the utility extensions with on-site development. Otherwise, a logical sequence of construction would allow all improvements to be occupied and operational at the same time for both the "Remote" and "Midfield" sites.

An overview of the comparison of operational factors is contained in the Comparative Concept Analysis Chart depicted in Exhibit 5.

3.2 Design Criteria

The "suitability" of each site alternative with respect to location, safety and security, and impact on existing development was evaluated using the design criteria outlined below.

3.2.1 Site Accessibility

The existing commercial terminal and proposed "Parking Lot Site" development are accessed via Winterville Road from Lexington Road (*Highway 78*). Proposed improvements may create a more direct link to the Airport in the future from the Athens Loop (*Highway 10*) by extension of Athena from Olympic Drive.

The "Remote Site" would be accessed by a dedicated road segment from Lexington Road, Cherokee Road, or Airport Road. This site is somewhat more visible and more directly accessible from Highway 78.

The "Midfield Site" would be accessed by a new private road directly off Lexington Road. This site would offer the potential for high visibility from Highway 78. The new road would form a perpendicular alignment with Shady Brook Drive across Highway 78. Traffic improvements such as deceleration lanes and/or signalization at the intersection could be accommodated when and if the traffic volume warrants.

3.2.2 Site Security and Separation

A key issue in security is the ability to prevent unauthorized persons from entering the Air Operations Area (*AOA*). Requirements of FAR Part 107 must be met for scheduled passenger service. Public charters (*those in which any part of the cost is borne directly or indirectly by individual passengers*) must also meet these requirements.

The "Parking Lot Site" would offer security by marginally improving the definition of the commercial service apron from adjacent general aviation uses and business aircraft uses. The area from the tower west and from the terminal site north would be outside of the commercial operations area.

Both the "Remote Site" and the "Midfield Site" maximize the securability of the commercial apron by total removal of the commercial activity from other Airport uses. However, neither FAR Part 107 nor the FAA "Recommended Security Guidelines for New Airport Construction and Major Renovations" dictate such a total separation of uses.

3.2.3 Part 77 / Safety Criteria

The height clearances and primary surface locations for each site were carefully considered during the development of each respective layout.

Both the "Parking Lot Site" and the "Remote Site" comply with criteria for object-free areas. The aprons allow for parking of aircraft with total heights up to approximately 35 feet, allowing for a reasonable mix of Design Group III aircraft. In addition, the "Parking Lot

Site" has some ability to handle larger/taller aircraft from the Design Group IV category.

The apron for the "Midfield Site" should be carefully reviewed during design. The apron should be built as close as prudent to Runway 9-27 to minimize earthwork requirements while providing the necessary clearances. The apron should allow for parking of aircraft with total tail heights up to approximately 37.5 feet, which allows for a reasonable range of design Group III aircraft (*see the Probable Aircraft Design Criteria table in Appendix B*).

3.2.4 Future Expandability / Flexibility

The "Parking Lot Site" has reasonable room for expansion of the building and parking. Airside limitations may result in the future from adjoining general aviation uses. In comparison, room for growth of all elements is present at the "Remote Site." The critical limitations to expansion may be keyed to topographic constraints.

Room for growth of all elements is also present at the "Midfield Site." Any limitations on expansion may largely be due to topography constraints. Additionally, an existing pond and intermittent stream could become a constraint to major easterly expansion in the future.

3.2.5 Effect on Residential Uses

Development at the "Parking Lot Site" does not create any impacts to existing residential uses. Development at the "Remote Site" may impact the residents along Airport Road and areas to the east, depending on the access alternative chosen. These effects include aircraft engine noise from taxiing and run-up operations, spillover light emissions from apron lighting, and increased automobile traffic in the vicinity.

Development at the midfield site may result in impacts to the residents of the small subdivision area to the west. These effects could include engine noise from taxiing and spillover from apron lighting. Due to this area being over 2000 feet from the proposed apron and near a heavily traveled highway, the impacts are believed to be minimal. Construction of a parallel taxiway from the current end or proposed extension of Runway 9 could increase the noise impacts on this residential area.

3.2.6 Effect on Recreational/Governmental Uses

Development at the "Parking Lot Site" does not appear to have an impact on recreational or other public uses.

Development at the "Remote Site" may create displacement and relocation of parking and access roads, increase adjacent traffic, and require site grading and development in close proximity to the existing recreational fields, depending on the access alternative chosen. The potential for relocating Satterfield Park may need to be a future consideration.

Development at the "Midfield Site" will increase public traffic adjacent to the County Farm area, and require site grading and development in close proximity to the existing county complex. However, beneficial effects from locating public facilities on adjacent land and controlling development in the immediate area of the County Farm could result. The proposed development leaves adequate buffering between adjacent uses and a portion of the property required could be made available for other County uses.

3.2.7 Effect on Commercial Uses:

Development at the "Parking Lot Site" has no effect on commercial uses. Assuming that the "Remote Site" access utilizes the route indicated by Alternate B or C, no commercial impacts would result by this development; however, Alternate A would require R.O.W. acquisition (*easement or fee simple*) for the terminal entrance road.

The "Midfield Site" affects and is affected by adjacent commercial uses, principally Farmer's Hardware. The added traffic impact is appropriately handled by Highway 78. It appears desirable for the County to control the entire property required as opposed to permitting further commercial development along the Highway 78 frontage.

An overview of the comparisons of Design Criteria is shown in the Comparative Concept Analysis Chart.

3.3 Development Cost Criteria

The following criteria were used to evaluate the costs associated with developing each site alternative.

3.3.1 Apron Development Requirements

The "Parking Lot Site" requires development of approximately 6,300 square yards of apron to in-fill the previous terminal location. The "Remote Site" requires development of approximately 11,000 square yards of new pavement for parking and maneuvering taxilanes. The "Midfield Site" requires development of approximately 11,100 square yards for the construction of apron parking and maneuvering taxilanes.

3.3.2 Taxiway Development Requirements

No additional taxiways are required for access to the "Parking Lot Site." The "Remote Site" requires, as a minimum, a connector taxiway to Taxiway B (*in alignment with Taxiway B2*), measuring approximately 300 feet in length. As discussed in the operational criteria, a partial parallel taxiway (*1,450 feet in length*) with appropriate separation may also be needed in the future to prevent temporary closure of Runway 2-20 while commercial aircraft taxi to the terminal. The partial parallel taxiway would also be necessary during an air traffic control tower closure to prevent permanent closure of Runway 2-20.

The "Midfield Site" requires at least a connector taxiway to Runway 9-27, measuring approximately 500 feet in length, and to Taxiway "A," measuring approximately 300 feet in length. As discussed in the operational criteria, a partial parallel taxiway (*1,600 feet in length to the Runway 9 end*) with appropriate separation may also be desirable in the future.

3.3.3 Loop Road Length

The "Parking Lot Site" development would employ a new loop road length of 850 linear feet, while the remainder of the loop utilizes existing road geometry. This allows for terminal parking and other parking uses to be combined. The "Remote Site" loop road measures 1,700 linear feet, while the "Midfield Site" loop road is 1,750 linear feet.

3.3.4 Entry /Exit Road Length

The "Parking Lot Site" does not require a new entry/exit road during the initial phase of development, rather minor enhancements to the turn geometry. The "Remote Site" requires 1,850, 1,350, and 650 linear feet of new road for Alternate A, B, and C, respectively to connect the loop to the chosen access point. It should be noted that Alternate C may require an overlay and nominal widening of Airport Road.

The "Midfield Site" requires 850 linear feet of road to connect the loop road to Lexington Road/Highway 78. The road construction at the "Midfield Site" is more costly due to the topography constraints

3.3.5 Parking Development Requirements

The "Parking Lot Site" must develop 240 spaces as forecast in the 20-year demand, and additional spaces dislocated by the new apron (*near the FAA tower*). The "Remote Site" requires the same 20-year demand parking, and may require the potential replacement of recreation lot parking displaced by the entry/exit road under access Alternate B. In comparison, the "Midfield Site" requires the same 20-year demand parking; however, no additional parking displacements occur. All parking at the "Midfield Site" is new construction.

3.3.6 Demolition Costs

The "Parking Lot Site" requires demolition of the existing 7,866 square foot terminal building and portions of the existing loop road and parking. Demolition at the "Remote Site" may only be limited to an automobile parking area at Satterfield Park *(access Alternate B)* and limited clearing and grubbing of the development area. Demolition at the "Midfield Site" is limited to clearing and grubbing of the development area, and removal of small farm structures.

3.3.7 Topography / Earthwork Requirements

The "Parking Lot Site" is relatively flat, with most earthwork requiring re-grading or under cutting of the site. Apron and automobile parking in some areas are developed on previously paved areas.

Notably the accommodation of existing terrain was a key element in developing concepts for the "Remote Site." Development area is limited due to the drop-off from Runway 2-20, east, toward the existing airport property line. At some portions of the site, 10 to 15 feet of fill will be required. The amount of grade differential that can be made up in the slope of the taxiway and apron is limited. Roads and parking are somewhat more flexible in their ability to accommodate sloping topography.

The accommodation of existing terrain was also a key element in developing concepts for the "Midfield Site." Development area is limited due to the drop-off from Runway 9-27 toward the property line to the south. At some portions of the site, 15-20 feet of fill will be required.

As noted previously, the amount of grade differential that can be made up in the slope of the taxiway and apron is limited, while roads and parking are more flexible in their ability to accommodate the current sloping topography.

3.3.8 Land Acquisition Requirements

The "Parking Lot Site" requires no additional land acquisition. The "Remote Site" assumes use of the access points shown on Exhibit 2. Access Alternate A may require either an easement or fee simple R.O.W. purchase to tie into Lexington Road. Alternate B may impact the eastern parking area of Satterfield Park to provide access via Cherokee Road. The park is currently owned by the County, lending consideration to a land swap or mutual use agreement between the park facility and the Airport. Alternate C, which would route traffic immediately adjacent to residential development, may necessitate the acquisition and relocation of approximately 10 residences in the future.

The "Midfield Site" requires the purchase of the remaining portion of the Beussee tract, approximately 38.5 acres. The cost of this property acquisition is a major consideration in the decision analysis of relocation to the "Midfield Site."

3.3.9 Leaseable Space Loss

The "Parking Lot Site" requires demolition of the existing terminal. The current building leases out 2,900 square feet to the Georgia Flight Academy and for travel agent offices. The terminal building program would include replacement space for the travel agent offices. No replacement space for Georgia Flight Academy lease area is included.

The "Remote Site" development would leave the existing terminal in place. Therefore, the existing 2,900 square feet leased remains in use and approximately 5,000 square feet of additional space would be available for leasing. Some renovations would be required to the existing terminal prior to leasing.

The "Midfield Site" development would leave the existing terminal in place. Therefore, the existing 2,900 square feet of leaseable space remains in use and approximately 5,000 square feet of additional space would be available for leasing. Some renovations would be required to the existing terminal prior to leasing.

3.3.10 Utility Corridor Extension

The existing terminal site requires modification to utilities (*water, gas, power, and communications*) and the future connection to County sewer. All existing facilities, the new terminal, and other planned improvements can share upgrades. This spreads the costs to various projects and tenants.

Development of the "Remote Site" would require establishing and/or extending utilities from Cherokee Road or Highway 78 to the site in most instances.

Development of the "Midfield Site" would require extending utilities from Lexington Road to the site development area. Adequate capacity for water and sewer should be available for the proposed development at the "Midfield Site."

An overview of the comparisons of Development Cost Criteria is shown in the Comparative Concept Analysis Chart.

3.4 Qualitative Criteria

In addition to comparison of the previous criteria, the Airport shall consider certain quality issues that will effect how well the Airport is able to fulfill its mission of service to the community. Goals include promoting development for the community, income production for the Airport, and improved passenger convenience. All of these need to be considered, not only in the context of the 20-year planning window, but beyond that horizon. These criteria reflect "big picture" considerations and assure that a terminal is the optimal land-use for the selected site.

3.4.1 Ability to Accommodate Growth

The "Parking Lot Site" has been studied in detail during the Master Plan Update for the ability to meet the demand requirements for 20 years and beyond. The draft master plan drawing indicates the ability to incorporate the commercial terminal, general aviation terminal, support facilities, and additional T-hangar and corporate hangars within the existing area *(Exhibit 4)*. Airfield work is limited to apron expansion and a 1000-foot extension of Taxiway B to provide a full parallel taxiway and ultimate apron expansion. However, significant redevelopment of structures, roads and parking, and utilities are required to meet the planned build-out. Ultimately, there will be a number of airside uses competing for a fixed amount of space, of which the expansion of one may limit the future expandability of the other.

The "Remote Site", as previously discussed, has significant limitations for use as a commercial terminal site due to operational issues and impacts to adjacent residential development. It does appear to offer future flexibility as a site for corporate hangars that need larger land and building areas and that may prefer a more private secure setting and restricted access.

The use of the "Midfield Site" allows space for the commercial terminal without future conflicts. Incorporation of this site into the long-term development of the airport maximizes the utilization of airside frontage, while increasing available property for revenue generation. The "Remote Site" can remain available for the corporate uses described above. The existing terminal area can be devoted to general aviation use. The existing roads, parking, and apron provide a significant incentive to future general aviation development.

3.4.2 Income Production Potential

The goal of the Airport is to become self-sustaining *(or income producing)* while at the same time meeting the needs of the community. The existing commercial terminal site's income potential is mainly derived from fuel sales, building and ground leases, and concession leases. The use of the "Midfield Site" or "Remote Site" increases the feasibility of revenue producing parking, and increases in concession revenues from rental car facilities. The "Midfield Site" also has potential income from the lease of ground or buildings along the Highway 78 commercial strip. The collateral value of the County directing development and creating a buffer near the extensive County Farm facility has an economic impact to the community, even though it may not become income producing to the airport. Potential negative impacts on the Airport's commercial passenger enplanements and general aviation operations will exist during a two to three year construction cycle at the "Parking Lot Site." The potential lies that construction sequencing may affect commercial operations with the "Parking Lot Site" and thereby, reduce fuel sales and landing fees to the airport. As previously presented, construction impacts associated with the "Remote Site" and "Midfield Site" are less significant, to the point of being a non-factor.

3.4.3 Impact on Future General Aviation Expansion

The success of the Airport in the general aviation market depends on a number of factors. These include the runway and taxiway systems *(including lighting and navigational aids)*, apron availability for itinerant operations, general aviation terminal facilities, hangar facilities, maintenance facilities, flight schools, charter operations, fuel availability and cost, and convenient access to the surrounding area. Athens currently competes with a number of airports in the surrounding area for this general aviation market.

The relocation of the commercial terminal to the "Midfield Site" can have an effect on some of the market factors listed above. The "Midfield Site" allows for conversion of portions of the existing apron to general aviation use. The current terminal building becomes available for use, potentially for the expansion of Georgia Flight Academy's current lease space. The existing roads and parking become available to serve a new general aviation terminal and expanded hangar facilities.

The "Remote Site" offers the same opportunity for general aviation expansion at the existing site as the "Midfield Site." Unlike the "Remote and Midfield Sites," the "Parking Lot Site" does not offer a vast area for expansion. Though the "Parking Lot Site" appears to provide a reasonable area to accommodate growth, the "Parking Lot Site" would face limitations sooner given its airside limitations resulting from adjoining uses. Future general aviation expansion beyond the 20-year planning period could hinge on future land use decisions at the "Parking Lot Site."

3.4.4 Passenger Convenience

Passenger convenience requires an easily used and properly located terminal area. Variety of flight times, travel time to alternate points of departure, acceptable aircraft, and competitive pricing, are significant features in decision-making by travelers. In the 1995 Master Plan Update, it was noted that Athens captures only 20 percent of Clarke County's potential enplanements. With the proximity of Atlanta-Hartsfield International, utilization of Atlanta will always be a tremendous influence on travel decisions. A terminal facility that includes space for a second airline could help attract the second airline tenant. However, new entrants to a market and the resulting competition are not necessarily influenced by the use of one site over another.

There are factors that the terminal location may impact. The current intermingling of circulation and parking for general aviation with the commercial terminal creates confusion, especially for the occasional traveler. Improvements to the road and parking at the "Parking Lot Site" define and separate the different uses to some extent. A separate commercial facility at the "Remote or Midfield Sites" offers a much more straightforward solution. "The Midfield Site" offers the clearest circulation connection to parking, rental cars, and bus transportation. The proposed location on Highway 78 offers access to the Highway 10 loop and to Highway 316 for convenient access to the surrounding market areas.

3.4.5 Linear Airside Frontage Available/Acreage Efficiency

An analysis of the existing property at Athens-Ben Epps Airport was conducted to ascertain two elements which could be utilized to identify the maximized level of available property for aviation-related development: 1) linear airside frontage and 2) acreage.

The current airport layout, if not hindered by external factors such as existing structures, roadways, adjacent property ownership, etc., would be able to provide upwards of approximately 26,000 linear feet (*LF*) of airside frontage available for aviation-related facilities, thus maximizing the airport's use and function. Given the existing property boundary and outside constraints, only 25% of this area is usable. Neither the "Remote or Parking Lot Sites" would alter this utilization percentage. The "Midfield Site", however will provide an additional 1,600-1,700 LF of airside frontage increasing the utilization percentage to nearly 32%.

A similar analysis was performed for the airport acreage. Total land area occupied by the airport is approximately 450 acres, in accordance with the currently approved Airport Layout Plan. Of that acreage, approximately 72.5 acres are available for aviation-related development. Neither the "Remote or Parking Lot Sites" would alter the total acreage available for the long-range expansion of aviation-related functions and facilities. On the contrary, the "Midfield Site" would add to the available acreage by approximately 38.5 acres, resulting in a significant increase. This additional property would increase the developable and potential revenue-generating property, by over 53%, which is substantial given the obvious constrained nature of existing lands.

4. CONCLUSIONS AND FINDINGS

A detailed evaluation comparing the proposed commercial terminal sites is shown in Exhibit 5. Sites were evaluated on technical merits and on qualitative criteria. A point system was utilized to quantify key factors in order to gauge each site against the others. Totals provide the highest ranked of the proposed sites.

The tabulation of all ratings point to marginal advantages (*scoring of 107 versus 102*) with the "Midfield Site" compared to the "Parking Lot Site." The "Remote Site" is the least favorable option with a total score of 87. It should be noted that based on "technical" merits *(operational, design and development cost criteria)*, the "Parking Lot Site" marginally outscores the "Midfield Site," 86 to 82. The final difference results from factoring potential qualitative impacts to the Airport.

In addition to subjective evaluation previously presented, The LPA Group prepared detailed cost estimates for the "Parking Lot Site," the "Midfield Site", and the "Remote Site." *(See Table 1.)* The preliminary estimates result in a total cost differential between the "Parking Lot Site" and the "Midfield Site" of approximately $2.3 million dollars. A great deal of the cost variance is a result of earthwork requirements and necessary property acquisition. Total cost differential between the "Parking Lot Site" and the "Remote Site" is $1.1 - 1.2 million.

4.1 Recommendation

Based on long-term advantages, the "Midfield Site' is the recommended site for future development of a commercial terminal at Athens-Ben Epps Airport. Operationally, very few advantages exist between the "Midfield Site" and the "Parking Lot Site." A midfield site will afford the County the intangible merits of convenient landside access, a desirable new front door appeal for arriving passengers, as well as long-range expandability for commercial aviation and general aviation to the south and north of Runway 9-27, respectively.

Several construction initiatives *(i.e., fuel farm, partial parallel taxiway, etc.)* would further strengthen the operational aspects of the "Midfield Site," but with added cost. Two long-term advantages of the "Midfield Site," which are non-existent at the "Parking Lot Site," would be the availability of leaseable commercial properties along Lexington Road and the potential for revenue producing vehicle parking at the commercial terminal. Airport revenues realized from the automobile parking facilities may range from $75,000-200,000 annually, depending on lot utilization and fee structure. This aspect alone may outweigh the difference in construction cost between the two sites.

A key determinant of which site to construct a new commercial terminal at Athens-Ben Epps Airport will be the ability of the County to finance the proposed improvements. Earlier reports *(See Appendices C and D)* provided cost estimates which factored in funding eligibility for the proposed improvements. Though the construction packages reveal the areas primarily eligible for federal funding assistance, funding terminal buildings improvements is often a low priority of the Airport Improvement Program *(AIP)*. Therefore, the airport should anticipate to bear the burden for the landside components of the development program, with AIP grants assisting airside development. Potential alternatives to AIP funds include Passenger Facility Charges *(PFC)*, secured airport revenues, governmental issued bonds, state/local funds and a Special Purpose Local Options Sales Tax *(SPLOST)*.

OPERATIONAL CRITERIA

	PARKING LOT SITE	MIDFIELD SITE	REMOTE SITE
Taxi Distance	5	4	1
Access to Fuel and Maintenance	5	2	1
Ability to Accomodate Group III Aircraft	5	4	2
Runway Crossing Traffic	4	3	2
Construction Phasing Criteria	2	5	4
SUBTOTAL (Operational Criteria)	21	18	10

DESIGN CRITERIA

	PARKING LOT SITE	MIDFIELD SITE	REMOTE SITE
Site Accessibility	3	5	4
Site Security / Traffic Separation	2	5	5
Part 77 / Safety Criteria	5	5	5
Future Expandability / Flexibility	3	4	4
Effect on Residential Uses	5	5	3
Effect on Governmental Uses	5	5	3
Effect on Commercial Uses	5	3	4
SUBTOTAL (Design Criteria)	28	32	28

DEVELOPMENT COST CRITERIA

	PARKING LOT SITE	MIDFIELD SITE	REMOTE SITE
Apron Development Requirements	4	2	3
Taxiway Development Requirements	5	3	2
Loop Road Length	3	5	4
Entry / Exit Road Length	5	4	3
Parking Development Requirements	3	1	3
Demolition Costs	1	5	4
Topography / Earthwork Requirements	5	2	3
Land Acquisition Requirements	5	2	3
Leasable Space Loss	2	5	5
Utility Corridor Extension	4	3	1
SUBTOTAL (Development Cost Criteria)	37	32	31

QUALITATIVE CRITERIA

	PARKING LOT SITE	MIDFIELD SITE	REMOTE SITE
Ability to Meet Needs Beyond 20 Year Horizon	4	5	4
Income Production Potential	4	5	4
Impact on Future General Aviation Expansion	3	5	4
Passenger Convenience	3	5	4
Linear Airside Frontage Available	2	5	2
SUBTOTAL (Qualitative Criteria)	16	25	18

TOTAL ALL CRITERIA	102	107	87

THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
COMMERCIAL TERMINAL ALTERNATIVES ANALYSIS

COMPARATIVE CONCEPT ANALYSIS CHART

EXHIBIT 5

Appendix IV

COMMERCIAL TERMINAL BUILDING DEMAND/CAPACITY ANALYSIS

COMMERCIAL TERMINAL BUILDING DEMAND/CAPACITY ANALYSIS

AVERAGE DAY, PEAK MONTH, PEAK HOUR PASSENGERS:

	1997	2002	2007	2017
Conservative[1]	11	15	18	25
Optimistic[2]	11	20	26	38

Source:
[1]LPA Forecasts, 1997
[2]Georgia Statewide Aviation System Plan

TICKET COUNTER AREA: Sizing for this area is based on 60 percent of the Peak Hour Enplaning Passengers for a 30 minute peak demand, because all of the Peak Hour Passengers do not arrive at the same time and 30 minutes is the maximum time travelers will typically wait in line without experiencing significant frustration. This number is divided by 6 (the maximum number of passengers that can be efficiently processed by a single agent in 30 minutes) to determine the number of agents required.

Ticket Position Analysis:

	1997	2002	2007	2017
Conservative	2	2	2	3
Optimistic	2	2	3	4

The terminal may be planned initially to serve a minimum of two airlines in anticipation of the successful recruitment of a new carrier. Based on our experience, airlines require a minimum of two agent positions to effectively serve their passengers. If a second airline tenant does initiate operations at Athens Ben-Epps Airport (AHN), the four ticket positions forecast for 2017 would be needed sooner. Space requirements should be discussed, and verified, with the tenant(s) prior to proceeding with design of the planned improvements. This will allow the airlines to make the layout suit their operations to review the size of lease area(s), and to express needs for future expansion flexibility.

Each agent requires approximately 6 lineal feet of counter space and bag well. After the Ticket Counter length is determined, the area including the counter and working space behind the counter is determined by multiplying the counter length by 10 feet (the average depth required behind the counter). An additional 3 feet of frontage should be allowed for traffic through the counter at each airline area.

TICKET AREA LOBBY:

The Ticket Lobby includes the area required for 6 passengers to queue up in front of each Ticket Counter. Approximately 3 feet per person, for a minimum depth of 18 feet, is multiplied by the Ticket Counter length to determine the Ticket Lobby. At small airports, the peak queuing may back-up into the circulation areas. A minimum circulation area of 8 feet should be provided clear of the queuing. Circulation must be sized so that peak queues do not block through traffic.

AIRLINE TICKET OFFICES:

A minimum space 20 –25 feet deep behind the Ticket Counter Area is an appropriate amount of area for the support offices to the Ticketing Area (see Figure 1). The total space for the ATO Area is the Ticket Counter length multiplied by 20 feet.

OUTBOUND BAGGAGE:

This area is used for processing bags that are checked in at the Ticket Counter. It should be directly behind or beside the ATO and Ticket Counter Area (see Figure 1) for efficient operations. One baggage cart and the space to maneuver around it requires approximately 250 square feet. The size of the Make-Up Area was determined by providing 1 cart per commercial airline tenant.

BAGGAGE CLAIM LOBBY:

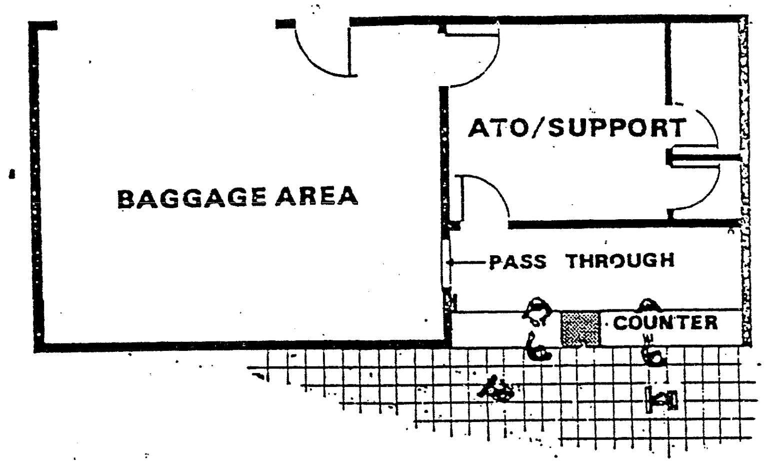
The Baggage Claim Area consists of a lobby and a baggage display device. The display device can be either a baggage shelf or a baggage conveyor unit. Depending on which device is used, the lineal footage of the device is calculated by assuming 2 bags per Peak Hour Deplaning Passenger (equal to Peak Hour Enplaning Passengers) and allowing for this baggage to be retrieved in a 20 minute period. A baggage shelf can display approximately 2 bags per lineal foot in a 20-minute period and a flat plate conveyor can display 2.5 bags per lineal foot in a 20-minute period. An additional 6 feet of lobby length should be allowed for circulation from the inbound baggage area to the baggage claim lobby.

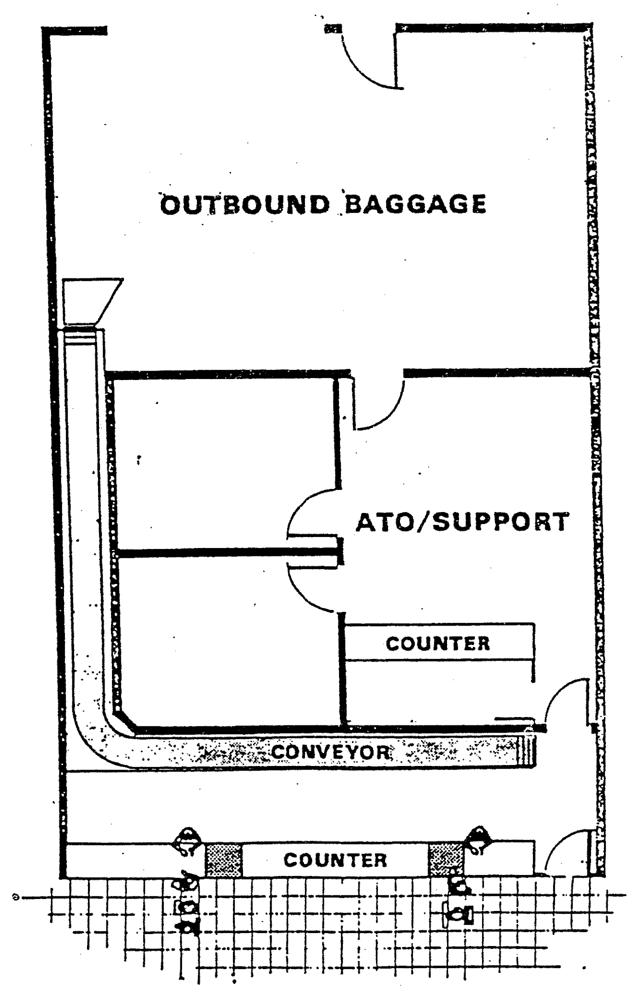
Bag Claim Shelf Requirements (l.f.):

	1997	2002	2007	2017
Conservative	11	15	18	25
Optimistic	14	20	26	38

After determining the length of the claim device, the Baggage Claim Lobby is determined by multiplying 30 feet by the length of the device plus the 6 feet for through traffic. This 30 feet provides appropriate space for waiting, retrieving baggage, queuing, and circulation beyond the claim device.

To allow for the potential of simultaneous arrivals, the claim shelf requirement may be divided to better distribute queuing areas and bag delivery.





Typical ATO Layouts - Single-:Level Terminals

Figure 1

The potential to allow use of a baggage conveyor in the future should also be considered, however this would only be likely in the event that larger (50+ passengers) aircraft come into use on a regular basis. This type of traffic is not expected in the forecasts.

INBOUND BAGGAGE: The Inbound Baggage Area relates directly to the Baggage Claim Device because a certain amount of space is needed to access the claim device, and handle incoming baggage. If a baggage shelf is utilized, 18 feet of covered service space behind the device is appropriate and 23 feet should be used when a conveyor device is used. For planning purposes, the conveyor depth may be used because many times a bag shelf is upgraded to a conveyor unit. However, the overall square footage has been determined by multiplying the 18-foot depth by the total lobby length, due to the unlikely need for a conveyor in the future.

PUBLIC WAITING: Public Waiting Area(s) should be provided at an airport for passengers and visitors arriving early before their flight, and for those individuals waiting for ground transportation after their flight arrives. Many small airports do not open the holding areas until shortly before boarding due to staffing requirements at the security screening station. Therefore, the Public Waiting Areas need to accommodate 75 percent of both the Peak Hour Passengers and one visitor per passenger. An area of 20 to 25 feet per person is appropriate for small airports such as Athens.

Public Waiting Area Requirements (seats):

	1997	2002	2007	2017
Conservative	17	23	27	38
Optimistic	21	30	39	57

It is assumed that as the airport's activity expands, the holding areas will absorb some of the public waiting needs if they become open at all times.

SECURE PASSENGER HOLDING AREA: The Passenger Holding Area provides secured areas where passengers can sit or stand while they wait to board a flight, or visitors can wait for incoming passengers. As discussed previously, at many small airports these holding areas are not open all the time, and when they are open, only passengers may access them. When sizing these areas, a Peak 30-Minute Load Factor of 75 percent of the Peak Hour Passengers is used. Again, 25 square feet per passenger is used to determine the required area for seating.

Holding Area Requirements (seats):

	1997	2002	2007	2017
Conservative	9	12	14	19
Optimistic	11	15	20	29

Some flexibility in holdroom and waiting areas would accommodate occasional charters with larger passenger capacity. In addition to seating, the holdroom should allow 200-250 square feet per gate location for queuing and ticket lift station.

SECURITY SCREENING:

The security area of an airport needs approximately 150 square feet of area for the screening devices and maneuvering space around them. Another 150 square feet should be provided for queuing. A room 100 square feet in size may be provided in case a passenger needs to be searched or detained. The total for the Security Area should be 300-400 square feet

A circulation path for deplaning passengers requires a minimum of 8 feet in width to the circulation area. Allow 200 square feet of program space for this function.

MISCELLANEOUS CONCESSIONS:

Miscellaneous concessions such as newsstands, gift shops, and snack areas need approximately 1 square foot of space for every 200 annual enplanements. Because of the small size of this airport, a minimum square footage of 300 square feet should be used until the annual enplanements justify more concession space.

VENDING AREA:

A vending area of 150 square feet should be provided for machines providing games and self-service packaged foods. These provide a service to passengers outside the normal operating hours of other concessions.

RESTURANT / EATING AREA:

Many times a small airport can not support a full service restaurant, however, this varies from community to community. For the purpose of planning the Athens Ben-Epps Airport, some space has been programmed to be a flexible eating area for food service, with the capability of developing space for another use such as tenant offices. Food service may be incorporated into the General Aviation Terminal or the Passenger Terminal, to maximize the feasibility for the vendor, but should not be duplicated. This area may be combined with the news/gift area to minimize staffing.

An area of 25 square feet per Peak Hour Passenger has been used to determine the size of these areas. The 25 square feet includes seating, circulation, and service areas related to the preparation of food.

AIRPORT ADMINISTRATION: Airport administration currently occupies space in the General Aviation terminal. The program for a new General Aviation Terminal indicates the administration activities will remain in that location. Current demands for airport office area (travel agent offices, Georgia Flight offices) suggest that accommodations for current tenants would allow the flexibility to locate the Airport administration to the commercial terminal in the future.

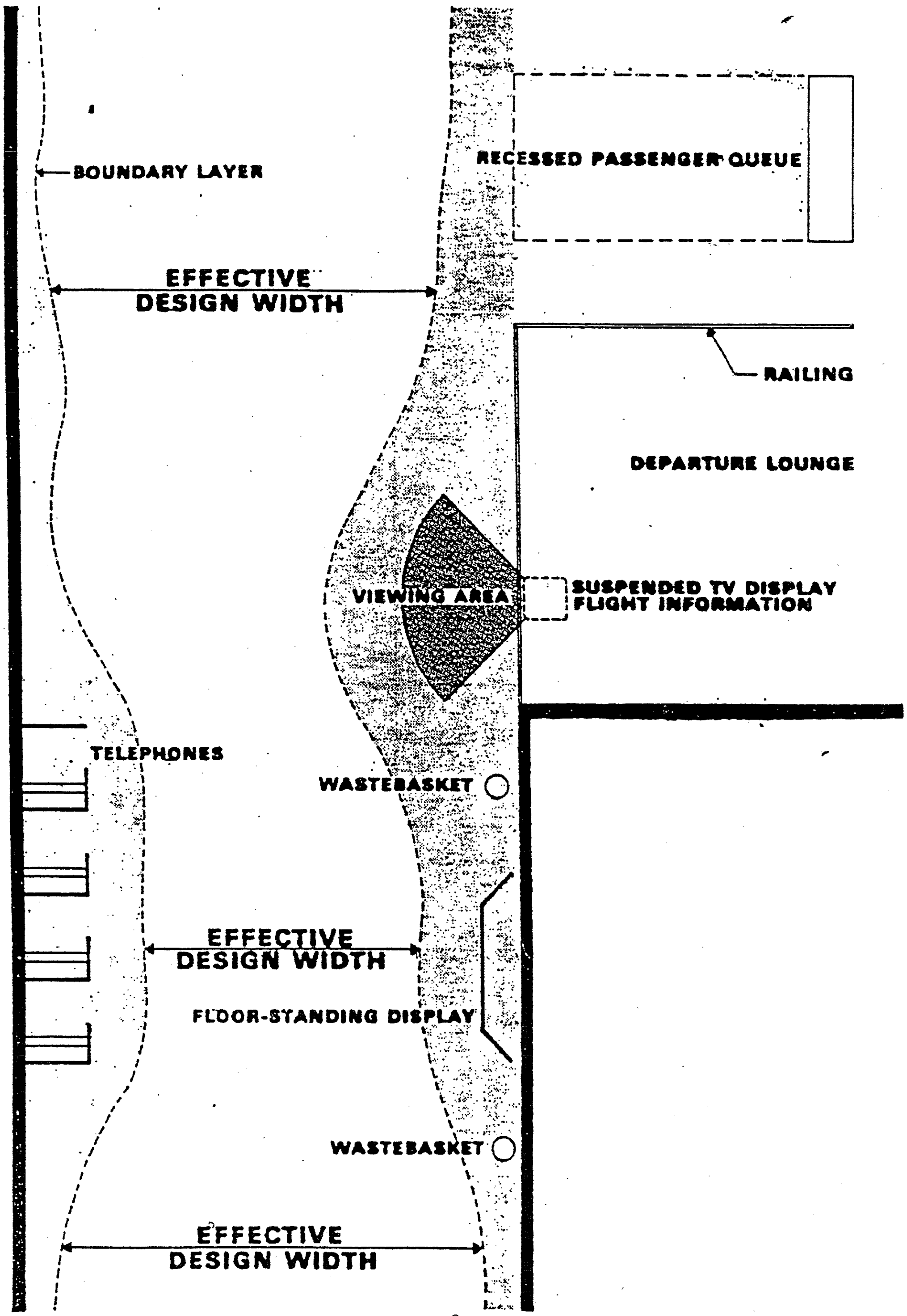
RENTAL CARS: A minimum of 80 square feet per rental car vendor should be provided (10 foot counter by 8 foot depth) with an additional 80 square feet for offices per agency. Some allowance should be made for queuing outside of circulation areas (8 to 10 feet in depth is recommended). It is assumed that there is the possibility that 3 vendors (2 existing tenants, plus 1 expansion slot) may want to service Athens. As the airport grows, more space may be provided to the vendors. Actual space requirements should be verified with tenants prior to proceeding with schematic design.

PUBLIC RESTROOMS: Because of the fluctuating activity of a small airport it is assumed that most of the Peak Hour Passengers may be enplaning or deplaning within a 15 minute period. Of these passengers, 20 percent may require the use of restroom facilities. Once the number of fixtures has been determined, approximately 80 square feet per fixture should be provided. This space is for a single restroom and should be doubled for a set. The preliminary planning numbers should be checked against the local building codes in schematic design to verify minimum requirements are met. Again, some over-sizing of this element can help accommodate occasional larger flights. Restroom locations are desirable in both secure and public areas.

Fixture Requirements (per sex):

	1997	2002	2007	2017
Conservative	3	3	3	4
Optimistic	3	3	4	4

CIRCULATION, MECHANICAL, MAINTENANCE: One way to determine these needs is to take percentages of the entire projected terminal building based on other projects of this kind. Circulation occupies approximately 25 percent of the total building area for small terminals. The circulation area also needs to take into consideration the effective width of the circulation area (see Figure 2). To allow for overflow of passengers, periodic displays, and future expansion, a width of 12-16 feet for the main circulation path is recommended. Entry vestibules with properly separated sliding or swinging doors require 150-200 square feet each.



Public Corridor Effective Design Width

Figure 2

Mechanical and maintenance areas require a minimum of 100 square feet for janitors service/storage area and 400 square feet for electrical/mechanical room(s). These areas should be sized to allow for some flexibility due to the difficulty in expanding the service core areas at a later date.

TERMINAL BUILDING DEMAND SUMMARY SHEET:

The demand/capacity analysis summary sheet (see Tables 1 and 2) takes the information for each area and combines them together to determine overall terminal building needs. The areas allocated are based on the descriptions and formulas applied to the selected forecast numbers.

ATHENS-BEN EPPS AIRPORT

Table 1

Demand / Capacity Summary Sheet
Conservative Forecast

Space Description	Units	Existing Area	PLANNING PERIOD 1997	2002	2007	2017
Ticket Counter Area	(sf)	107	150	150	150	210
Ticket Lobby	(sf)	0	135	135	135	189
Airline Ticket Offices[1]	(sf)	230	300	300	300	420
Outbound Baggage Make- up	(sf)	440	250	250	250	500
Baggage Claim Lobby	(sf)	111	510	630	720	930
Inbound Baggage	(sf)	0	306	378	432	558
Public Waiting	(sf)	635	425	575	675	950
Secure Passenger Hold Room	(sf)	396	475	550	600	975
Security Screening	(sf)	92	500	500	500	500
Misc. Concessions / Gift Shop[3]	(sf)	169	300	300	300	300
Vending Area	(sf)	0	150	150	150	150
Restaurant / Eating Area	(sf)	0	275	375	450	625
Administration Offices	(sf)	0	0	0	0	0
Travel Agent Offices	(sf)	594	800	800	800	800
Georgia Flight Offices	(sf)	2,307	0	0	0	0
Weather Service Offices [3]	(sf)	277	300	300	300	300
Rental Cars- Counters and Offices[2]	(sf)	519	480	480	480	480
Rental Car Queuing	(sf)	0	270	270	270	270
Public Restrooms	(sf)	536	480	480	480	640
Circulation	(sf)	1040	1675	1800	1900	2350
Vestibules	(sf)	140	600	600	600	600
Mechanical / Maintenance	(sf)	273	500	500	500	500
TOTAL	**(sf)**	**7,866**	**8,881**	**9,523**	**9,992**	**12,247**

Notes:
1. The existing Airline Ticket Counter is 10'-6" (lf).
2. The Rental Car Counter is 17 (lf) total (2 tenants).
3. Located in the Georgia Flight area (see Figure _____) but not included in Georgia Flight square footage spacing above.

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ATHENS-BEN EPPS AIRPORT
Table 2
Demand / Capacity Summary Sheet
Optimistic Forecast

			PLANNING PERIOD			
Space Description	**Units**	**Existing Area**	**1997**	**2002**	**2007**	**2017**
Ticket Counter Area	(sf)	107	150	150	210	300
Ticket Lobby	(sf)	0	135	135	189	270
Airline Ticket Offices[1]	(sf)	230	300	300	420	600
Outbound Baggage Make- up	(sf)	440	250	250	500	500
Baggage Claim Lobby	(sf)	111	600	780	960	1320
Inbound Baggage	(sf)	0	360	468	574	792
Public Waiting	(sf)	635	525	750	780	1140
Secure Passenger Hold Room	(sf)	396	525	625	750	1225
Security Screening	(sf)	92	500	500	500	500
Misc. Concessions / Gift Shop[3]	(sf)	169	300	300	300	300
Vending Area	(sf)	0	150	150	150	150
Restaurant / Eating Area	(sf)	0	350	500	650	950
Administration Offices	(sf)	0	0	0	0	0
Travel Agent Offices	(sf)	594	1000	1000	1000	1000
Georgia Flight Offices	(sf)	2,307	0	0	0	0
Weather Service Offices [3]	(sf)	277	0	0	0	0
Rental Cars- Counters and Offices[2]	(sf)	519	480	480	480	640
Rental Car Queuing	(sf)	0	270	270	270	360
Public Restrooms	(sf)	536	480	480	640	640
Circulation	(sf)	1040	1750	1900	2250	2750
Vestibules	(sf)	140	600	600	600	600
Mechanical / Maintenance	(sf)	273	500	500	500	500
TOTAL	**(sf)**	**7,866**	**9,225**	**10,138**	**11,723**	**14,537**

Notes:
1. The existing Airline Ticket Counter is 10'-6" (lf).
2. The Rental Car Counter is 17 (lf) total (2 tenants).
3. Located in Georgia Flight area (see Figure _____) but not included in Georgia Flight square footage spacing above.

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ATHENS BEN-EPPS AIRPORT
Terminal Concepts Narrative

The existing terminal has been reviewed for capacity to meet current (1997) and future demand during the planning period (Tables 1 and 2 of the forecasts). The current facility has also been reviewed for conformance to desirable circulation flows and passenger convenience as shown in FAA AC 150/5360-9 "Planning and Design of Airport Terminal Building Facilities at NonHub Locations". The desired flow and organization are illustrated in Figure 1 from the Advisory Circular, and as further developed in Figure 2 by THE LPA GROUP Incorporated. The principal problems noted in the existing building include:

- Congested circulation areas and limited queuing;
- Inadequate space for and undesirable location of baggage claim;
- Limited concessions and restroom space;
- Inadequate security screening and secure passenger holding area; and,
- Limited expansion capabilities due to adjacent occupancy and due to building construction type (load bearing masonry walls).

While passenger comfort is a more subjective criteria, the survey list of "What Travelers Hope to Find When They Get to the Airport" (Figure 3) is a representative list. Most of these "desires" are not met within the existing facility.

Based on this understanding of current shortcomings, future demand requirements and desired functional relationship and circulation, three alternative concepts have been developed.

The alternative concepts are briefly summarized in the pages following Figures 1 through 3.

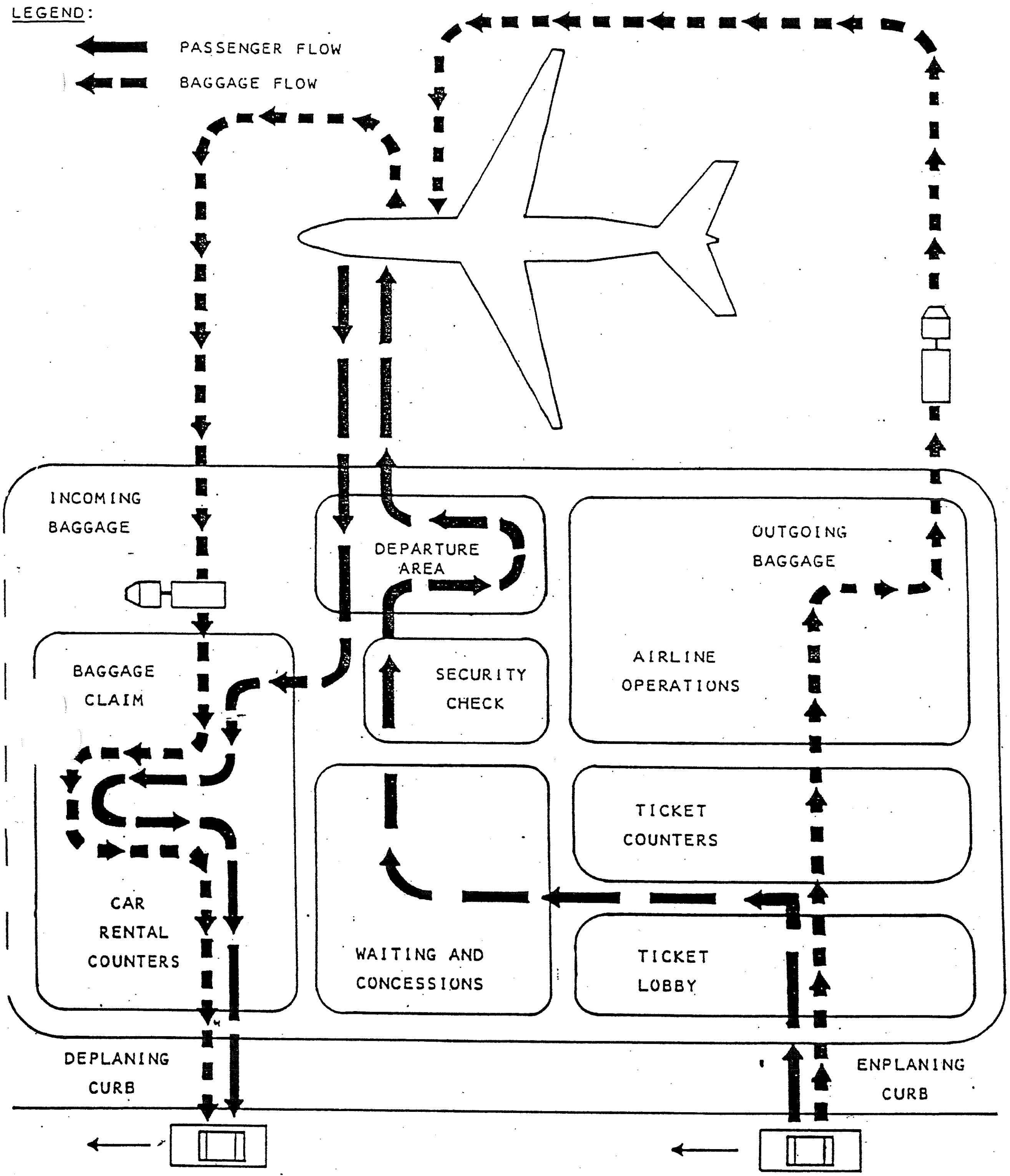


FIGURE 4-2. DIAGRAM OF PASSENGER TERMINAL CIRCULATION AND FUNCTIONAL RELATIONSHIPS

Figure 1

⁻)EALIZED TERMINAL CIRCULATION/FUNCTIONAL RELATIONSHIPS

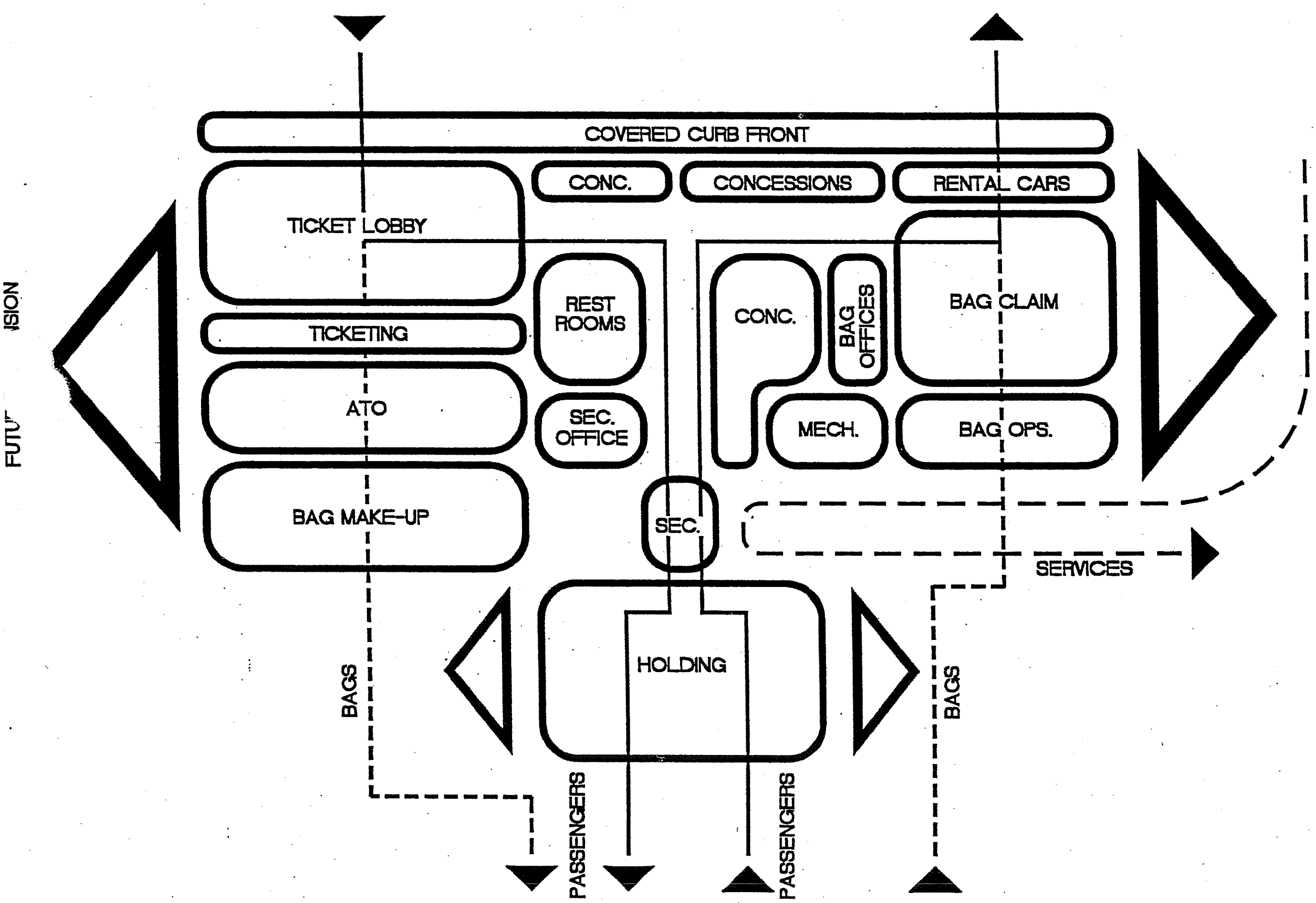


Figure 2

FIGURE: 2
SOURCE: THE LPA GROUP INC.

F:\ARCH\ATHENS\FIG2.DOC

What Travelers Hope to Find When They Arrive at Airports:

- ☑ 1. Avoid Lengthy Waits at Check In / Check Out
- ☑ 2. Short Walking Distances
- ☑ 3. Clear Directional Signs
- ☐ 4. Quality Food Fast
- ☐ 5. Clean and Convenient Toilets
- ☑ 6. Diversions (Shops, Games, Museums/ Displays)
- ☑ 7. Adequate Seating at Waiting Areas
- ☑ 8. Phones, with Seats and Privacy
- ☑ 9. Security
- ☑ 10. Access to Taxis / Public Transportation
- ☐ 11. Luggage Carts
- ☑ 12. Enjoyable Environment

☑ = Building Design Issues

Source: Frequent Flyer, February 1994

Figure 3

L:\ARCH\ATHENS\FIGURE.DOC

CONCEPT 1

In Concept 1 (see Figure 4), all existing space in the current building envelope is retained and renovated for improved circulation and function. The western third of the existing building contains the ticketing function for two airlines. The middle third remains as principally public waiting but the toilet areas are reduced to allow for through circulation. The eastern third is renovated for bag claim and rental offices. Existing service core areas are retained and the weather service office remains in the terminal building.

An expansion to the south (apron) side creates additional space to meet demand requirements for toilets, security screening/queuing, and a secure holdroom. Space for a potential food concession adjacent to and accessible from public waiting has been included as well.

Adjacent site work includes renovations to the screen wall at the apron, improved tug drives to the outbound baggage and bag claim areas, and an extended canopy at the curbfront. Work required to match the site to the building is the least extensive of the three schemes.

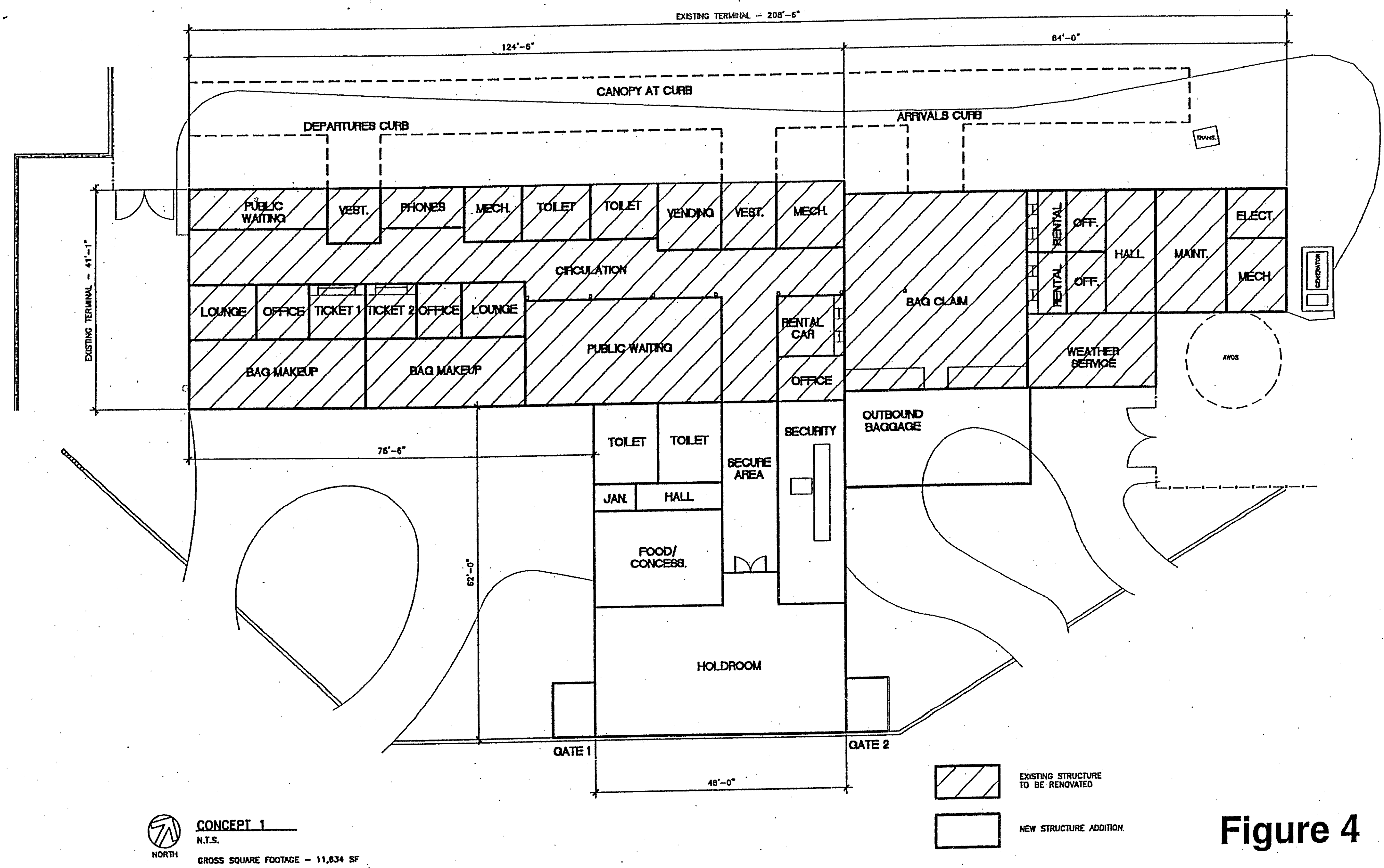


Figure 4

\\ RA\EXT3\ARCH\ATHENS\FIG4-6.DOC

CONCEPT 2

Concept 2 (see Figure 5) combines partial demolition of the existing building with more extensive addition and renovation than Concept 1, to better accommodate the demand requirements. Demolition includes the eastern third of the building (Georgia Flight and Weather Service tenant area) and the exterior precast concrete wall and fascia system. The eastern portion is in the worst physical condition and is the most restrictive in building envelope height and width.

Expansion to the north (curb) side allows some of the restricted circulation and queuing problems in Concept 1 to be resolved. Connection between the expansion and existing north wall will be limited by the existing exterior walls load-bearing construction. The low (∀ 9'-6") eave will also present problems in expanding to the north. A new bag claim wing replaces the demolished east wing. This new area can meet all anticipated demand requirements.

Finally, an adequately sized holdroom would be added to the south side of the building. In general, the interior renovations are more extensive than in Concept 1. Adjacent site work includes renovation to the tug drive areas at the outbound baggage and bag claim areas, and significant renovation to the loop road and parking to allow construction of the north addition. Improvements to walkways for circulation from the ramp to the holdroom will also be required. The site work requirements for Concept 2 are greater than Concept 1, but less than those anticipated for Concept 3.

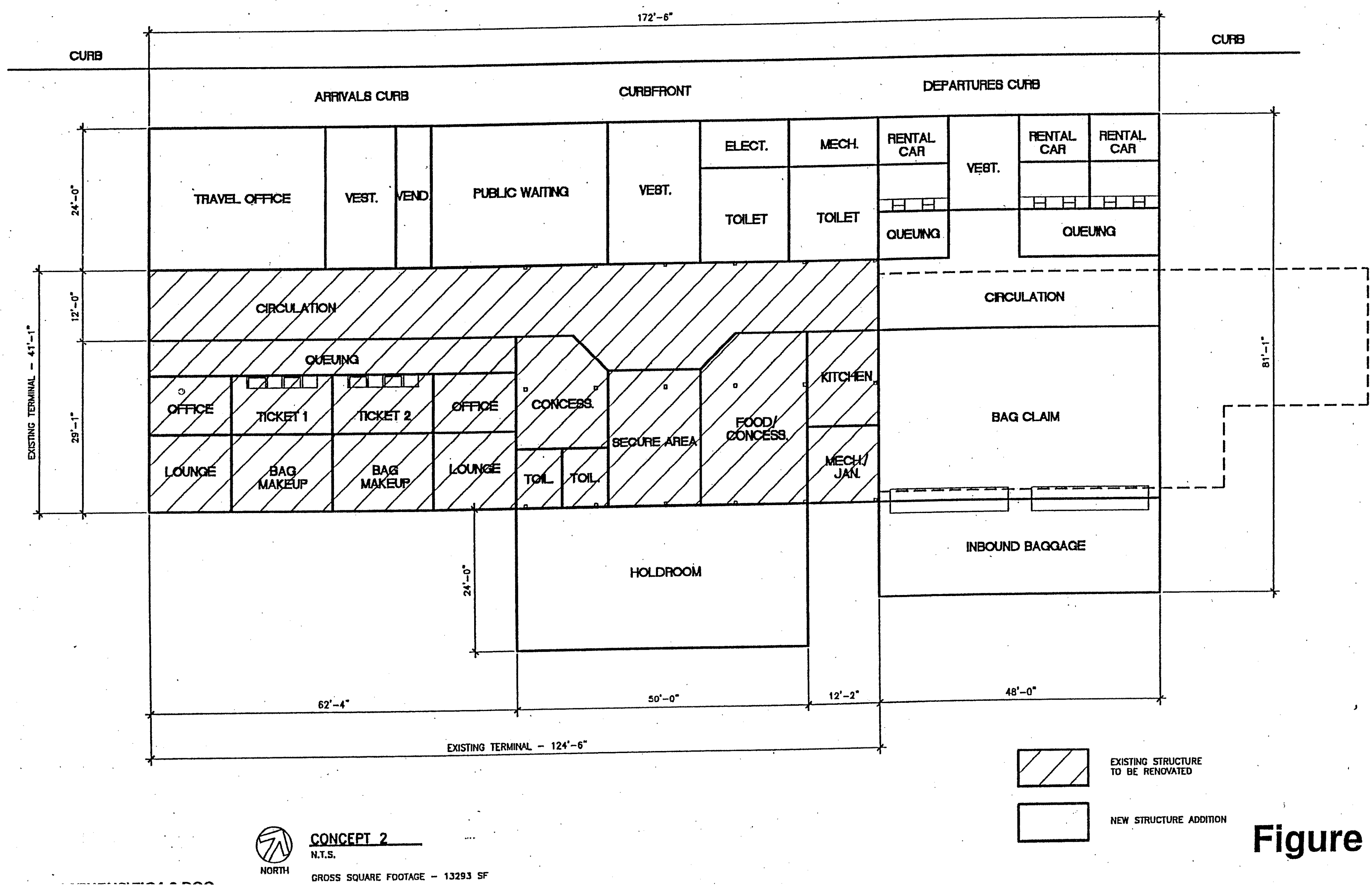

172'-6"
CURB
CURB
ARRIVALS CURB
CURBFRONT
DEPARTURES CURB
TRAVEL OFFICE
VEST.
VEND.
PUBLIC WAITING
VEST.
ELECT.
TOILET
MECH.
TOILET
RENTAL CAR
QUEUING
VEST.
RENTAL CAR
RENTAL CAR
QUEUING
CIRCULATION
QUEUING
OFFICE
TICKET 1
TICKET 2
OFFICE
LOUNGE
BAG MAKEUP
BAG MAKEUP
LOUNGE
CONCESS.
TOIL.
TOIL.
SECURE AREA
FOOD/ CONCESS.
KITCHEN
MECH./ JAN.
CIRCULATION
BAG CLAIM
INBOUND BAGGAGE
HOLDROOM
24'-0"
12'-0"
29'-1"
EXISTING TERMINAL – 41'-1"
24'-0"
81'-1"
62'-4"
50'-0"
12'-2"
48'-0"
EXISTING TERMINAL – 124'-6"
EXISTING STRUCTURE TO BE RENOVATED
NEW STRUCTURE ADDITION
NORTH
CONCEPT 2
N.T.S.
GROSS SQUARE FOOTAGE – 13293 SF

Figure 5

CONCEPT 3

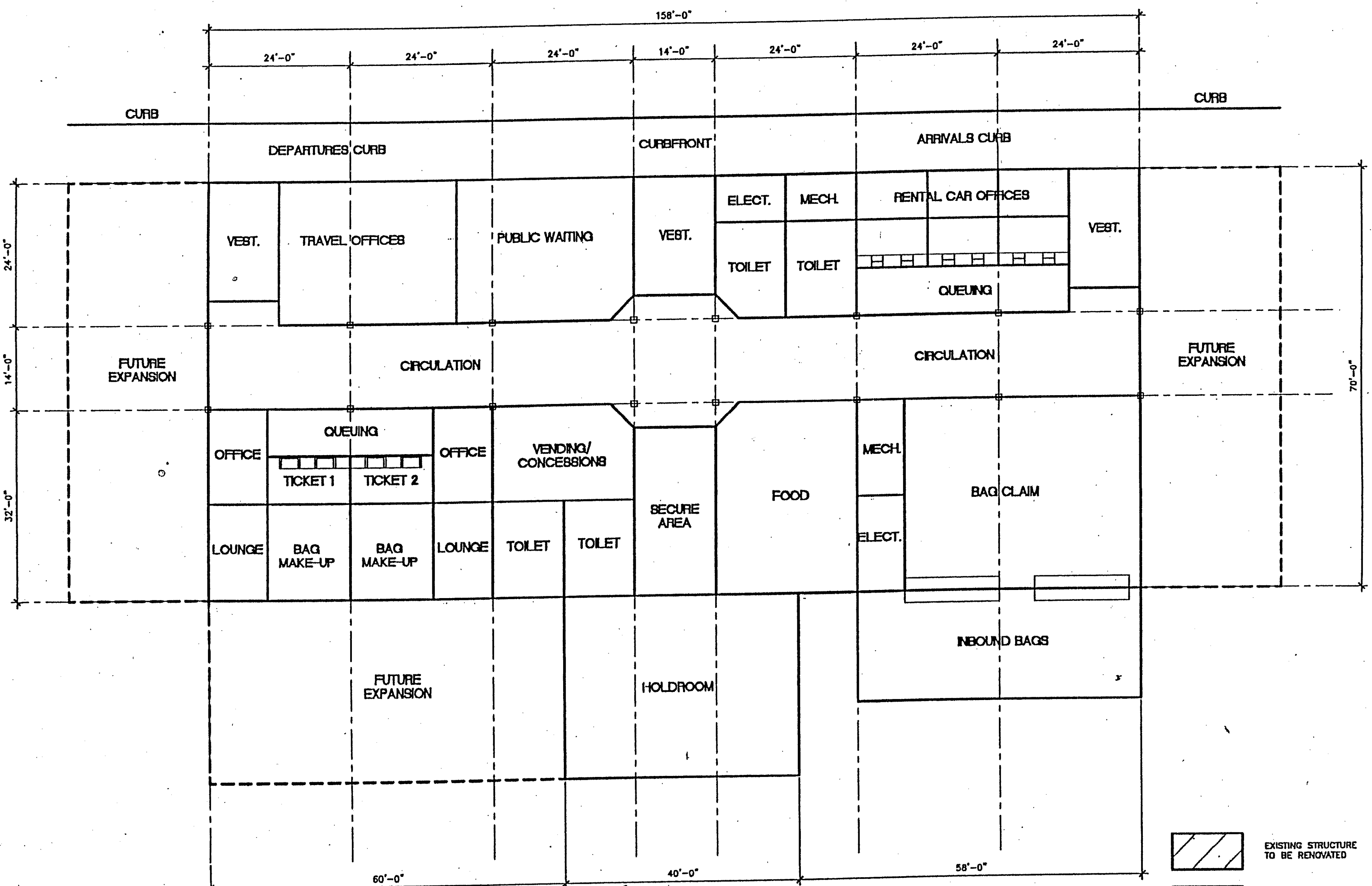
Concept 3 (see Figure 6) proposes the construction of a new terminal building. Two potential locations have been identified in the site concepts. The first requires demolition of the existing Sonny's Aviation hangar, as well as a portion of the east end of the existing terminal building. The second location is within the curve of the existing loop road and requires demolition and replacement of some existing parking.

A new terminal building offers the opportunity to replace the outdated building systems while creating a facility sized to meet demand requirements. Passenger flows, circulation, and spatial relationships can be optimized. A new "gateway" appearance to the community can be developed to compliment and enhance the new general aviation terminal and other airport improvements.

Continued use of existing facilities and total cost present the major obstacles in implementing Concept 3. Use of the Sonny's site requires coordination with the proposed new Colvin Aviation hangar schedule. Once the Colvin Aviation project is complete and Sonny's and Georgia Flight tenants have been relocated, the site is available for construction without disturbing operations at the passenger terminal. Some phasing of construction or temporary relocation of electrical service for the terminal building will be required. Demolition of the existing terminal and completion of road/curbfront complete the last phase.

The site within the existing parking area avoids problems of coordination with other projects and avoids the electrical service center at the existing terminal building. This location will require re-routing of and longer walk distances for passengers from parking. Additional permanent and temporary parking will be required to make-up for displacing existing facilities. The demolition of the existing terminal and construction of an expanded apron would be the final phase. Some restrictions on aircraft parking near the terminal and longer passenger walks would be required until the apron can be completed.

Higher construction costs need to be evaluated in the context of available funding, versus the value of improved facilities with the flexibility to serve the Airport well beyond the 20-year planning period.



EXISTING STRUCTURE TO BE RENOVATED

NEW STRUCTURE ADDITION

CONCEPT 3

N.T.S.

GROSS SQUARE FOOTAGE – 13124 SF

Figure 6

CONCEPTS EVALUATION

Each concept offers certain advantages and disadvantages in the categories of: ability to satisfy 20-year demand, passenger flows and circulation, new construction requirements, impact to existing operations, phasing/constructability, expandability, and flexibility to meet additional demand. These are discussed in the following detailed narratives of each criteria, and are summarized in Table 1 that follows.

ABILITY TO SATISFY 20-YEAR DEMAND

Concept 1 provides good response to the demand requirements but some functions are over or under-sized, due to the need to fit within the existing building envelope and to work within the structural limitations. Concept 2 improves the response to demand requirements by expanding to the north and east. Some restrictions in connecting spaces due to load-bearing walls will still apply. Concept 3 is rated excellent, as new construction can be sized to demand and all load-bearing walls will be eliminated.

PASSENGER FLOWS AND CIRCULATION

All three concepts utilize the idealized flows and space relationships shown in Figure 1 and 2. Concept 1 is rated fair because of restricted circulation width, due to existing construction constraints and the fact that queuing areas will block some circulation areas. Again, Concept 2 improves the circulation width and provides queuing areas with the limitations of incorporating the existing structure. New construction as shown in Concept 3 is sized to the demand requirements and FAA recommendations for effective circulation widths.

NEW CONSTRUCTION REQUIREMENTS

This criteria reflects the impact of costs of new construction and demolition of existing facilities. However, the existing building is 40 years old, and would be expected to require improvements to mechanical and electrical systems in addition to the interior renovations to the layout shown. Concept 1 closely overlays the spaces to existing functions to minimize cost and interruption of use. Concept 2 removes the east third of the building. This eliminates the narrowest portions of the building, which is also restricted in building height (existing mechanical systems run exposed on the roof). Concept 2 would also require removal of the precast concrete facing system. Concept 3 requires new building construction, demolition of the existing building, and some renovation to the apron and curbfront areas.

Impact to Existing Operations

Concept 1 will require relocation or removal of the travel agent and Georgia Flight tenants, to allow renovations of the bag claim area and second airline area. Some rerouting of passengers to aircraft for enplaning/deplaning is also required. Operations of the parking, curbfront, and apron would remain largely undisturbed.

Concept 2 involves considerable interruption to the curbfront, however the apron/aircraft activities are only slightly impacted due to passenger routing. Some disturbances to interior operations can be avoided by constructing expansions first, then renovating the interior. The relocation of Georgia Flight offices is required and the removal of the existing electrical center creates construction issues. It may be possible to leave the electrical center in place until the new service/ distribution is in operation.

Concept 3 impacts are similar to Concept 2, however the majority of disruption is to external operations instead of internal tenant areas and varies by the site location chosen for the new building. The parking area location affects parking, pedestrian traffic, and eventually apron usage as the apron is expanded. The location near the existing Sammy's hangar would require coordination with relocation of that tenant(s) and of the Georgia Flight Academy. The electrical center presents a similar problem as discussed in Concept 2. The need for early demolition will require relocation or temporary facilities.

Phasing/Constructability

This criteria is related to the previous discussions about impact on existing operations. However, this adds consideration of construction time, cost, and temporary relocations. Concept 1 incorporates much of the existing layout. Phasing to create the south addition and renovate the eastern third of the building could be accomplished and occupied prior to the minor interior renovations in the remainder of the existing building. Exterior renovations to the entry/curbfront would be the last phase. Work for this concept will be complicated by the need to keep utilities and services to the building active while incorporating demolition, renovation, and new construction. Consideration of new and existing building systems (electrical, mechanical, and plumbing) also present difficulties.

Concept 2 involves many of the same criteria as Concept 1 above, while adding additional exterior demolition work. In addition, the existing roof slope will make expansion to the north (curb) side difficult, due to the low (9'-6"∀) existing eave height. Concept 2 also requires removal of the electrical center containing the main service, panels, and emergency generation. The time and expense from a constructability standpoint for this concept would be significantly more than Concept 1.

Concept 3 phasing depends upon site selection, however the effects tend toward site obstructions without affecting the interior workings of the terminal. Constructability should be excellent unless the new construction has to be phased to avoid disturbing existing obstacles. Temporary facilities (within the new building) could be used to eliminate problems of conflict with the electrical center location. An overall rating of good (mid-range) for Concept 3 is used for purposes of comparison with the other concepts.

EXPANDABILITY

Concept 1 reflects maximum use of the existing structure along with significant expansion. As such, the opportunities for additional expansion are severely restricted. Concept 2 also has limitations due to the building location, existing structure, and height problems previously discussed. Some expansion of the holdroom and bag claim areas could be accommodated. The new building in Concept 3 should be designed from a structural and site location standpoint to allow expansion to any and all areas.

FLEXIBILITY TO MEET ADDITIONAL DEMAND

In addition to expandability as discussed above, flexibility to adjust to demand within the building is also desirable. Concept 1 has limited flexibility due to the many load bearing and masonry walls, column locations, and narrow building width.

Concept 2 has similar limitations due to incorporation of most of the existing structure. Additional limitations will be faced in connecting to the added space through the existing masonry walls. Some flexibility to move non-bearing partitions is available within the addition areas.

Concept 3 flexibility would be limited only by the locations of interior columns and core mechanical/electrical locations. All walls would be non-bearing to allow for maximum internal flexibility.

TABLE 1
Alternative Concept Analysis Chart

CRITERIA	CONCEPT 1	CONCEPT 2	CONCEPT 3
Ability to Satisfy 20 Year Demand	3	4	5
Passenger Flow and Circulation	2	4	5
New Construction Requirements	5	3	1
Impact to Existing Operations	3	2	3
'hasing/Constructability	4	3	3
Expandibility	2	4	5
Flexibility to Meet Additional Demand	2	3	5
TOTAL	21	23	27

SYMBOL LEGEND

- POOR (1)
- FAIR (2)
- GOOD (3)
- VERY GOOD (4)
- EXCELLENT (5)

ATHENS-BEN[illegible]PS AIRPORT

Ma[illegible]pdate

Revised Square F[illegible]ge/ Demand Comparison

Space Description	Units	Concept 1	Concept 2	Concept 3	Conservative Demand 2017	Optimistic Demand 2017	Comments
Ticket Counter Area	(sf)	208	**344**	224	210	300	
Ticket Lobby	(sf)	***0***	**374**	224	189	270	
Airline Ticket Offices	(sf)	443	646	640	420	600	
Outbound Baggage Make -up	(sf)	**825**	450	448	500	500	
Baggage Claim Lobby	(sf)	1274	1396	1280	930	1320	
Inbound Baggage	(sf)	630	768	864	558	792	
Public Waiting	(sf)	935	***720***	712	950	1140	
Secure Passenger Hold Room	(sf)	**1376**	1200	1200	975	1225	
Security Screening	(sf)	488	369	392	500	500	
Misc. Concessions / Gift Shop	(sf)	***119***	281	240	300	300	
Vending Area	(sf)	152	144	136	150	150	
Restaurant / Eating Area	(sf)	***441***	710	760	625	950	depends on forecast and airport/vendor
Administration Offices	(sf)	0	0	0	0	0	
Travel Agent Offices	(sf)	***0***	***720***	***720***	800	1000	
Georgia Flight	(sf)	0	0	0	0	0	
Weather Service Offices	(sf)	341	***0***	***0***	300	0	verify requirements with Airport
Rental Cars- Counters and Offices	(sf)	596	576	576	480	640	
Rental Car Queuing	(sf)	***0***	288	288	270	360	
Public Restrooms	(sf)	632	644	**760**	640	640	
Circulation	(sf)	***2054***	2298	2452	2350	2750	
Vestibules	(sf)	233	**864**	760	600	600	
Mechanical /Maintenance	(sf)	**887**	403	448	500	500	
TOTAL	**(sf)**	**11,634**	**13,195**	**13,124**	**12,247**	**14,537**	

Airline Ticket Counter	**(lf)**	20'-4"	24'-0"	24'-0"
Baggage Claim Shelf	(lf)	30'-0"	40'-0"	32'-0"
Rental Car Counter	(lf)	34'-4"	36'-0"	36'-0"

BOLD = Exceeds demand/capacity 10% or more

BOLD ITALICS = *B*elow demand/capacity 10% or more

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ATHENS P[illegible]S AIRPORT

Mas[illegible] Update

Concept Cost Comparison

WORK DESCRIPTION	QNTY	UNIT	COST	TOTAL
Building Demolition	0	SF	$10.00	$ -
Selective Demolition- Interior	7,866	SF	$5.00	$ 39,330
Selective Demolition- Exterior	2,500	SF	$15.00	$ 37,500
Interior Renovation - Light (70%)	5,500	SF	$35.00	$ 192,500
Interior Renovation - Heavy (30%)	2,366	SF	$55.00	$ 130,130
Exterior Renovations - Walls	3,000	SF	$20.00	$ 60,000
Exterior Renovations - Roof	8,500	SF	$4.00	$ 34,000
New Construction - Building	3,000	SF	$125.00	$ 375,000
New Cônstruction - Canopy	2,240	SF	$60.00	$ 134,400
Site Demolition	1	LS	$20,000.00	$ 20,000
New Construction - Site	1	LS	$30,000.00	$ 30,000
New Construction - Parking / Roads	0	SY	$35.00	$ -
New Construction - Apron	0	SY	$60.00	$ -
Phasing - Interior Work	1	LS	$25,000.00	$ 25,000
Phasing - Exterior Work	1	LS	$10,000.00	$ 10,000
Temporary Facilities	1	LS	$20,000.00	$ 20,000
SUBTOTAL				$ 1,107,860
Contingency (10%)				$ 110,786
TOTAL COST- CONCEPT ONE				$ 1,218,646

ATHENS B[illegible] S AIRPORT

Mas[illegible] Update

Concept Cost Comparison

WORK DESCRIPTION	QNTY	UNIT	COST	TOTAL
Building Demolition	2,766	SF	$10.00	$ 27,660
Selective Demolition- Interior	5,100	SF	$5.00	$ 25,500
Selective Demolition- Exterior	2,500	SF	$15.00	$ 37,500
Interior Renovation - Light	0	SF	$35.00	$ -
Interior Renovation - Heavy	5,100	SF	$55.00	$ 280,500
Exterior Renovations - Walls	1,000	SF	$20.00	$ 20,000
Exterior Renovations - Roof	5,500	SF	$4.00	$ 22,000
New Construction - Building	8,100	SF	$125.00	$ 1,012,500
New Construction - Canopy	1,720	SF	$60.00	$ 103,200
Site Demolition	1	LS	$50,000.00	$ 50,000
New Construction - Site	1	LS	$30,000.00	$ 30,000
New Construction - Parking / Roads	1,000	SY	$35.00	$ 35,000
New Construction - Apron	2,000	SY	$60.00	$ 120,000
Phasing - Interior Work	1	LS	$40,000.00	$ 40,000
Phasing - Exterior Work	1	LS	$20,000.00	$ 20,000
Temporary Facilities	1	LS	$50,000.00	$ 50,000
SUBTOTAL				$ 1,873,860
Contingency (10%)				$ 187,386
TOTAL COST- CONCEPT TWO				$ 2,061,246

ATHENS F 'S AIRPORT

Mas. .n Update

Concept Cost Comparison

WORK DESCRIPTION	QNTY	UNIT	COST	TOTAL
Building Demolition	7,866	SF	$10.00	$ 78,660
Selective Demolition- Interior	0	SF	$5.00	$ -
Selective Demolition- Exterior	0	SF	$15.00	$ -
Interior Renovation - Light	0	SF	$35.00	$ -
Interior Renovation - Heavy	0	SF	$55.00	$ -
Exterior Renovations - Walls	0	SF	$20.00	$ -
Exterior Renovations - Roof	0	SF	$4.00	$ -
New Construction - Building	13,124	SF	$125.00	$ 1,640,500
New Construction - Canopy	1,580	SF	$60.00	$ 94,800
Site Demolition	1	LS	$30,000.00	$ 30,000
New Construction - Site	1	LS	$15,000.00	$ 15,000
New Construction - Parking / Roads	1,200	SY	$35.00	$ 42,000
New Construction - Apron	1,500	SY	$60.00	$ 90,000
Phasing - Interior Work	1	LS	$5,000.00	$ 5,000
Phasing - Exterior Work	1	LS	$10,000.00	$ 10,000
Temporary Facilities	1	LS	$50,000.00	$ 50,000
SUBTOTAL				$ 2,055,960
Contingency (10%)				$ 205,596
TOTAL COST- CONCEPT THREE (SONNY'S SITE)				$ 2,261,556

ATHENS [illegible]S AIRPORT

Mas[illegible] Update

Concept Cost Comparison

WORK DESCRIPTION	QNTY	UNIT	COST	TOTAL
Building Demolition	7,866	SF	$10.00	$ 78,660
Selective Demolition- Interior	0	SF	$5.00	$ -
Selective Demolition- Exterior	0	SF	$15.00	$ -
Interior Renovation - Light	0	SF	$35.00	$ -
Interior Renovation - Heavy	0	SF	$55.00	$ -
Exterior Renovations - Walls	0	SF	$20.00	$ -
Exterior Renovations - Roof	0	SF	$4.00	$ -
New Construction - Building	13,124	SF	$125.00	$ 1,640,500
New Construction - Canopy	1,580	SF	$60.00	$ 94,800
Site Demolition	1	LS	$50,000.00	$ 50,000
New Construction - Site	1	LS	$30,000.00	$ 30,000
New Construction - Parking / Roads	4,000	SY	$35.00	$ 140,000
New Construction - Apron	3,300	SY	$60.00	$ 198,000
Phasing - Interior Work	1	LS	$0.00	$ -
Phasing - Exterior Work	1	LS	$20,000.00	$ 20,000
Temporary Facilities	1	LS	$10,000.00	$ 10,000
SUBTOTAL				$ 2,261,960
Contingency (10%)				$ 226,196
TOTAL COST- CONCEPT THREE (PARKING LOT SITE)				$ 2,488,156

ATHENS-B... S AIRPORT

Ma... pdate

FAA AIP ...gibility Comparison

Space Description	Units	Concept 1		Concept 2		Concept 3	
		Eligible	Ineligible	Eligible	Ineligible	Eligible	Ineligible
Ticket Counter Area	(sf)	61	147	102	242	90	134
Ticket Lobby	(sf)	0	0	374	0	224	0
Airline Ticket Offices	(sf)	0	446	0	646	0	640
Outbound Baggage Make -up	(sf)	0	825	0	450	0	448
Baggage Claim Lobby	(sf)	1274	0	1396	0	1280	0
Inbound Baggage	(sf)	630	0	768	0	864	0
Public Waiting	(sf)	935	0	720	0	712	0
Secure Passenger Hold Room	(sf)	1376	0	1200	0	1200	0
Security Screening	(sf)	488	0	369	0	392	0
Misc. Concessions / Gift Shop	(sf)	119	0	0	281	0	240
Vending Area	(sf)	0	152	0	144	0	136
Restaurant / Eating Area	(sf)	0	441	0	710	0	760
Administration Offices	(sf)	0	0	0	0	0	0
Travel Agent Offices	(sf)	0	0	0	720	0	720
Georgia Flight	(sf)	0	0	0	0	0	0
Weather Service Offices	(sf)	0	341	0	0	0	0
Rental Cars- Counters and Offices	(sf)	0	596	0	576	0	576
Rental Car Queuing	(sf)	0	0	288	0	288	0
Public Restrooms	(sf)	632	0	644	0	760	0
Circulation	(sf)	1886	168	2298	0	2452	0
Vestibules	(sf)	233	0	864	0	760	0
Mechanical /Maintenance	(sf)	443	444	201	202	224	224
SUBTOTALS	(sf)	8077	3557	9224	3971	9246	3878
TOTAL CONCEPT AREA	**(sf)**		**11,634**		**13,195**		**13,124**
ELIGIBLE PERCENTAGE			**69.43%**		**69.91%**		**70.45%**

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Appendix III

RUNWAY 9/27 EXTENSION FEASIBILITY

ATHENS/BEN EPPS AIRPORT
ATHENS, GEORGIA

RUNWAY 9-27
EXTENSION FEASIBILITY

T E C H N I C A L   R E P O R T

Prepared for:
Athens-Clarke County Government

Prepared by:
THE LPA GROUP INCORPORATED

MAY 1999

RUNWAY 9-27 EXTENSION FEASIBILITY

TABLE OF CONTENTS

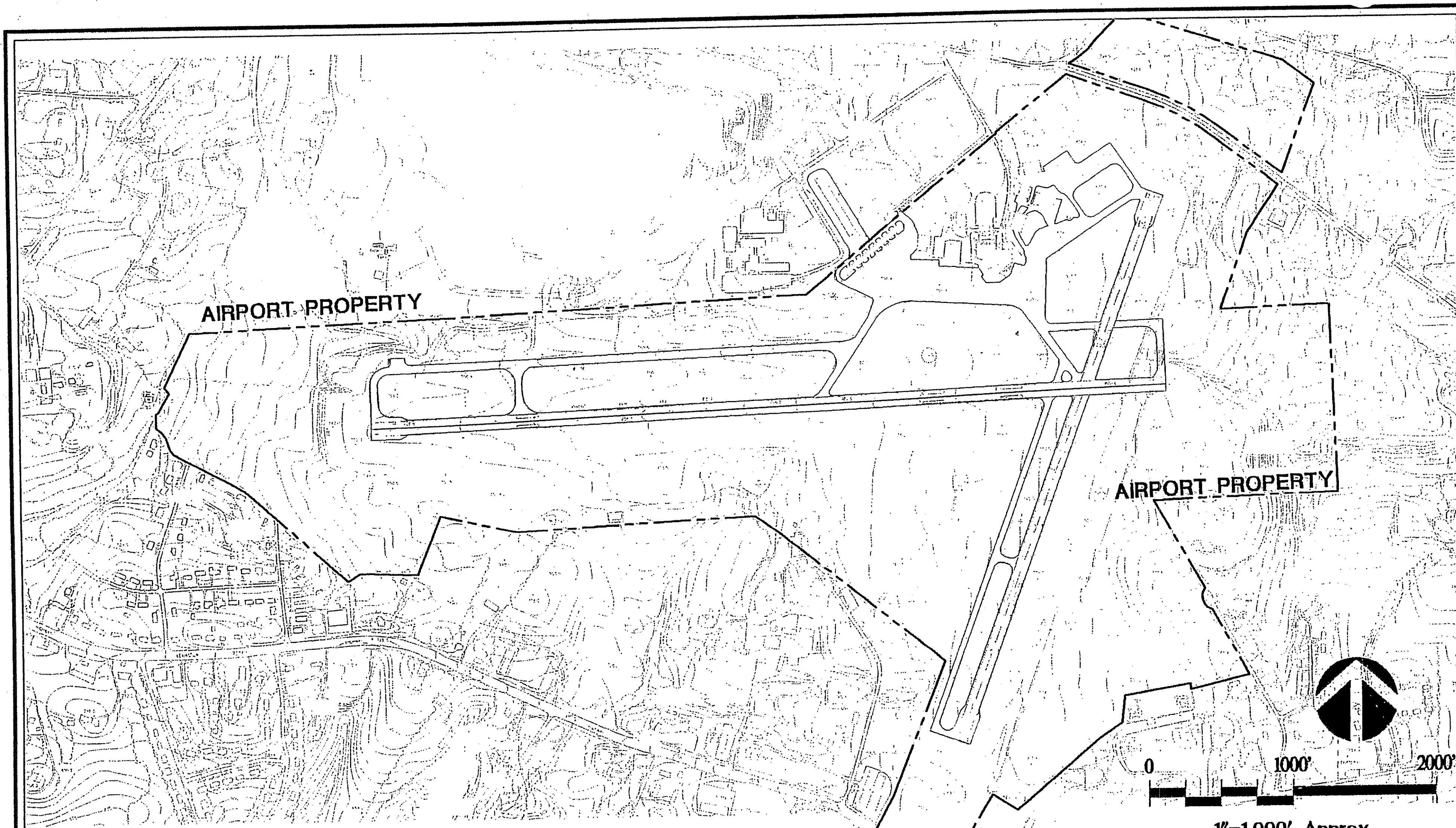
RUNWAY 9-27 EXTENSION FEASIBILITY

LIST OF EXHBITS

Section 1
INTRODUCTION

Following a detailed analysis of runway length at the Athens/Ben Epps Airport (*AHN*), the Athens - Clarke County Government contracted with The LPA Group Incorporated to prepare and study the viable alternatives to meeting the runway length requirements. Developmental alternatives to provide the ultimate recommended runway enhancements are presented and evaluated at a detailed level to facilitate selection. Operational and environmental factors are considered which may have a direct impact on each alternative's viability. Preliminary cost estimates and other implementation factors associated with each considered alternative are also provided to facilitate direct comparison of the recommended improvements.

Upon receipt of approval for the recommended alternative, from the Athens - Clarke County, The LPA Group is prepared to update the Airport Layout Plan, reflecting the proposed changes to existing airfield facilities, as shown in Exhibit 1. These plan modifications would be forwarded to the Federal Aviation Administration (*FAA*) and the Georgia Department of Transportation – Intermodal Programs, as deemed necessary for review, comment, and approval. Under the direction of the County, these plans will also be incorporated into the on-going update to the airport master plan for AHN.



SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

SITE MAP

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 1

Section 2
SUMMARY

A future and ultimate runway length for Runway 9-27 was determined previously determined under a separate technical study, based on user demand. A near-term runway length of approximately 6,500 feet was identified as being needed, while added potential demand calls for an ultimate runway length and width of 7,000 feet and 150 feet, respectively. Advance planning to ensure airspace and land use protection is essential. This study analyzes and recommends the optimum program of development for the airport and identifies the potential costs, both financially and environmentally.

Three distinct alternatives to provide 6,500 feet were considered in the feasibility analysis. The alternatives (*extending 1,000 feet west, extending 1,000 feet east, and 500 feet in both directions*) were considered carefully in light of operational, environmental, and implementation factors. As a result it is recommended that Runway 9-27 be extended 500 feet to the east and west to provide 6,500 feet. The final 500 feet, for a total of 7,000 feet, is recommended to occur at the Runway 9 end. Table 1 presents a cursory overview of the advantages and disadvantages found to exist among the various alternatives considered for development.

The above recommendations were driven by: an evaluation of all pertinent feasibility factors, the need to expeditiously develop an airfield to sufficiently meet user needs, capital improvement costs, and potential public concerns. The total estimated construction cost for the 6,500-foot runway program is approximately $22.34 million. The added cost to ultimately expand the runway to 7,000 feet in length and 150 feet in width is estimated to be an additional $16.56 million.

	FACTOR	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
OPERATIONAL ISSUES	GROUND MOVEMENTS/ TAXI DISTANCES	No change to queue capability Better taxi distance for AC/ Less desireable for GA	Improved queue capability(27) Nominal Impact to taxi distances	Greatest queue capability(27) Improves taxi distances for GA
	LINE-OF-SIGHT	Nominal Impact	Nominal Impact	No Change
	NAVIGATIONAL AIDS	Relocate 9 end systems Glide Slope remains	Relocate all systems Glide Slope moves to south	Relocate 27 end systems Glide Slope moves to south
	RPZ PROTECTION	Purchase of IMC AgriBusiness	Balanced purchases of Farmland & Portions of IMC AgriBusiness	Purchase of Farmland
	OFF-AIRPORT OBSTRUCTIONS	No Impacts	No Impacts	No Impacts
ENVIRONMENTAL ISSUES	AIRCRAFT NOISE	No Impacts to Incompatible Land Uses	No Impacts to Incompatible Land Uses	No Impacts to Incompatible Land Uses
	LAND USE COMPATIBILITY	Increased over–flight concerns for UGA Campus & Downtown	Balanced distribution of overflights	Increased over–flight concerns for Residential Development east of Airport
	WATER QUALITY AND WETLANDS	Impact to western wetlands (4.6 acres) 1000' Culvert necessary (9)	Impact to western wetlands (1.9 acres) 300' Culvert necessary (9)	Least impact to western wetlands (3.4 acres) Impact to eastern wetlands
	CONSTRUCTION IMPACTS	Least impact from materials hauling	Nominal impact from materials hauling	Greatest impact from materials hauling
IMPLEMENTATION	DESIGN CONSTRAINTS	Max Time for MALSR (7000') No Landfill impact	Mean Time for MALSR (7000') 500' impact area of Landfill	Min Time for MALSR (7000') 1000' impact area of Landfill
	BORROW AREAS/ EARTHWORK	1.9 million CY	2.0 million CY (2.9 million CY)*	2.8 million CY (4.9 million CY)*
	LAND ACQUISITION	14.7 acres (res./comm.) 63.5 acres (agr./open)	14.7 acres (res./comm.) 87.7 acres (agr./open)	10.3 acres (res./comm.) 75.6 acres (agr./open)
	PRELIMINARY COST ESTIMATES	$20.2 million	$22.3 million ($27.9 million)*	$25.1 million ($38.3 million)*
	CONSTRUCTION PHASING	Marginal impact to A/C operations during construction MALSR delayed (7000')	Impacts to A/C operations during construction MALSR ready (7000')	Marginal impact to A/C operations during construction MALSR ready (7000')

* Totals reflect future impacts associated with a glide slope relocation to the south side of Runway 9–27

ATHENS–BEN EPPS AIRPORT
RUNWAY 9–27 EXTENSION FEASIBILITY

AIRFIELD ALTERNATIVE COMPARISION SUMMARY

THE LPA GROUP AVIATION CONSULTANTS

TABLE 1

Section 3

PROJECT PURPOSE & NEED

The Athens/Ben Epps Airport currently serves as the area's only commercial service airport, and proudly calls itself home to number of large corporate general aviation operators. In addition, Athens is a routine destination/stop-over for transient business and pleasure flyers, as well as transient military operators. The presence of the University of Georgia and the ever-expanding corporate base have resulted in a significant user demand for additional runway length beyond the current 5,522 feet.

The fundamental basis for studying the feasibility of extending Runway 9-27 is centered around enhanced safety at the airport. With this in mind, the initial priority must be the upgrade of the non-standard runway safety areas (RSAs) beyond each end of Runway 9-27 to 1,000 feet in length, per FAA requirements. The second priority is to enhance the operational capabilities of the airfield through systematic construction of improvements to active pavements and navigational aids. By doing so, payload and destination restrictions may be greatly reduced of eliminated, while also enhancing the level of safety at the airport. The final purposes for considering the extension of Runway 9-27, focus on enhancing community development potential and meeting the travel needs associated with university and corporate travel.

As noted in a previous study, "Runway 9-27 Length Analysis", Fortune 500 companies place a great deal of importance on the aviation assets offered by a community. The function of an expanded airfield must work efficiently and free from restrictions. Ensuring feasibility from a cost standpoint, will hopefully facilitate the identification of a positive benefit/cost ratio. Undoubtedly, design constraints, earthwork requirements, land acquisition, and construction phasing will need to be identified. It is imperative that aircraft movements, line-of-sight issues, navigational aids, close-in structures, and off-airport obstructions also be identified and evaluated. From an environmental perspective, noise, land use compatibility, water quality, and construction impacts must be assessed and mitigated, if necessary. These items are addressed in this study.

Section 4

RUNWAY EXTENSION FEASIBILITY

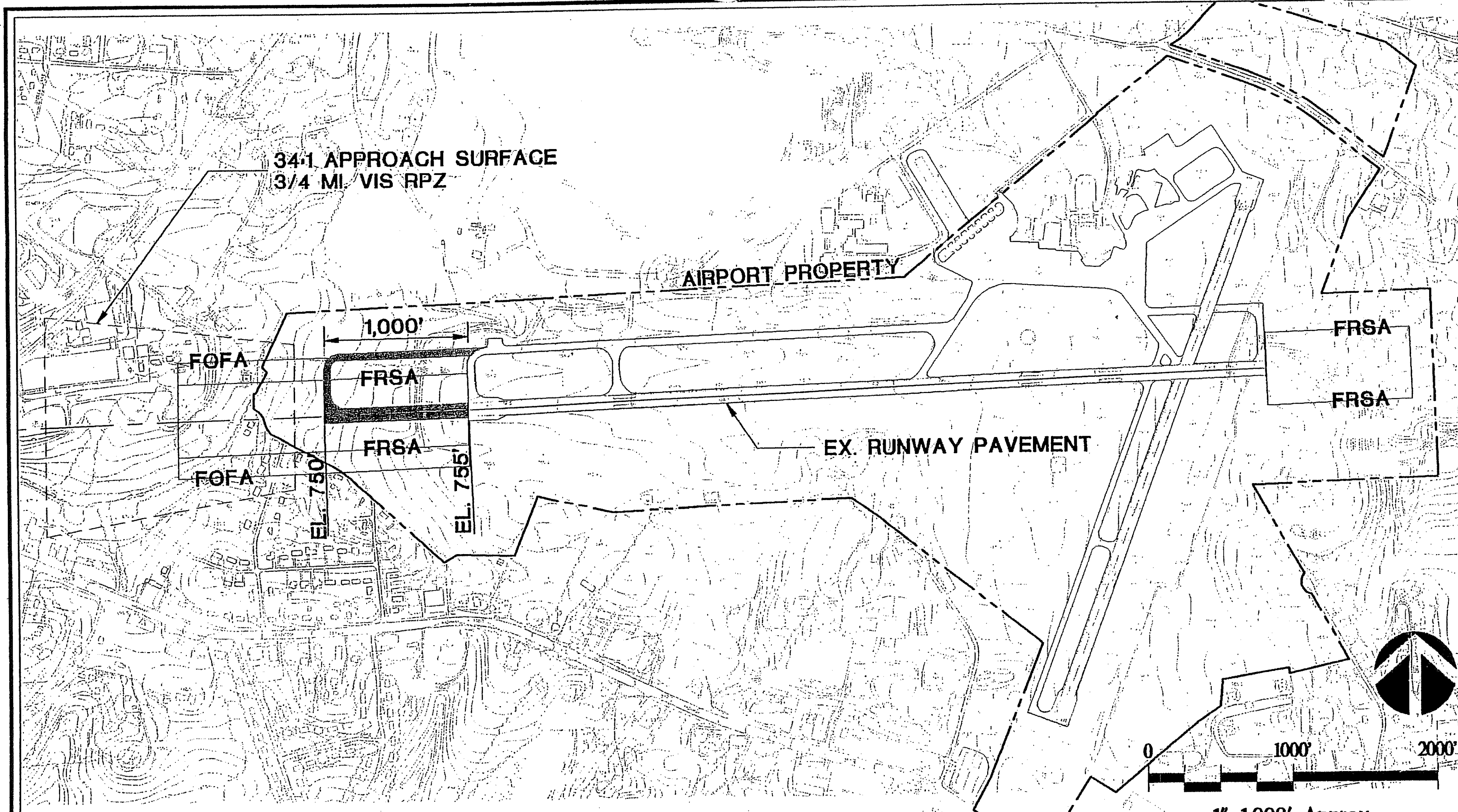
4.1 EXTENSION ALTERNATIVES

A required minimum takeoff length of approximately 6,500 feet was calculated in Section 4.0 utilizing a combination of guidelines and design standards established by FAA, manufacturer's performance specifications, and based on user justification. A cursory analysis of the existing airfield, points toward three possible alternatives which may be considered. Recognizing that safety receives the highest priority, these alternatives are:

- Alternative 1 - extend Runway 9-27 and Taxiway "A" to the west by approximately 1000'±, providing full length 1,000-foot RSAs at both ends of the runway (*see Exhibit 2*);
- Alternative 2 - extend Runway 9-27 and Taxiway "A" to the west and east by approximately 500'± in both directions, providing full length 1,000-foot RSAs at both ends of the runway (*see Exhibit 3*); and
- Alternative 3 - extend Runway 9-27 and Taxiway "A" to the east by approximately 1000'±, providing full length 1,000-foot RSAs at both ends of the runway (*see Exhibit 4*).

These alternatives are graphically depicted in schematic form on the following pages.

Beyond satisfying the basic requirement for runway length, various issues and factors are associated with the feasibility of each option. These factors, which are carefully presented and analyzed in the following subsections, include operational issues, environmental issues, and implementation considerations.



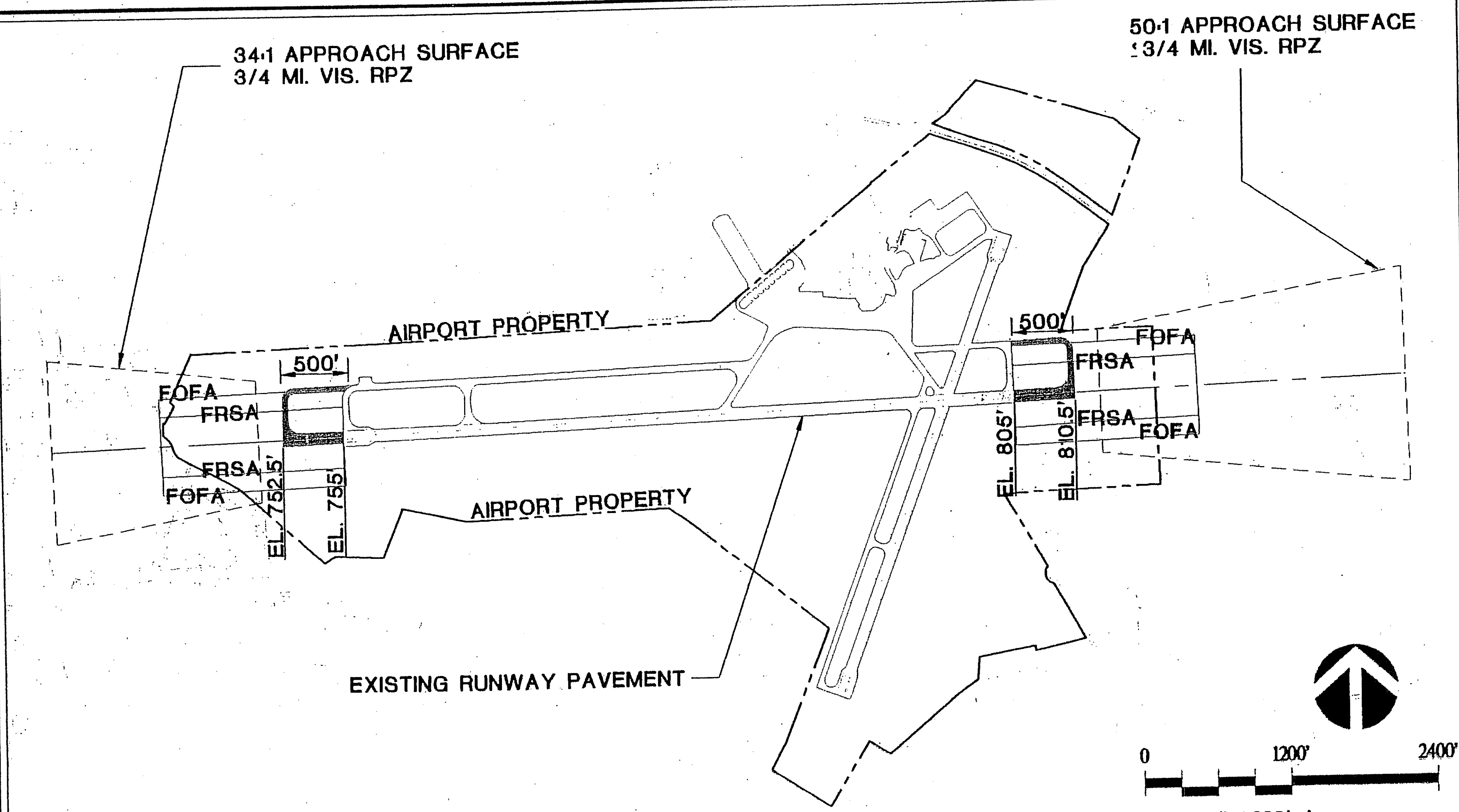
SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department.

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

1000-FOOT WEST EXTENSION

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 2



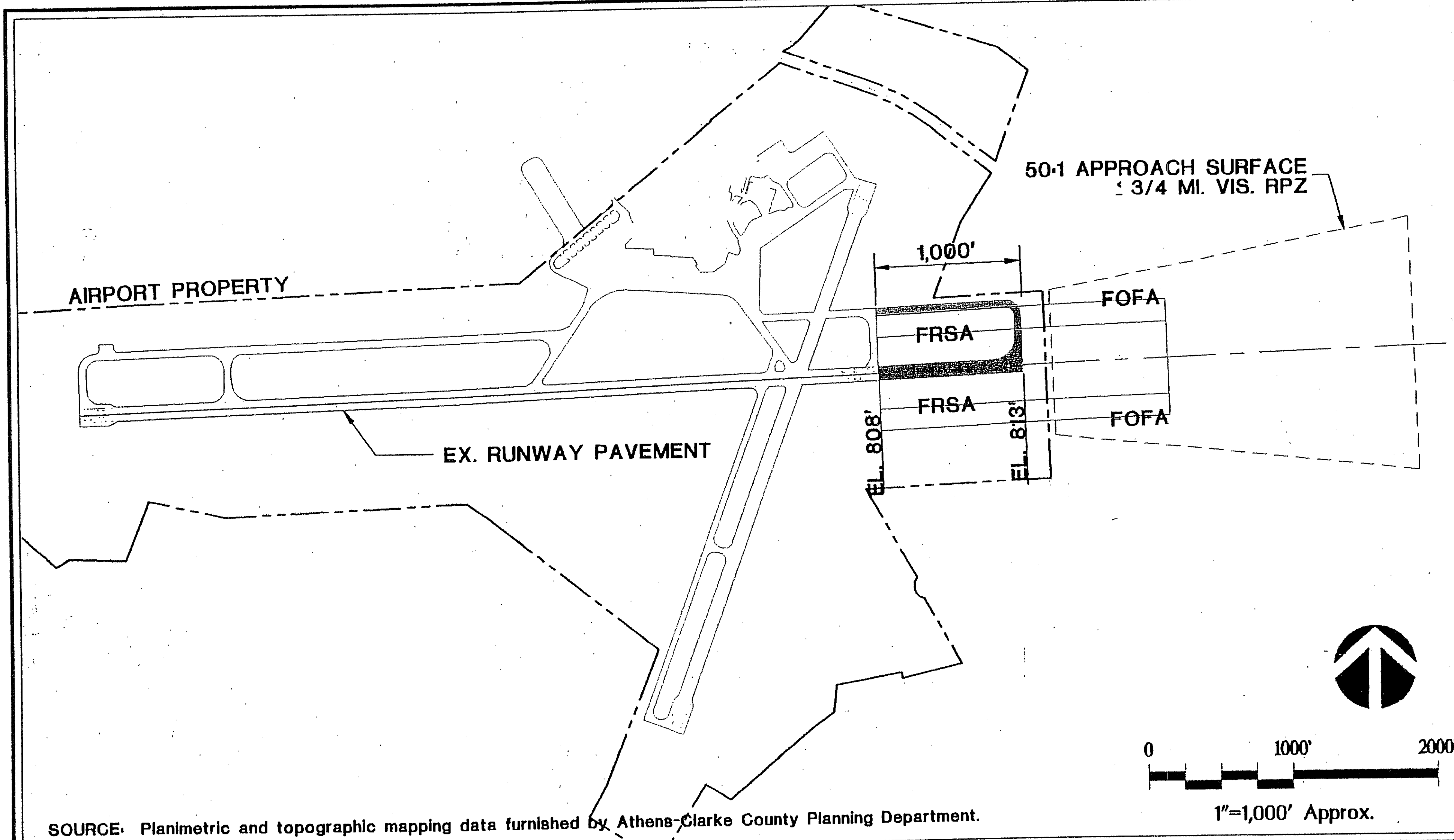
SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department.

THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

500-FOOT WEST EXTENSION/500-FOOT EAST EXTENSION

EXHIBIT 3



SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department.

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

1000-FOOT EAST EXTENSION

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 4

4.2 OPERATIONAL ISSUES

The consideration of a significant runway extension, must consider the operational aspects associated with each alternative. The major operational factors which influence not only the feasibility, but also the selection of a preferred alternative at AHN include the following: ground movements/taxi distances, line-of-sight standards, navigational aid impacts, RPZ protection, and potential off-airport obstruction impacts.

4.2.1 Ground Movements/Taxi Distances

The future extension of Runway 9-27 may present an operational safety concern if constructed as described without an extension of the north side parallel Taxiway "A". This scenario would require departing aircraft to back taxi on the runway to achieve the full 6,500 feet for departure. Obviously the impact would be less under Alternative 2. Though the airport is staffed with contract air traffic controllers, alleviating most of the concern, the hours of ATC positive control are less than 24-hours, creating the possibility of back taxiing during nighttime hours with the reliance on the UNICOM frequency; thus posing a serious safety concern. Of a much lesser concern are aircraft landings, which will rarely require the full runway length by being able to exit on connector taxiways. Approximately seven years ago when Runway 9-27 was extended east by 500 feet to its present length of 5,522 feet, the extension of parallel Taxiway "A" followed within the ensuing five years (*for reasons principally associated with cost*). For the above safety reasons, an extension of Taxiway "A" should be programmed to coincide with the runway extension.

One noted advantage of Alternative 2 and 3 would be the obvious ability to queue more aircraft on Taxiway "A" for westerly departures. Presently, the hold position dictated by the runway safety areas of Runways 9-27 and 2-20 provide for a maximum queue of two small aircraft east of Runway 2-20. Increasing the Taxiway "A" capability will enable the airport to accommodate more peak hour operations in the future.

A 1,000-foot extension to Runway 9-27 at AHN will have a negligible effect on taxi distances for both general aviation patrons and commercial/charter airlines. The potential of relocating the commercial terminal to a new site south of Runway 9-27 will ultimately benefit more from Alternative 1, by creating a more centralized location and reducing overall taxi distances under both east and west flow conditions. Conversely, general aviation will benefit more from Alternative 3 for similar reasons.

4.2.2 Line-of-Sight

Line-of-sight issues revolve around three major factors: runway longitudinal line-of-sight, intersecting runways line-of-sight protection, and Air Traffic Control Tower (*ATCT*) line-of-sight. Ideally, line-of-sight along the full length of the runway surface should be maintained. As a minimum, a point five feet above the respective runway end elevations should be visible the entire runway length. In instances where the airport is equipped with a full length parallel taxiway, this minimal requirement may be reduced to one-half the runway length. In the case of intersecting runways, it is optimal to see a point five feet above all runway end elevations; however, this is a rare occurrence at most airports. Therefore, a minimum Runway Visibility Zone concentrating on the central core of the airport near the point of runway intersection, should be maintained for all runways. The existence of an ATCT may mitigate this requirement to some degree. Nevertheless, Alternative 3 presents the least constraint to existing facilities, albeit minimal. Alternative 2 offers the most promising compromise.

The existence of the contract ATCT must also be considered for controller line-of-sight issues. There does not appear to be any negative impacts presented by existing facilities under either extension scenario. The only other issue to remain cognizant of relates to the angle of incidence created by the eye level of the controlled as it relates to the ability to discern distant objects on the horizon (*i.e., objects toward the west*). Given the location of the ATCT and the overall planned runway length, neither alternative should present a viewing angle problem for the controllers.

4.2.3 Navigational Aids

Existing navigational aids consist of a localizer (*west end*), a glide slope (*east end*), and VASIs/PAPIs (*east and west ends, respectively*). Any extension to the west will necessitate the relocation of both the localizer and the PAPI systems. Likewise any extension to the east may require the relocation of the glide slope, the ODALS, and the VASI systems. It may be possible to displace the east end threshold and leave the glide slope, ODALS, and VASI systems undisturbed; however, this would reduce the overall capability of the runway for landings. Therefore, Alternative 2 may require the relocation of all systems. A preliminary analysis of the glide slope antenna site, reveals that with both a 500 and 1,000-foot extension, the glide slope site may be relocated to the south side of Runway 9-27. A relocation under Alternatives 2 and 3 would greatly improve aircraft movements on Taxiway "A", by reducing current hold position restrictions, as noted in Subsection 4.2.1. Additionally, in the unfortunate event that the contract ATCT is closed, relocating the glide slope to the south side will prevent the loss of the glide slope/Category I precision instrument approach, which would otherwise fall victim to the absence of positive ATC ground control.

One additional factor to consider centers around the future installation of a medium intensity approach light system w/runway alignment indicators (*MALSR*) on the east runway end. This system will ultimately reduce landing minima under Category I conditions, improving the airport's poor weather capability and enhancing operational safety. The installation of this system must be considered from the standpoint of construction phasing, when analyzing the ultimate airfield configuration.

4.2.4 RPZ Protection

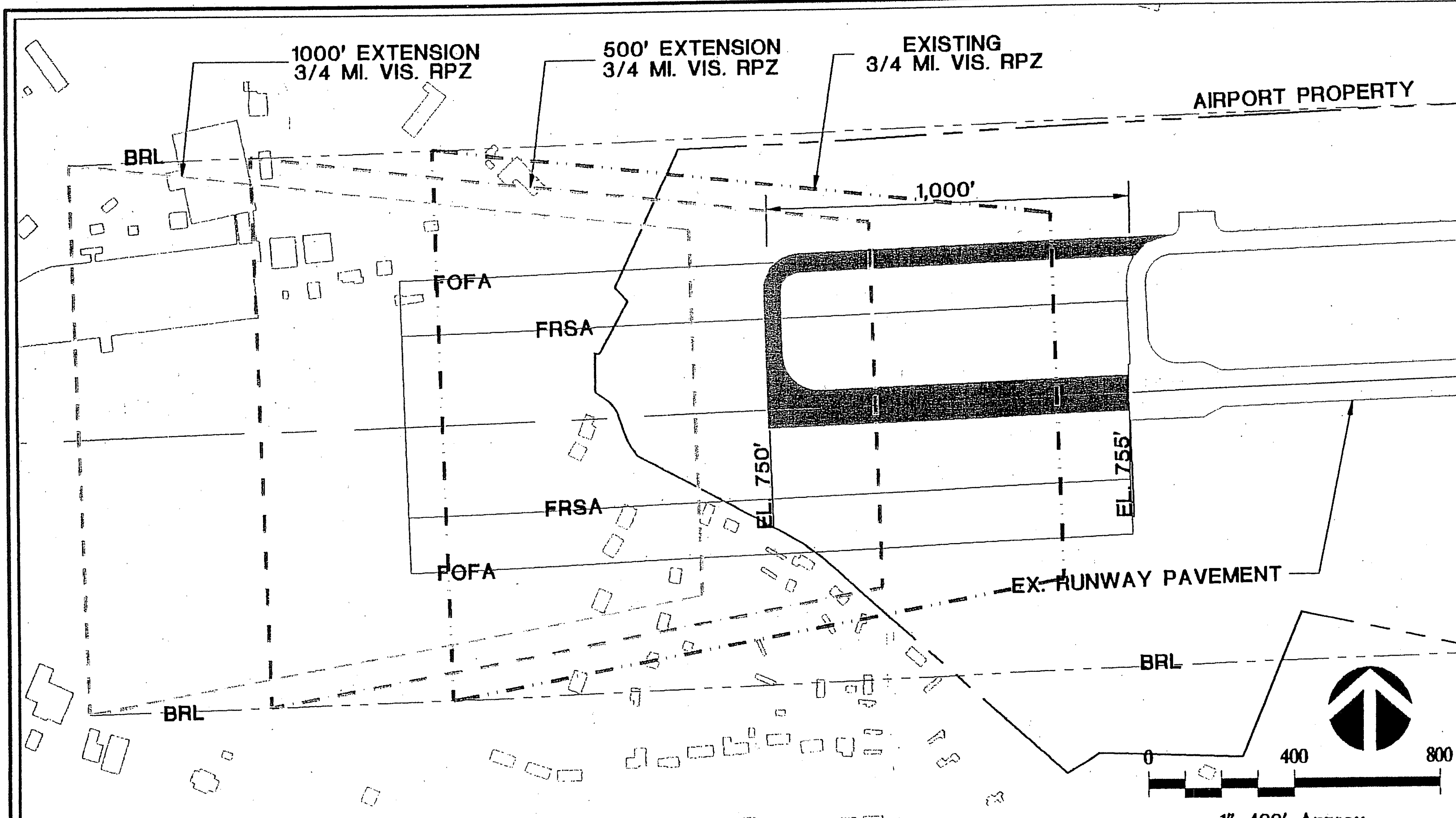
The ends of Runway 9-27 have associated Runway Protection Zones (*RPZs*) which are 2-dimensional and trapezoidal in shape. The basis for their existence is safety related. FAA recommends that the airport Sponsor acquire the area within the RPZ through fee simple means, or as a minimum possess control over the use of the property. The RPZ for the west end of the runway is associated with a non-precision approach, while the

RPZ for the east end of the runway is somewhat larger in area and is associated with a precision approach. FAA recommends that buildings, water bodies (*bird attracting*), and places promoting the congregation of people be restricted from the RPZ area. Exhibits 5 and 6 illustrate the RPZ limits for all alternatives considered to the west and east, respectively.

For purposes of this study, commercial and residential properties containing buildings within the RPZ or Building Restriction Line areas, will be considered for acquisition, regardless of the owner or function. Additionally, in instances where a structure may fall outside the limits of the RPZ, but a majority of the property is contained within the RPZ area thus potentially impacting the usability of the property, acquisition is assumed. The no-build scenario (*Alternative 3*) to the west already includes residential acquisition, whereas, Alternatives 1 and 2 may involve the purchase of the IMC Agribusiness site. The RPZ alternatives to the east impact large tracts of County-owned property; however, Alternatives 2 and 3 may involve the purchase of open/farmlands beyond Beaverdam Road to varying degrees.

4.2.5 Off-Airport Obstructions

Each end of Runway 9-27 has a controlling obstacle-free 3-dimensional approach surface dictated by Federal Aviation Regulations (*FAR*) Part 77. The resulting approach slope is predicated on the location of the physical runway end, its elevation, and the type of approach. The west runway end, having a non-precision approach with visibility minimums greater than ¾ mile, has a controlling 34:1 surface which extends to the west approximately 10,000 feet (*from the runway's primary surface – a point 200 feet beyond the runway end*) and theoretically beyond. The west runway end, equipped for precision instrument landing, has a controlling 50:1 surface which extends to the east approximately 10,000 feet, and transitions to a 40:1 surface for another 40,000 feet. These surfaces all illustrated in Exhibits 7 and 8.



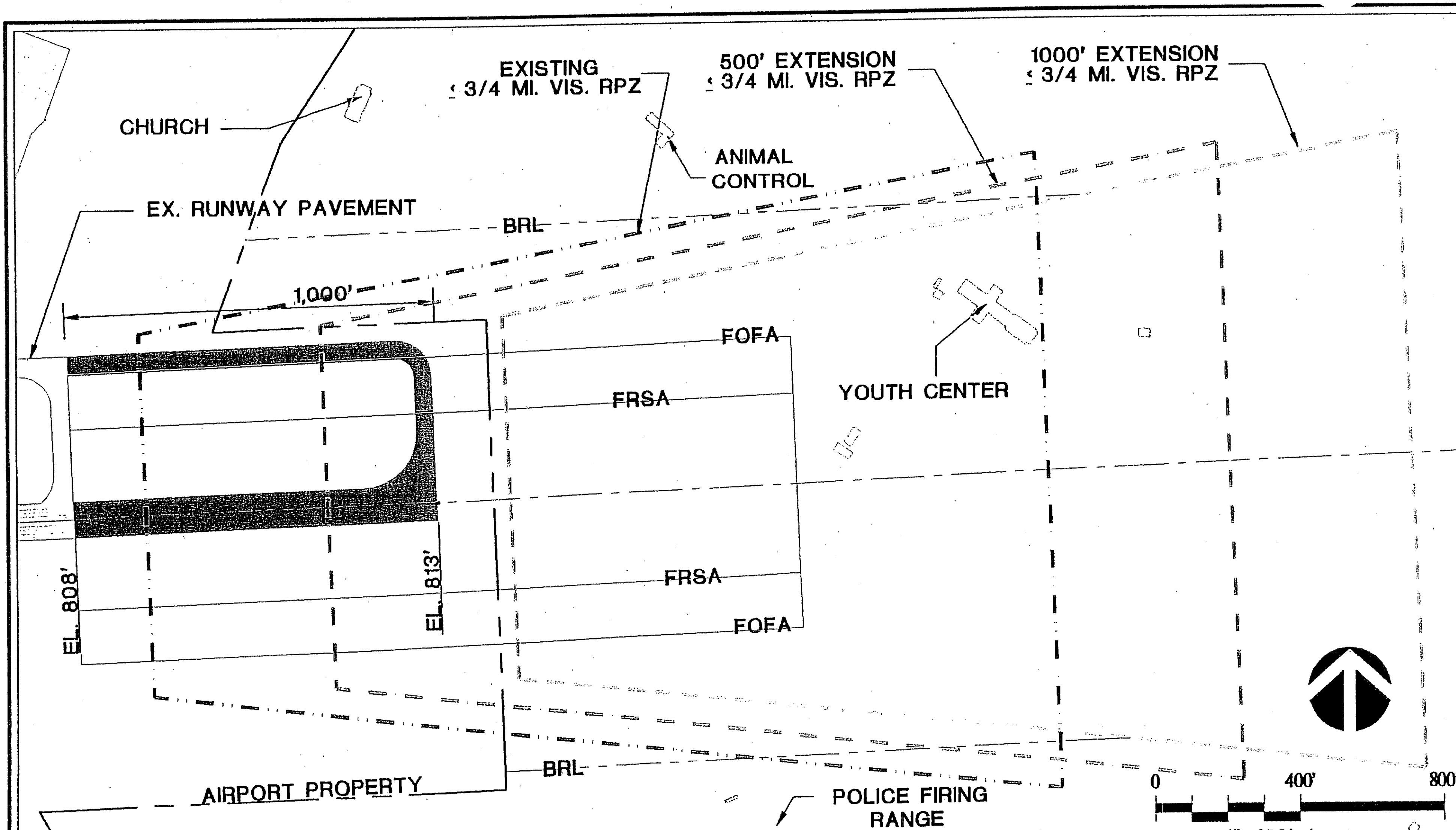
SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department.

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

WEST RUNWAY END RPZ ALTERNATIVES

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 5



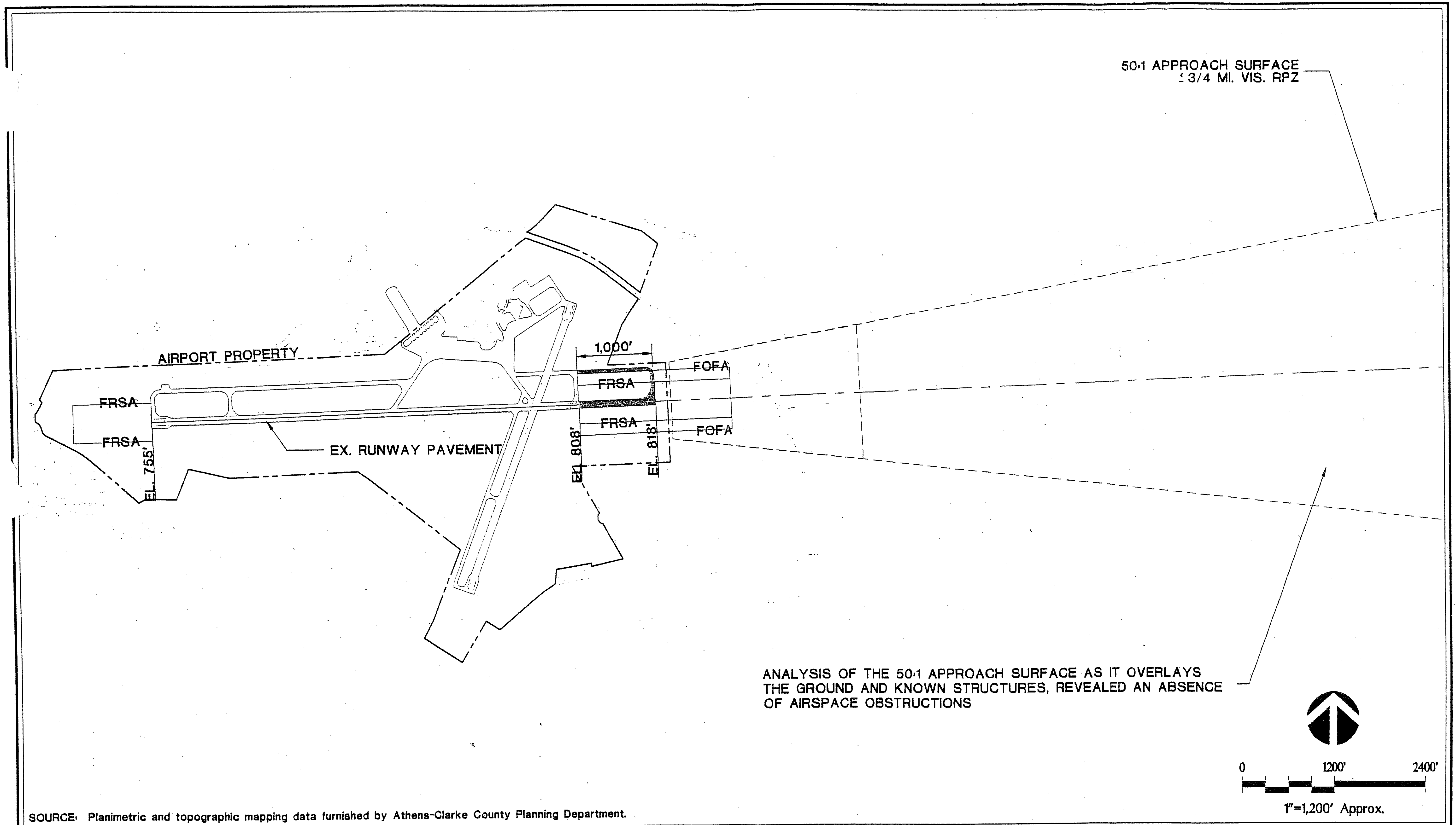
SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department.

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

EAST RUNWAY END RPZ ALTERNATIVES

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 6



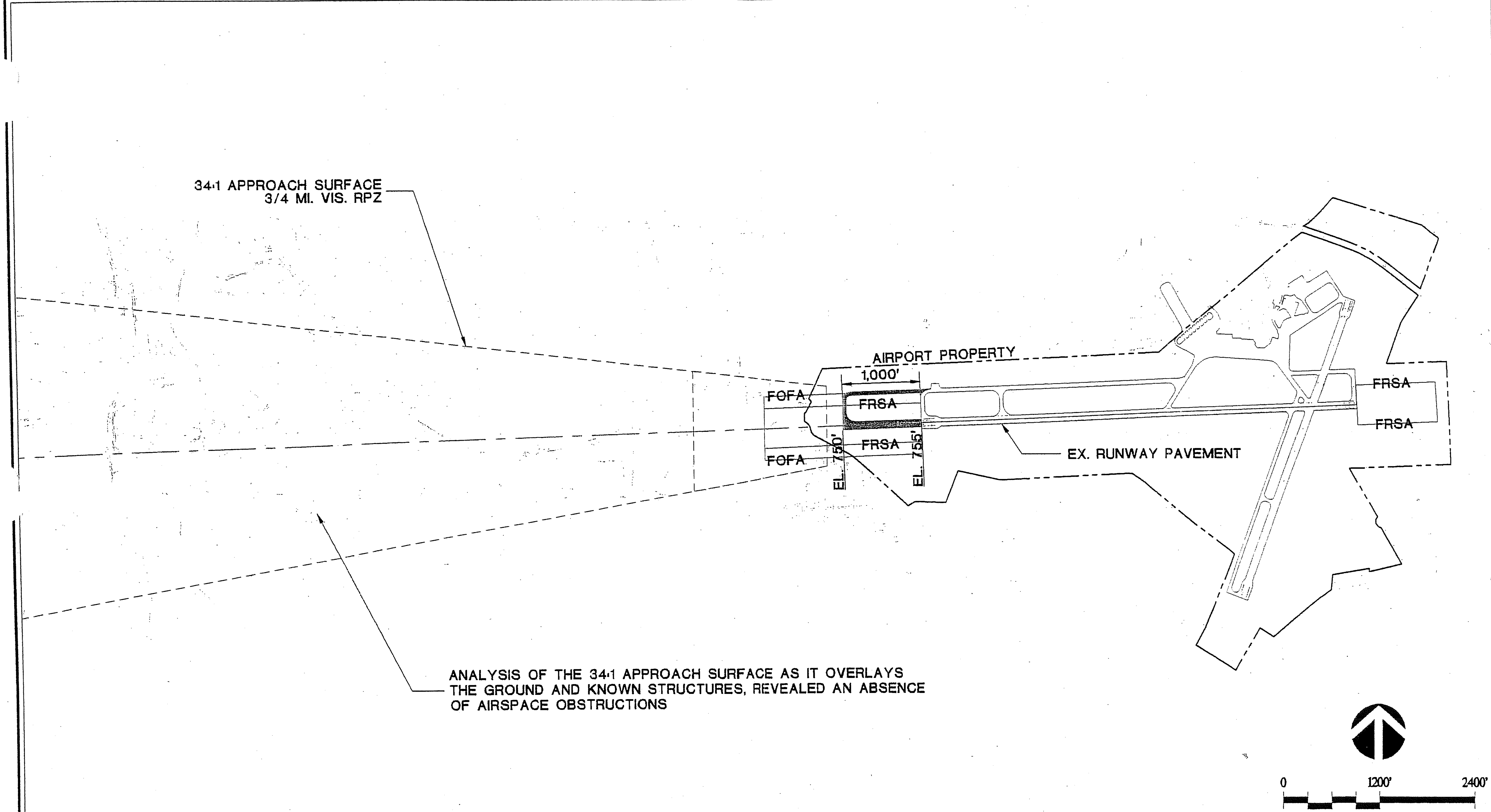
THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT

RUNWAY 9-27 EXTENSION FEASIBILITY

EXTENDED APPROACH FROM THE EAST

EXHIBIT 8



SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department.

THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

EXTENDED APPROACH FROM THE WEST

EXHIBIT 7

A review of planimetric and topographic base map files furnished by Athens-Clarke County Planning Department, indicated that no known in-close obstructions exist that would have a negative impact on air navigation to either runway end extension under either development scenario.

4.3 ENVIRONMENTAL ISSUES

The consideration of a significant runway extension, must additionally consider the environmental consequences associated with each alternative. The major environmental consequences at AHN which may affect the feasibility and selection of a preferred alternative include the following: aircraft noise, land use compatibility, water quality/wetland impacts, and construction impacts. Further assessment may be required in an Environmental Assessment by the FAA.

4.3.1 Aircraft Noise

Aviation noise has been a constant concern of communities and airports since the introduction of the jet engine to commercial aviation in the early 1970's. The Airport Noise and Capacity Act (*Noise Act*) passed by Congress in 1990, created noise standards for aviation. Associated with the standards is the gradual phase out of older and noisier aircraft. This transition from noisier Stage 2 aircraft to quieter Stage 3 aircraft is scheduled for completion by January 2000. The phase out and Stage 2/3 descriptors apply only to civil aircraft weighing in excess of 75,000 pounds (i.e., 737-400, 757-200).

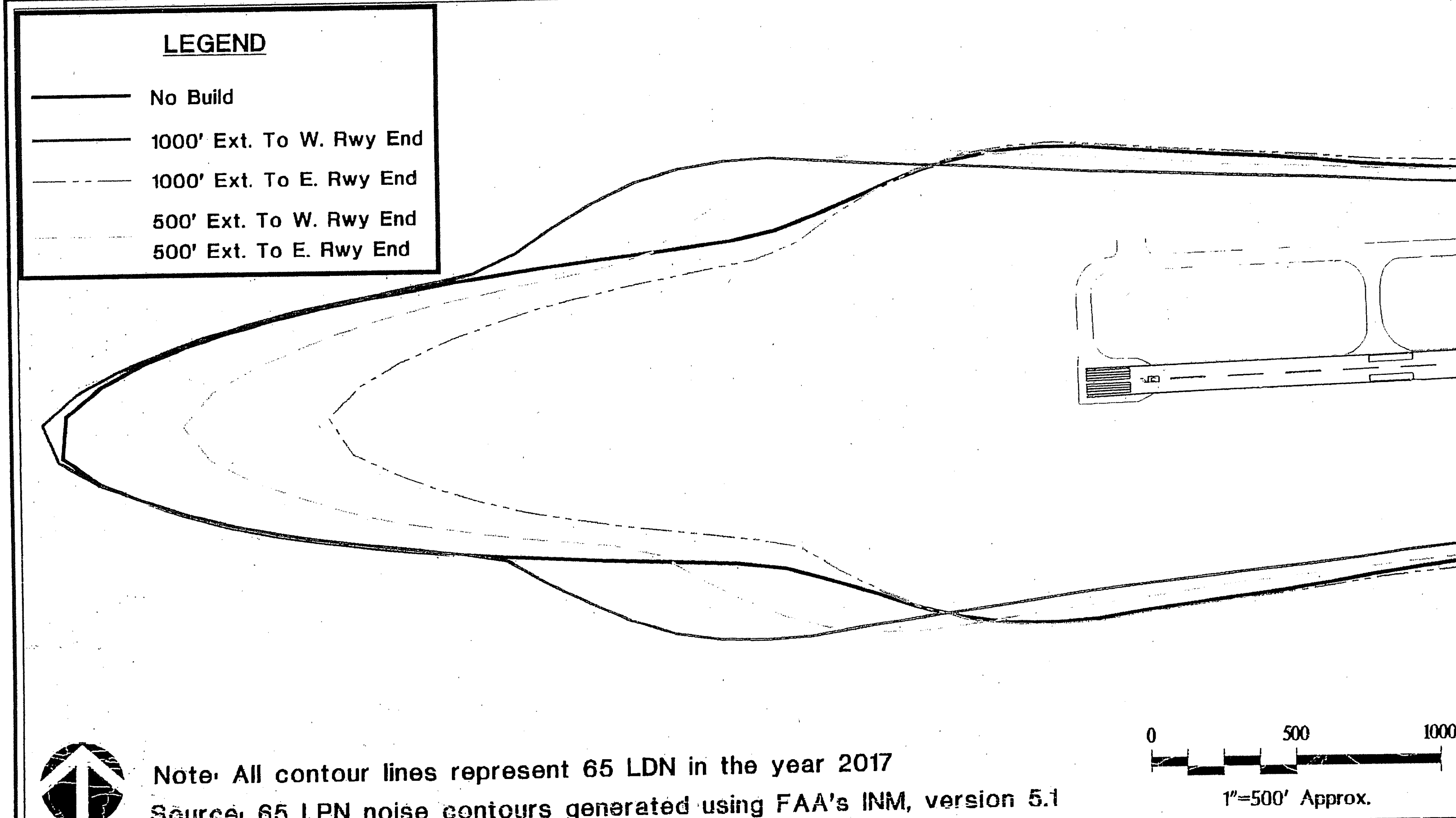
Unfortunately, this rule does not cover the majority of corporate business jet operations taking place at AHN. On a positive note, the business jet manufacturers have made noted strides in reducing aircraft noise over the last decade, to the point of falling well below the Stage 3 required noise levels. As older business jet technology is replaced by more efficient newer models, noise levels will significantly decrease. Additionally, widely utilized noise abatement measures may be employed at AHN in an effort to further mitigate noise impacts to the surrounding communities.

FAA's Integrated Noise Model (*INM*), version 5.1, was utilized to assist in the review of potential noise impacts for each development scenario. Based on flight track and runway end utilization data gathered as a part of the on-going Master Plan, future 2017 noise contours were generated for all alternatives, including the no-build option. Exhibits 9 and 10 graphically portray the 65 Ldn contour sets for a runway extension to the west and east, respectively. Although given the level of effort for this analysis, every effort was made to portray a conservative noise exposure area. For example under the extension scenarios in the future, charter operations conducted from AHN by 737-400 aircraft operated by Delta Airlines, were assumed to occur at a rate of approximately two flights per week.

The results of the preliminary noise analysis reveals that based on conservative Master Plan forecasts and the inclusion of 737-300 charter flights, no significant aircraft noise impacts were calculated for either runway end under all scenarios. It is also important to note that since a majority of operations are conducted using a westerly flow, the noise exposure area associated with Alternative 1 (*worst case*) does not exceed the exposure for the no-build scenario. This is a result of most noise being generated on departure, which in most cases the aircraft departure profile for Runway 27 is relatively unchanged.

4.3.2 Land Use Compatibility

Land use in the vicinity of the proposed runway extension alternatives and there respective noise exposure areas has remained virtually unchanged for the past 10 years. In the approach area for Runway 9 existing land uses include industrial/commercial north of and south of the extended runway centerline. Immediately south of the proposed runway end under Alternative 1 are single family residential units. Additional commercial properties also exist along Lexington Road. The land area west of Winterville Road is largely undeveloped, with commercial properties just north of the extended runway centerline. Beyond the point lies Brown Parkway, a limited access 4-lane bypass around the City of Athens, and further west additional commercial, single and multi-family residential uses. Appendix A outlines the Federal guidelines on land use compatibility.



Note: All contour lines represent 65 LDN in the year 2017

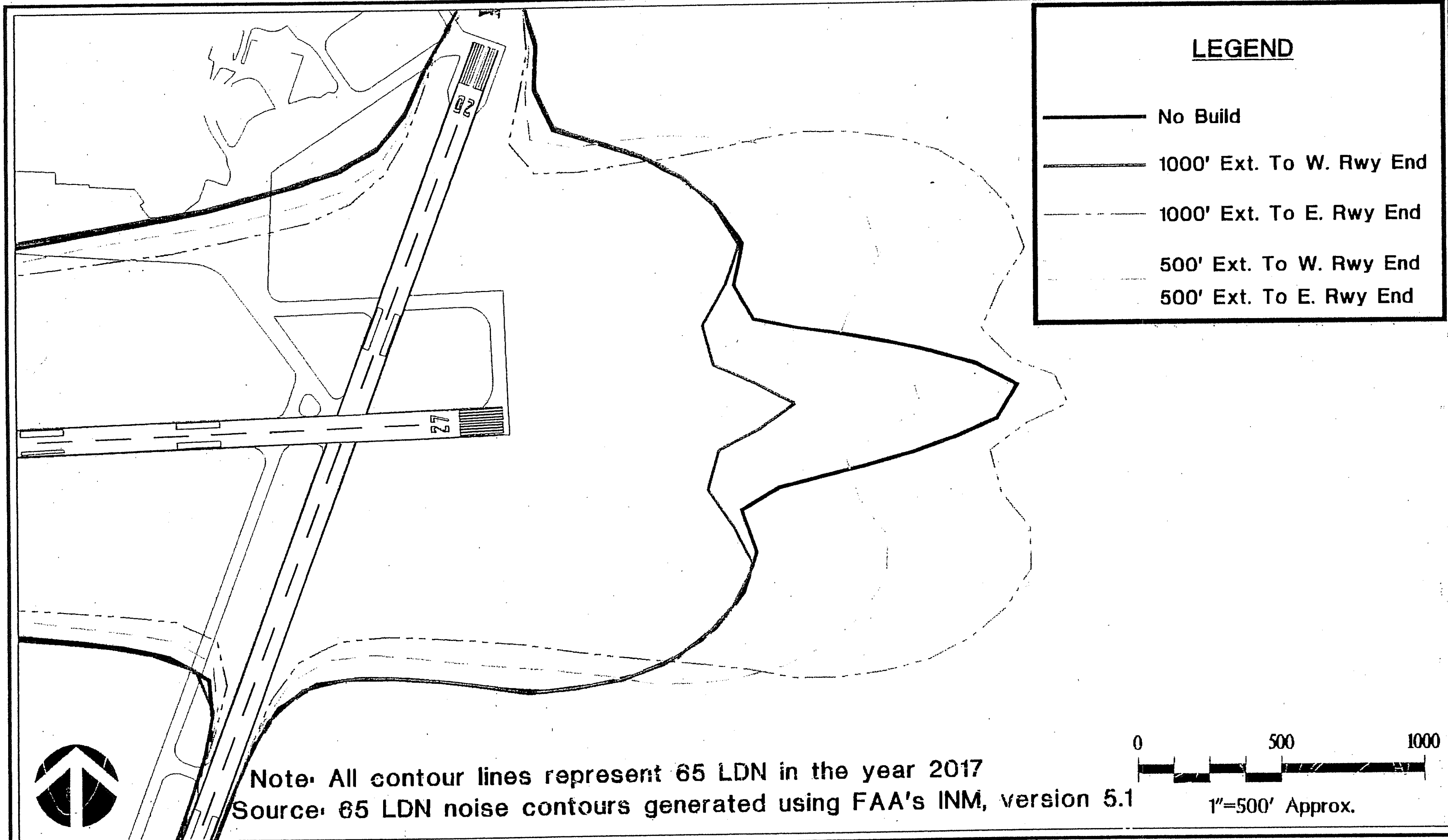
Source: 65 LPN noise contours generated using FAA's INM, version 5.1

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

NOISE IMPACTS TO THE WEST

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 9



ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

NOISE IMPACTS TO THE EAST

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 10

In the approach to the easternmost runway end, the land is predominantly undeveloped. West of Beaverdam Road, the vast majority of property is owned by the County. East of Beaverdam Road the Youth Center lies directly within the existing and all alternative RPZ areas. The remaining lands immediately beyond Beaverdam Road for a minimum of 1,000 feet consist of open/agricultural/forested land uses. Approximately 500 feet beyond and south of the RPZ limits of Alternative 3 lies a single family residential subdivision.

A review of current and on-going comprehensive land use plans for Clarke County do not contradict these existing uses. Based on a cursory analysis of existing and proposed land uses in the immediate approach areas, and given the area overlays of aircraft noise exposure and RPZ areas, no land use incompatibility was determined.

Of lesser concern from a feasibility and technically acceptable standpoint, but certainly a factor which oftentimes may be perceived by the general public as critical, are flight tracks of arriving and departing aircraft; more specifically, overflights. Aircraft taking off from and landing on the west runway end, fly over the heart of the UGA campus (*including Sanford Stadium*) and portions of downtown Athens. These overflights occur now and will continue to occur in the future, regardless of the chosen alternative. Any extension to the west may marginally move aircraft on approach closer to more densely populated areas. In reality, a 1,000-foot extension lowers the altitude of aircraft on final approach by less than 35 feet, a distance unable to be distinguished from the ground. The actual altitude of aircraft taking off to the west should not be altered. However, perception, rather than fact may be an issue requiring further consideration. It should be noted that possible mitigating measures may include: rerouting of flight tracks, implementing departure and/or arrival profiles, or displacing the landing threshold (*under an extension scenario*).

4.3.3 Water Quality & Wetlands

Exhibit 11 depicts the approximate extents of existing floodplains, potential wetlands, and streams/creeks. As illustrated, potential wetlands (*from National Wetland Inventory mapping*) may exist beyond both runway ends. The only existing floodplain area lies along Shoals Creek and is well beyond any potential impact areas. Intermittent streams are located within the extension limits of each runway end.

The potential wetlands off the west end of the runway are impacted in order of severity under Alternatives 1 and 2, while Alternative 3 would have no impact. However, Alternative 3 is the only likely scenario that will impact the possible wetlands off the east end of the runway. Therefore, coordination with Federal and State agencies may be required to address mitigation. For purposes of project cost estimating, a replacement ratio of 1:2 was assumed.

Stream impacts will occur under all alternatives in the east runway end RSA; whereas, only Alternatives 1 and 2 were determined to impact the stream in the west extension area. Field inspections indicate Alternatives 1 and 2 will require a 6'x8'±concrete culvert measuring approximately 1,000 feet and 300 feet, respectively, to route the stream under the RSA of the west extension. Conversely, the much smaller intermittent stream in the east runway end RSA may be routed through a lesser diameter steel or concrete pipe.

4.3.4 Construction Impacts

Major construction activities will include site preparation, building and pavement demolition, trenching, and asphalt paving. The associated impacts with these activities may include truck haul routes, airborne dirt, equipment noise, and possible asbestos removal. The implementation of Best Management Practices (*BMPs*) should limit most impacts to local water and air quality. Alternative 1 and Alternative 2 to a lesser degree offer the best logistics to mitigate haul route issues during the site preparation phase, due to their proximity to the Davidson Minerals quarry (*possible source for fill material*). During the design phase of either alternative and prior to any building demolition, a

Phase I site assessment should be performed to check for potential asbestos materials in all structures. If determined to exist, asbestos abatement will be implemented and acceptable disposal methods and locations will be identified.

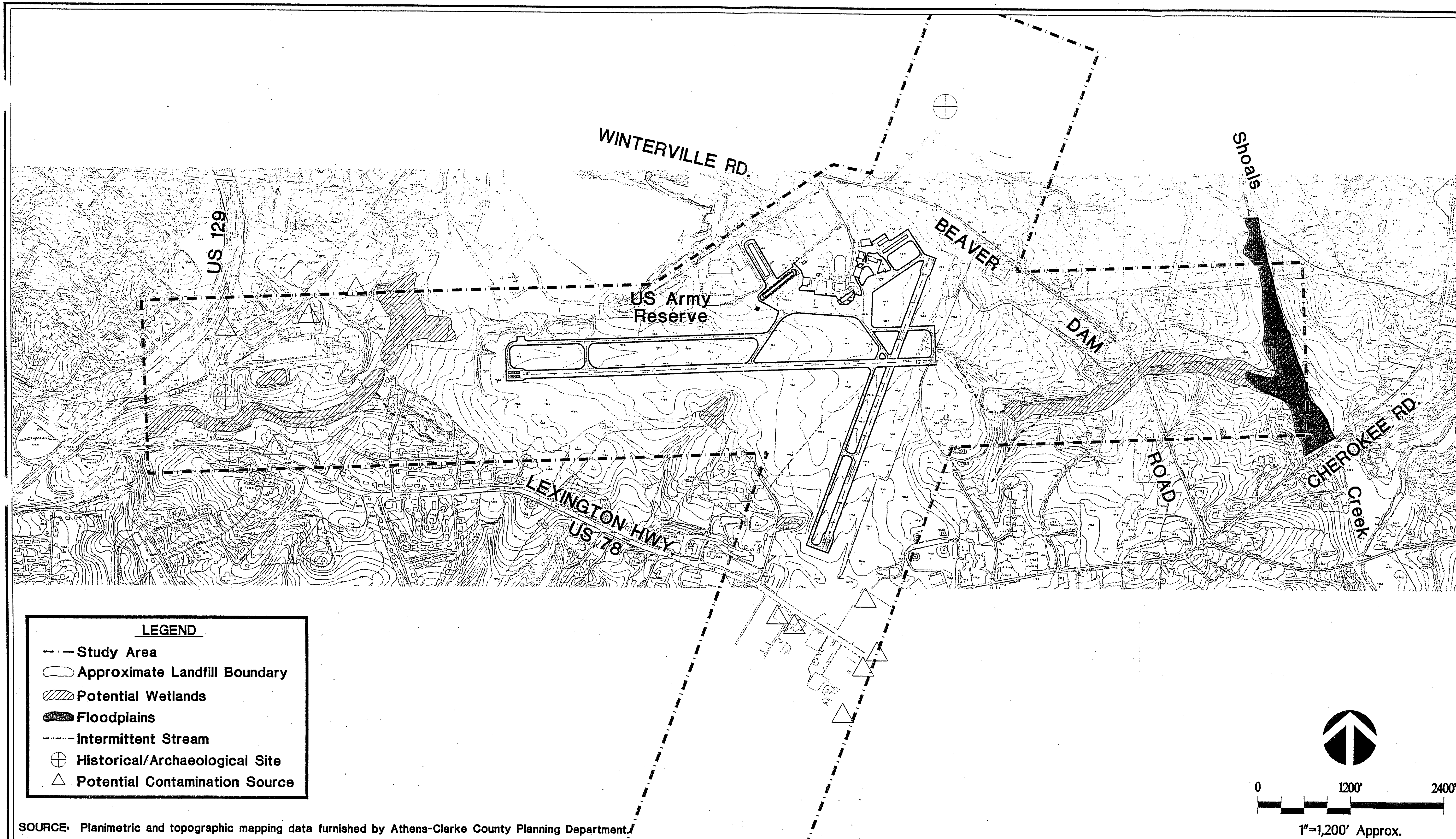
4.4 IMPLEMENTATION

The implementation phase of the runway extension(*s*) may present items which require special consideration. The significant items focused on in this subsection include special design constraints, borrow areas/earthwork, and land acquisition. The possible solutions or impacts of these items may cause one alternative to be deemed more feasible. Also presented in this subsection are preliminary cost estimates for each Alternative, and a possible construction phasing scenario for the recommended alternative.

4.4.1 Design Constraints

It should be noted that the application of declared distances have not been explored during the course of this feasibility analysis. Declared distances, per FAA AC 150/5300-13, permit an airport sponsor to modify recommended design standards at severely constrained airports or when standard airport expansion alternatives may be cost prohibitive. This process requires the calculation of several components for runway takeoff and landing lengths, namely: the accelerate/stop distance (*ASDA*), takeoff run available (*TORA*), takeoff distance available (*TODA*), and landing distance available (*LDA*). Additionally, displaced thresholds, although touched on in previous subsections, are not considered in this analysis.

Construction phasing of the actual site preparation and paving activities will require careful planning. Because the existing runway is marginally sufficient to accommodate the fleet mix at AHN, construction activities must be conducted to minimize impacts to aircraft operations. Every effort should be made to maintain an operational field length and complement of navigational aids to alleviate a possible runway closure during construction.



SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department.

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ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

OTHER ENVIRONMENTAL CONSIDERATIONS

EXHIBIT 11

Additionally, an alternative should be strongly considered which lessens the need for multiple navigational aid relocations. The future MALSR installation for the east runway end should also be carefully considered, as implementation of the various alternatives will have a direct influence over the timing of the MALSR. Ideally the installation of this system should be expedited.

Adding physical pavement to the east runway end would require construction over a capped landfill (*reference Exhibit 11*). During the last 500-foot extension to the east runway end, which occurred seven years ago, dynamic compaction of the landfill material was required to prevent subsequent pavement settling. Alternatives 2 and 3 may require a similar construction activity for similar reasons. Options to dynamic compaction may include pressure grouting, where grout material is physically injected into the garbage and allowed to solidify, or concrete structural pier placement. All options are considerably expensive and should be explored during design.

As mentioned earlier, the ultimate runway length to be planned for is 7,000 feet. This length is unable to be fully accommodated to the east without a significant roadway relocation. Full extension to the west, although physically possible, would further increase: 1) the risk of adverse noise impacts to the west; 2) the potential for obstruction problems; and 3) the concerns associated with overflights. Therefore, a balance of ultimate extensions to both ends must be considered (*i.e., Alternative 2 plus an ultimate 500-foot extension to the west*).

4.4.2 Borrow Areas/Earthwork

Depending on the preferred alternative, necessary earthwork may range from approximately 1.8 – 2.9 million cubic yards of dirt to construct 1,000 feet of new runway. This volume may require significant haul distances if adequate borrow sites are not identified proximate to the airport. Discussions with Davidson Minerals have taken place over the past year to facilitate the potential availability of fill material from the quarry. Unfortunately at this time the exact volume available over the next five years is unknown, but may present a sizeable contribution to the overall project.

Once preliminary design for the runway extension project is initiated, candidate borrow sites must be identified. The final selection of borrow areas may have a substantial impact on the actual construction cost. Preliminary estimates in this report assume that a majority of the fill will be available from the adjacent quarry, while the balance would be trucked from a site approximately one mile away.

4.4.3 <u>Land Acquisition</u>

Exhibits 12 and 13 illustrate the various RPZ and BRL limits of the various alternatives together with a worst case property acquisition scenario. Athens-Clarke County Tax Assessors personnel were contacted to assist in determining parcel boundaries and assessed values of land and associated buildings. Exhibit 12 depicts the approximate area to be acquired under Alternative 1, whereas, Exhibit 13 depicts the approximate land necessary for Alternative 3. In the case of the west runway end, acquisition of the residential area south of the airport and north of Lexington Road is recommended under all alternatives; the balance is assumed as being purchased under Alternatives 1 and 2. Similarly for the east runway end, all property west of Beaverdam Road as well as the Youth Center property are recommended for purchase under all Alternatives. The land area east of Beaverdam Road is recommended for acquisition to various extents for Alternatives 2 and 3.

4.4.4 <u>Preliminary Cost Estimates</u>

Preliminary cost estimates (*reference Appendix B*) have been developed for each of the alternatives utilizing 1998 dollars. Individual alternative project totals are presented in Table 2. Surprisingly, the difference between all alternatives is approximately 25%. The difference between Alternative 1 and 2 is approximately 10%, while that between Alternatives 2 and 3 is roughly 15%.

TABLE 2
PRELIMINARY COST ESTIMATES
Athens/Ben Epps Airport

PROJECT DESCRIPTION	TOTAL PROJECT COST
Extend Runway & Taxiway "A" 1,000' West	$20,213,600
Extend Runway & Taxiway "A" 500' West and 500' East	$22,340,700
Extend Runway & Taxiway "A" 1,000' East	$25,085,900

Source: The LPA Group analysis, 1998.

Of the total dollar amounts presented above, 90 percent is eligible for Federal funding. This would result in approximately $18.2 - $22.6 million of the total program being eligible for Federal grants-in-aid. It should be mentioned that these totals far exceed the traditional AIP entitlement funds received annually by AHN. Funding of this magnitude from the FAA would need to be augmented by AIP discretionary and/or a special allocation of funds (*i.e., Letter of Intent*).

More detailed preliminary construction cost estimates for each alternative are provided in Appendix B. Additionally, a cost breakdown for the ultimate program of a 7,000' x 150' runway is provided in Appendix B.

4.4.5 Construction Phasing

Due to the overall magnitude of construction costs associated with the described project, it may prove beneficial to the County to consider a program of projects to meet the airfield requirements which are phased over time. Phasing the various projects may be necessary to satisfy levels of funding which are less than the program total.

The previous analysis points to the ultimate feasibility of extending either runway end by 1,000 feet. As stated in Section 3.0, it is recommended that ultimate planning should accommodate a 7,000-foot long runway with a 150-foot width. A decision is necessary to determine which end to build-out at 500 feet, rather than the full 1,000 feet. For cost reasons, extending the east end beyond 500 feet is no longer considered, thus eliminating

Alternative 3 and retaining Alternatives 1 and 2. Three basic reasons force a recommendation of implementing Alternative 2:

1) Constructing Alternative 1 would require delaying installation of the future MALSR beyond completion of the 6,500-foot program reviewed in this report.
2) Due to potential overflight concerns of the UGA campus and the final justification for a 7,000-foot runway being driven through travel generated by the university and other similar interests, this permits the University of Georgia to make the ultimate decision of extending to the west by the full 1,000 feet.
3) A cost differential of only 10% should not overshadow item #1 above.

The recommendation of implementing Alternative 2, assumes that the ultimate 7,000 feet will be accomplished by extending the runway west by an additional 500 feet (*including potentially widening Runway 9-27 to 150 feet*). Based on this recommendation, a suggested program breakdown of projects are described as follows:

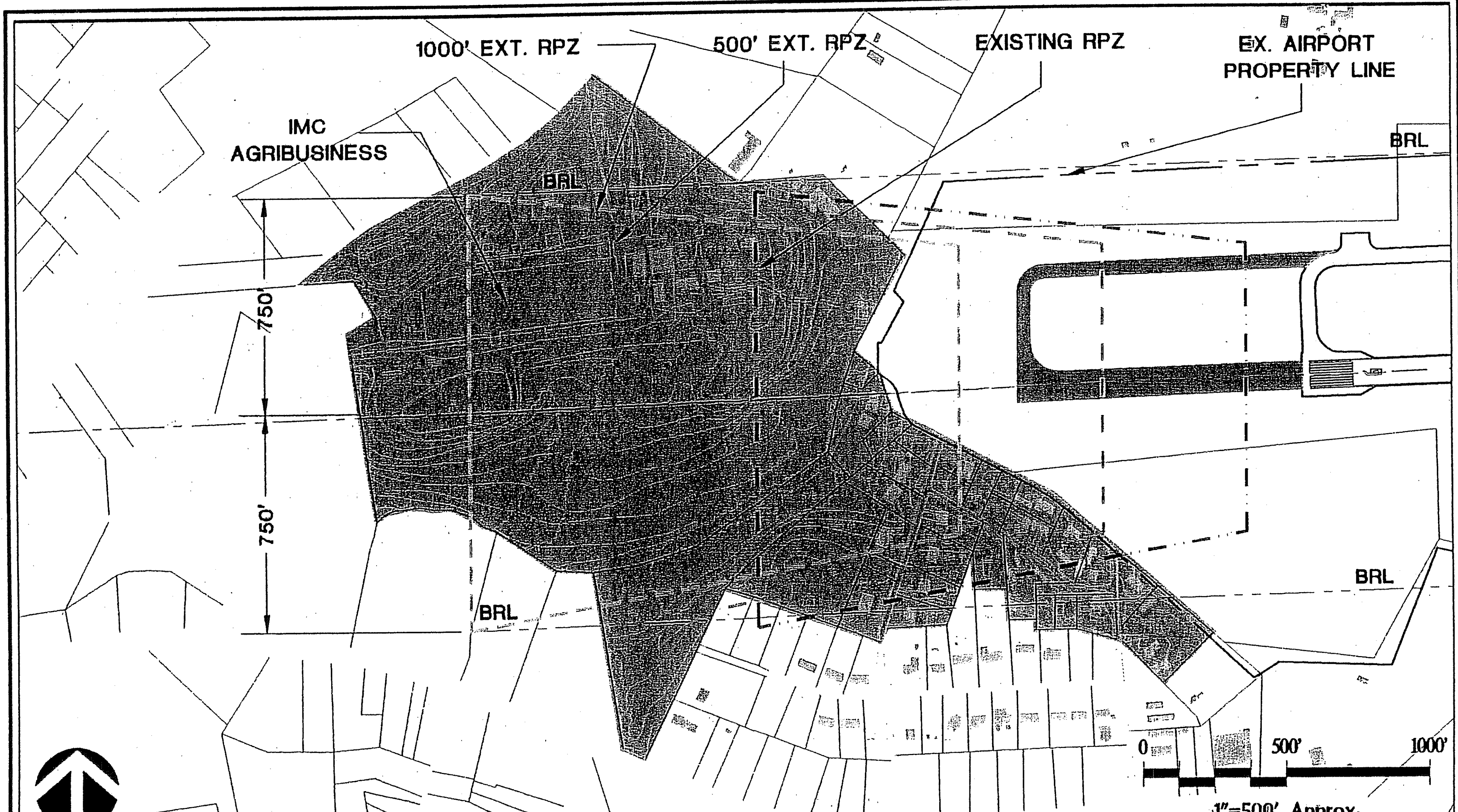
1. Extend the existing non-standard RSAs for both runway ends, resulting in full-length RSAs of 1,000 feet;
2. Begin acquiring land in the approaches to both runway ends;
3. Extend the runway, Taxiway "A", and the RSA east by approximately 500 feet (*with an interim displaced threshold*);
4. Relocate the glide slope and eliminate the displaced threshold on the east end;
5. Relocate the localizer on the west end; and
6. Extend the runway, Taxiway "A", and the RSA west by approximately 500 feet.

Remaining items discussed in this report to be ultimately constructed include:

1. Install MALSR off the east end of the runway;
2. Widen Runway 9-27 by 50 feet for a total width of 150 feet; and
3. Extend the runway, Taxiway "A", and the RSA west by approximately 500 feet for a total length of 7,000 feet.

The phasing sequence described above is preliminary in nature and may be revised to accommodate funding requirements/availability and local requirements.

Exhibit 14 illustrates these improvements in a color-coded format.



SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department.

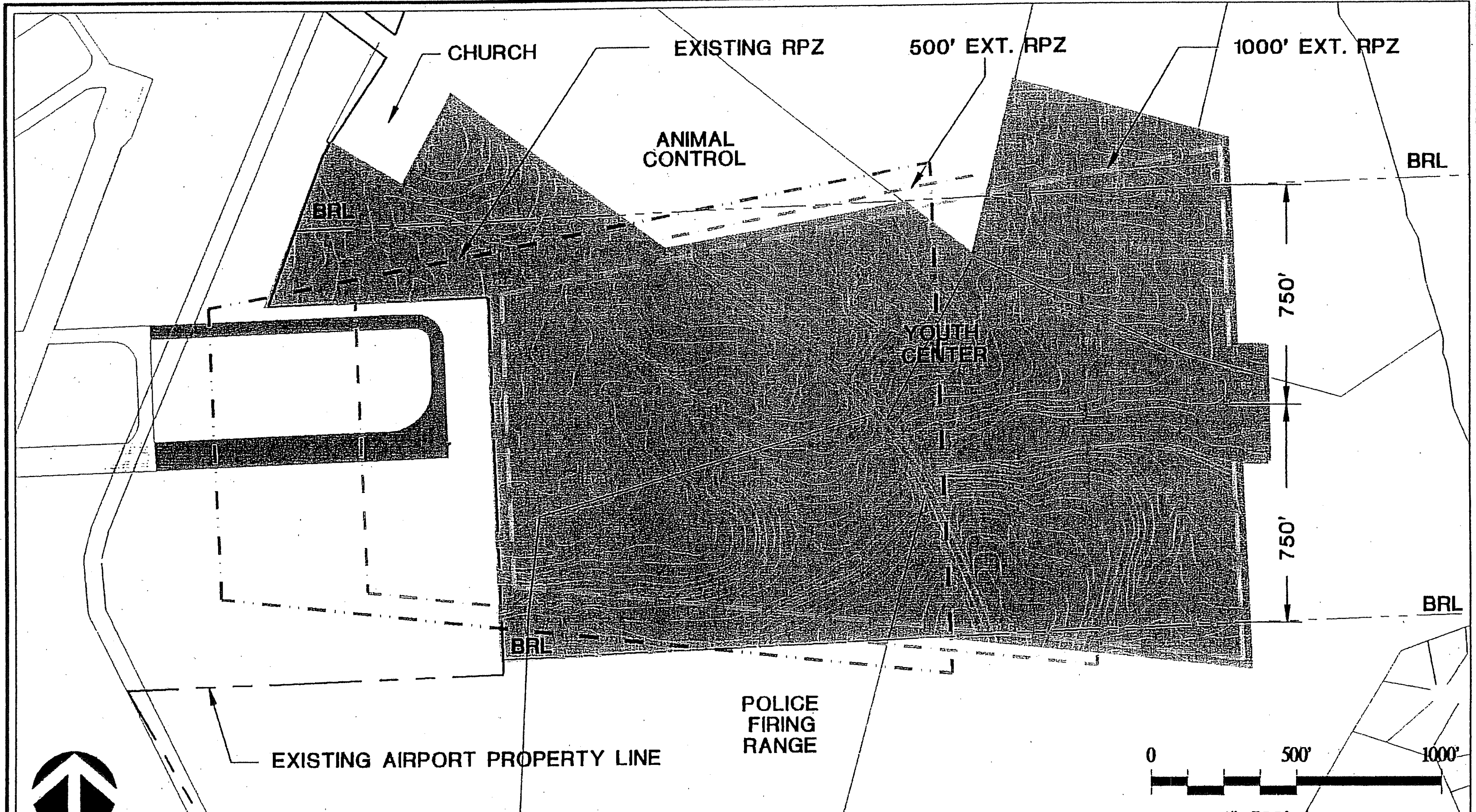
ATHENS-BEN EPPS AIRPORT

RUNWAY 9-27 EXTENSION FEASIBILITY

POTENTIAL ACQUISITION AREA/WEST SIDE OF AIRPORT

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 12



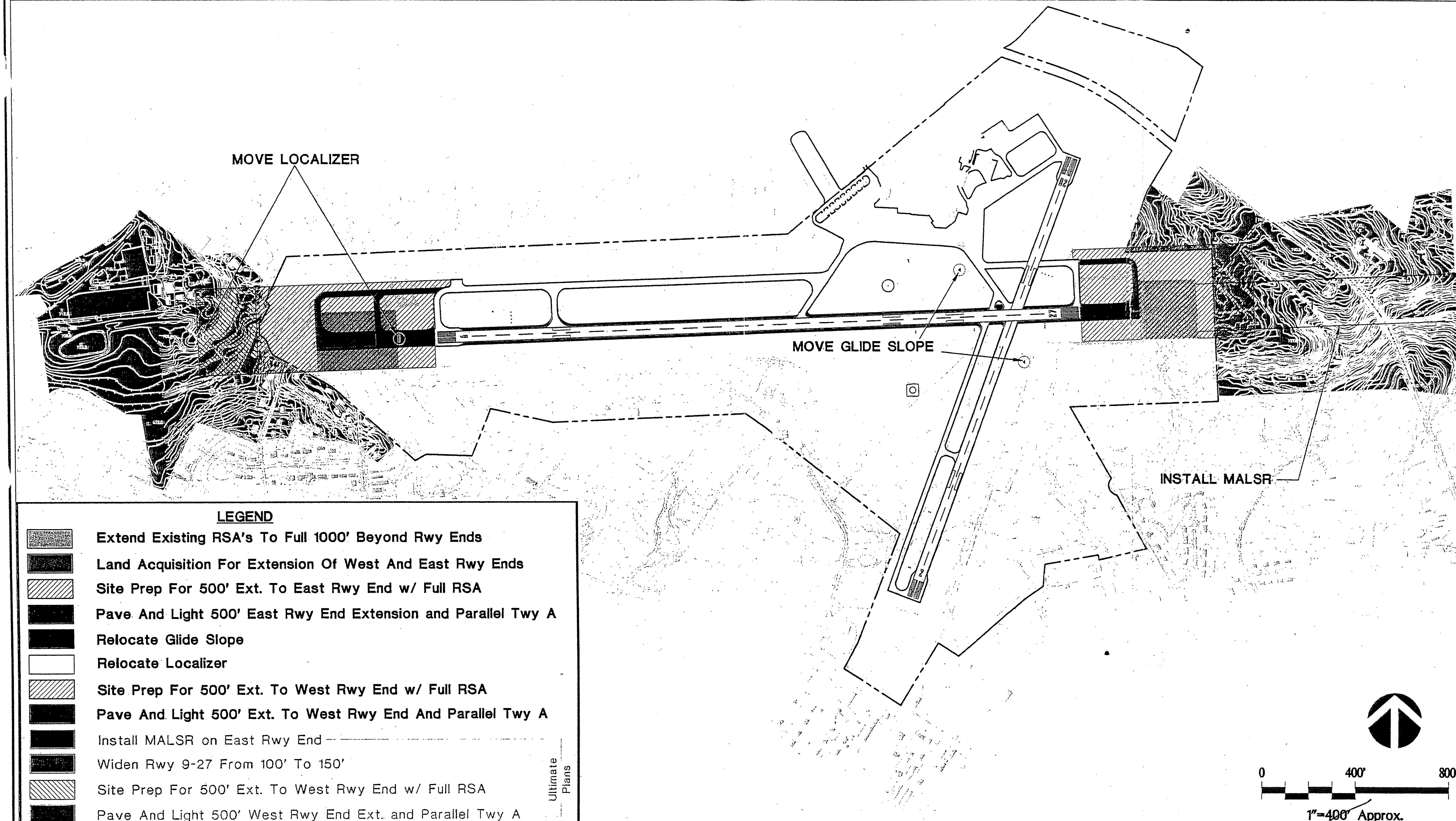
SOURCE: Planimetric and topographic mapping data furnished by Athens-Clarke County Planning Department.

THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY

POTENTIAL ACQUISITION AREA/EAST SIDE OF AIRPORT

EXHIBIT 13



LEGEND

- Extend Existing RSA's To Full 1000' Beyond Rwy Ends
- Land Acquisition For Extension Of West And East Rwy Ends
- Site Prep For 500' Ext. To East Rwy End w/ Full RSA
- Pave And Light 500' East Rwy End Extension and Parallel Twy A
- Relocate Glide Slope
- Relocate Localizer
- Site Prep For 500' Ext. To West Rwy End w/ Full RSA
- Pave And Light 500' Ext. To West Rwy End And Parallel Twy A

Ultimate Plans

- Install MALSR on East Rwy End
- Widen Rwy 9-27 From 100' To 150'
- Site Prep For 500' Ext. To West Rwy End w/ Full RSA
- Pave And Light 500' West Rwy End Ext. and Parallel Twy A

THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 EXTENSION FEASIBILITY
CONSTRUCTION PHASING & ULTIMATE AIRFIELD CONFIGURATION

EXHIBIT 14

LAND USE COMPATIBILITY GUIDELINES*
FOR
YEARLY DAY-NIGHT AVERAGE SOUND LEVELS

Athens/Ben Epps Airport

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

(NUMBERS IN PARENTHESES REFER TO NOTES - *see next page.*)

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

Section 5

CONCLUSIONS

Construction of major airfield improvements at Athens/Ben Epps Airport will be driven by many factors such as capital costs, environmental concerns, public perception, and political decisions. Based on an analysis of the practical alternatives presented herein and the reasons outlined in Subsection 4.4.5, The LPA Group recommends that Athens-Clarke County consider a phased program of development that would provide the airport with a near-term runway length of 6,500 feet for takeoffs and landings. The program would emulate Alternative 2, considered throughout the feasibility analysis in Section 4.0, which involves the near-term extension of existing Runway 9-27, parallel Taxiway “A”, and RSAs by approximately 500 feet at both runway ends. This program would maintain safety as the County’s top priority, while attempting to expedite the most advantageous airfield components for user critical demand. It is anticipated that due to the environmental consequences associated with this 1,000-foot extension program, an Environmental Assessment complete with a formal public hearing will need to be conducted before receiving approval for funding eligibility and to begin construction. Ultimately, the runway should be programmed for the long-term expansion to a full 7,000 feet. This will require that the County begin protecting airspace and adjacent land use compatibility immediately.

APPENDIX A

LAND USE COMPATIBILITY GUIDELINES

LAND USE COMPATIBILITY GUIDELINES*
FOR
YEARLY DAY-NIGHT AVERAGE SOUND LEVELS
Athens/Ben Epps Airport

NOTES

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

1. Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal construction can be expected to provide an NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
2. Measures to achieve NLR to 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
3. Measures to achieve NLR to 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
4. Measures to achieve NLR to 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
5. Land use compatible, provided special sound reinforcement systems are installed.
6. Residential buildings require an NLR of 25.
7. Residential buildings require an NLR of 30.
8. Residential buildings not permitted.

Source: Federal Aviation Administration.

APPENDIX B

COST ESTIMATES

PRELIMINARY COST ESTIMATE
ATHENS/BEN EPPS AIRPORT

1,000-FOOT EXTENSION TO RUNWAY 9 & TAXIWAY A

ITEM	UNIT	UNITS	UNIT COST	ITEM COST	PROJECT COST
Earthwork	CY	1,879,000	$4.50	$8,455,500	
Dynamic Compaction	LS	1	$0.00	$0	
Airfield Paving (incl. Lighting/marking/drainage)	SY	18,980	$85.00	$1,613,300	
Pavement Demolition	SY	5,000	$7.00	$35,000	
Building Demolition	SF	300,000	$3.50	$1,050,000	
Fencing Removal	LF	1,375	$1.50	$2,063	
Security Fencing	LF	4,900	$12.00	$58,800	
Navigational Aid Relocation	LS	1	$75,000.00	$75,000	
Drainage Improvements	LF	1,000	$175.00	$175,000	
Wetland/Floodplain Mitigation	LS	1	$230,000.00	$230,000	
Property Acquisition					
- Residential & Commercial Lands	ACRE	14.7	$15,000.00	$220,500	
- Agricultural/Forest/Open Lands	ACRE	63.5	$7,500.00	$476,250	
- Building Purchases	LS	1	$1,960,000.00	$1,960,000	
- Relocation Expenses	LS	1	$405,000.00	$405,000	
- Appraisals/Surveys/Legal Fees/etc.	LS	1	$306,175.00	$306,175	
Subtotal					**$15,062,588**
Mobilization					$1,169,466
Engineering, Inspection, Testing, Admin., etc.					$1,722,170
Contingency @15%					$2,259,388
Total					**$20,213,611**

Wetland/Floodplain Mitigation costs assume a 2:1 replacement ratio for wetlands @$50,000/acre and $25,000/acre for floodplain modifications.

Note:

It should be recognized that the accuracy of these cost estimates, although prepared in good faith and with reasonable care, is based on available information at the time of its preparation.

Due to the very preliminary nature of the cost estimating process and the many construction cost factors which are not within LPA's control, the level of detail and accuracy has been limited.

SOURCE: The LPA Group analysis, 1998.

PRELIMINARY COST ESTIMATE
ATHENS/BEN EPPS AIRPORT

500-FOOT EXTENSIONS TO RUNWAY 9 and 27 & TAXIWAY A

ITEM	UNIT	UNITS	UNIT COST	ITEM COST	PROJECT COST
Earthwork	CY	2,007,500	$4.50	$9,033,750	
Dynamic Compaction	LS	1	$840,000.00	$840,000	
Airfield Paving (incl. Lighting/marking/drainage)	SY	20,660	$85.00	$1,756,100	
Pavement Demolition	SY	4,900	$7.00	$34,300	
Building Demolition	SF	300,000	$3.50	$1,050,000	
Fencing Removal	LF	2,375	$1.50	$3,563	
Security Fencing	LF	4,050	$12.00	$48,600	
Navigational Aid Relocation	LS	1	$185,000.00	$185,000	
Drainage Improvements	LF	300	$175.00	$52,500	
Wetland/Floodplain Mitigation	LS	1	$60,000.00	$60,000	
Property Acquisition					
- Residential & Commercial Lands	ACRE	14.7	$15,000.00	$220,500	
- Agricultural/Forest/Open Lands	ACRE	87.7	$7,500.00	$657,750	
- Building Purchases	LS	1	$1,960,000.00	$1,960,000	
- Relocation Expenses	LS	1	$405,000.00	$405,000	
- Appraisals/Surveys/Legal Fees/etc.	LS	1	$324,325.00	$324,325	
Subtotal					**$16,631,388**
Mobilization					$1,306,381
Engineering, Inspection, Testing, Admin., etc.					$1,908,248
Contingency @15%					$2,494,708
Total					**$22,340,724**

Wetland/Floodplain Mitigation costs assume a 2:1 replacement ratio for wetlands @$50,000/acre and $25,000/acre for floodplain modifications.

Note:

It should be recognized that the accuracy of these cost estimates, although prepared in good faith and with reasonable care, is based on available information at the time of its preparation.

Due to the very preliminary nature of the cost estimating process and the many construction cost factors which are not within LPA's control, the level of detail and accuracy has been limited.

SOURCE: The LPA Group analysis, 1998.

PRELIMINARY COST ESTIMATE
ATHENS/BEN EPPS AIRPORT

1,000-FOOT EXTENSION TO RUNWAY 27 & TAXIWAY A

ITEM	UNIT	UNITS	UNIT COST	ITEM COST	PROJECT COST
Earthwork	CY	2,830,000	$4.50	$12,735,000	
Dynamic Compaction	LS	1	$1,450,000.00	$1,450,000	
Airfield Paving (incl. Lighting/marking/drainage)	SY	19,170	$85.00	$1,629,450	
Pavement Demolition	SY	0	$7.00	$0	
Building Demolition	SF	64,000	$3.50	$224,000	
Fencing Removal	LF	2,100	$1.50	$3,150	
Security Fencing	LF	3,150	$12.00	$37,800	
Navigational Aid Relocation	LS	1	$185,000.00	$185,000	
Drainage Improvements	LF	0	$175.00	$0	
Wetland/Floodplain Mitigation	LS	1	$10,000.00	$10,000	
Property Acquisition					
- Residential & Commercial Lands	ACRE	10.3	$15,000.00	$154,500	
- Agricultural/Forest/Open Lands	ACRE	75.6	$7,500.00	$567,000	
- Building Purchases	LS	1	$1,060,000.00	$1,060,000	
- Relocation Expenses	LS	1	$255,000.00	$255,000	
- Appraisals/Surveys/Legal Fees/etc.	LS	1	$203,650.00	$203,650	
Subtotal					**$18,514,550**
Mobilization					$1,627,440
Engineering, Inspection, Testing, Admin., etc.					$2,166,708
Contingency @15%					$2,777,183
Total					**$25,085,881**

Wetland/Floodplain Mitigation costs assume a 2:1 replacement ratio for wetlands @$50,000/acre and $25,000/acre for floodplain modifications.

Note:

It should be recognized that the accuracy of these cost estimates, although prepared in good faith and with reasonable care, is based on available information at the time of its preparation.

Due to the very preliminary nature of the cost estimating process and the many construction cost factors which are not within LPA's control, the level of detail and accuracy has been limited.

SOURCE: The LPA Group analysis, 1998.

PRELIMINARY COST ESTIMATE
ATHENS/BEN EPPS AIRPORT

500-FOOT EXTENSIONS TO RUNWAY 9 and 27 & TAXIWAY A
(w/Ultimate Expansion to 7,000'x150')

ITEM	ITEM COST	PROJECT COST
RUNWAY SAFETY AREA IMPROVEMENTS	$3,195,063	
LAND ACQUISITION	$4,443,301	
SITE PREP FOR RUNWAY 27	$5,240,250	
PAVE RUNWAY 27	$2,646,087	
RELOCATE GLIDE SLOPE	$150,700	
RELOCATE LOCALIZER	$102,750	
SITE PREP FOR RUNWAY 9	$5,364,304	
PAVE RUNWAY 9	$1,198,271	
Total		**$22,340,700**
W/GLIDE SLOPE RELOCATION TO SOUTH SIDE OF RUNWAY 9-27		
RUNWAY SAFETY AREA IMPROVEMENTS	$3,195,063	
LAND ACQUISITION	$4,443,301	
SITE PREP FOR RUNWAY 27	$10,819,575	
PAVE RUNWAY 27	$2,646,087	
RELOCATE GLIDE SLOPE	$150,700	
RELOCATE LOCALIZER	$102,750	
SITE PREP FOR RUNWAY 9	$5,364,304	
PAVE RUNWAY 9	$1,198,271	
Subtotal	**$27,920,000**	
PROJECTS BEYOND PROGRAM		
INSTALL MALSR	$753,500	
WIDEN RUNWAY 9-27	$3,887,375	
SITE PREP FOR RUNWAY 9	$5,143,323	
PAVE RUNWAY 9	$1,198,271	
Subtotal	**$10,982,500**	
Total for 7,000' x 150' Runway		**$38,902,500**

Note:
It should be recognized that the accuracy of these cost estimates, although prepared in good faith and with reasonable care, is based on available information at the time of its preparation.
Due to the very preliminary nature of the cost estimating process and the many construction cost factors which are not within LPA's control, the level of detail and accuracy has been limited.

SOURCE: The LPA Group analysis, 1998.

APPENDIX C

GLOSSARY OF AVIATION TERMS

Glossary of Aviation Terms

-A-

AC - Advisory Circular.

ADAP - Airport Development Aid Program.

ADO - Airports District Office - administrative regional office of FAA that oversees airport development projects.

AFSFO - Airway Facilities Sector Field Office.

AFB - Air Force Base.

AGL - Above Ground Level.

AHN - Three letter identifier for Athens/Ben Epps Airport.

AIA - Annual Instrument Approach.

AIP - Airport Improvement Program.

AIR CARRIER - Aircraft operating under certificates of public convenience and necessity issued by the FAA authorizing the performance of scheduled air transportation over specified routes and a limited amount of non-scheduled air transportation over specified routes and a limited amount of non-scheduled operations.

AIRCRAFT TYPES - An arbitrary classification system which identifies and groups aircraft having similar operational characteristics for the purpose of computing runway and terminal area capacity.

AIR NAVIGATIONAL FACILITY - Any facility used for guiding or controlling flight in the air or during the landing or takeoff of aircraft.

AIR ROUTE SURVEILLANCE RADAR (ARSR) - Long-range radar which increases the capacity of air traffic control for handling heavy enroute traffic. An ARSR site is usually located at some distance from the ARTCC it serves. Its range is approximately 200 nautical miles. Also called ATC Center Radar.

AIR TAXI - Aircraft operated by a company or individual that performs air transportation on a non-scheduled basis over unspecified routes usually with light aircraft.

AIRPORT SURVEILLANCE RADAR - Radar providing position of aircraft by azimuth and range data without elevation data. It is designed for a range of 50 miles. Also called ATC Terminal Radar.

AIRPORT TRAFFIC AREA - Unless otherwise specifically designated, that airspace within a horizontal radius of five statute miles from the geographical center of any airport at which a control tower is operating, extending from the surface up to but not including 3,000 feet above the surface.

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.

AIRSPACE - The space lying above the earth or above a certain area of land or water which is necessary to conduct aerodynamic operations.

ALP - Airport Layout Plan.

ALS - Approach Light System.

ALSF-II - High intensity approach light system with sequenced flashing lights.

ANG - Army National Guard.

ANNUAL SERVICE VOLUME - Maximum number of annual aircraft operations that can theoretically be conducted at an airport, based on configuration, aircraft fleet mix, use, etc.

APPROACH FIX - The point from or over which final approach (IFR) to an airport is expected.

ARFF - Aircraft Rescue and Fire Fighting.

ARTS - Automated Radar Terminal Station.

ASNA - Aviation Safety and Noise Abatement Act of 1979.

ASPH - Abbreviation for runway surface composed of asphalt.

ASR - Airport Surveillance Radar.

ASV - Annual Service Volume.

ATA - Air Transport Association.

ATC - Air Traffic Control.

ATCT - Air Traffic Control Tower.

AVASI - Abbreviated visual approach slope indicator system.

-B-

BASED AIRCRAFT - An aircraft permanently stationed at an airport, usually by some of agreement between the aircraft owner and airport management.

BASIC TRANSPORT AIRPORT - An airport designed to serve operations by business jet aircraft.

BASIC UTILITY AIRPORT - An airport of this type is designed to accommodate 95 percent of the propeller aircraft fleet under 12,500 pounds.

BRL - Building Restriction Line.

-C-

CAB - Civil Aeronautics Board - former federal agency responsible for overseeing and regulating air carrier industry; FAA has been delegated the responsibilities that were assumed by the CAB.

CAT I - Category I Instrument Landing System.

CAT II - Category II Instrument Landing System.

CAT III A - Category III A Instrument Landing System.

CBD - Central Business District.

CIRCLING APPROACH - A descent in an approved procedure to an airport, a circle-to-land maneuver.

CL - Centerline Lighting.

COMMUTER AIRLINE - Aircraft operated by an airline that performs scheduled air transportation service over specified routes using light aircraft. Light aircraft means an aircraft having 30 seats or less and a maximum payload capacity of 7,500 pounds or less.

CONTINENTAL CONTROL AREA - This includes the airspace at and above 14,500 feet MSL of the 48 contiguous states, the District of Columbia, and Alaska, excluding the Alaskan peninsula west of longitude 160 degrees west. It does not include the airspace less than 1,500 feet above the surface of the earth nor most prohibited or restricted areas.

CONTROL AREAS - These consist of the airspace designated as VOR Federal Airways, additional Control Areas, and Control Area Extensions but do not include the Continental Control Area. Control zones that do not underlie the Continental Control Area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of 5 statute miles and any extensions necessary to include instrument departure and arrival paths.

CONTROL TOWER - A central operations facility in the terminal air traffic control system consisting of a tower cab structure (including an associated 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.

CONTROL ZONES - These are areas of controlled airspace which extend upward from the surface and terminate at the base of the Continental Control Area. Control zones that do not underlie the Continental Control Area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of five statute miles and any extensions necessary to include instrument departure and arrival paths.

CONTROLLED AIRSPACE - Airspace designated as Continental Control Area, control area, control zones, or transition area within which some or all aircraft may be subject to air traffic control.

-D-

dB - Decibel.

dBA - A-weighted Decibel.

DECISION HEIGHT (DH) - With respect to the operation of aircraft, this means the height at which a decision must be made, using an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

DISTANCE MEASURING EQUIPMENT (DME) - An electronic installation established with either a VOR or 11-5 to provide distance information form the facility to pilots by reception of electronic signals. It measures, in nautical miles, the distance of an aircraft from a NAVMD.

DOD - Department of Defense.

-E-

ENROUTE - The route of flight from the point of departure to point of destination, including intermediate stops (excludes local operations).

ENROUTE AIRSPACE - Controlled airspace above and/or adjacent to terminal airspace.
EPA - Environmental Protection Agency.

-F-

FAA - Federal Aviation Administration.

FAR - Federal Aviation Regulations.

FBO - Fixed-Based Operator.

FINAL APPROACH IFR - The flight path of an aircraft which is inbound to the airport on an approved final instrument approach course, beginning at the point of interception of that course and extending to the airport or the point where circling for landing or missed approach is executed.

FINAL APPROACH VFR - A flight path of landing aircraft in the direction of landing along the extended runway centerline from the base leg to the runway.

FLEET MIX - The proportion of aircraft types or models expected to operate at an airport.

FLIGHT SERVICE STATION (FSS) - A facility operated by the FAA to provide flight assistance services.

-G-

GADO - General Aviation District Office.

GENERAL AVATION (GA) - Refers to all civil aircraft and operations which are not classified as air carrier.

GENERAL UTILITY (GU) AIRPORT - An airport which is designed to accommodate substantially all propeller-driven aircraft of less than 12,500 pounds.

GENERAL TRANSPORT (GT) AIRPORT - This airport designation is used when an airport is forecast to support general aviation transport aircraft between 60,000 and 175,000 pounds MGTOW.

GLIDE SLOPE (GS) - The vertical guidance component of an ILS.

-H-

HIRL - High Intensity Runway Edge Lighting.

HIGH ALTITUDE AIRWAYS - Air routes above 18,000 feet MSL. These are referred to as Jet Routes.

HOLDING - A pre-determined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

HUD - Department of Housing and Urban Development.

INSTRUMENT APPROACH - An approach conducted while the final approach fix is below VFR minimums.

IFR - Instrument Flight Rules that govern flight procedures under IFR conditions (limited visibility or other operational constraints).

INM - Integrated Noise Model.

INSTRUMENT LANDING SYSTEM (ILS) - A precision landing air consisting of localizer (azimuth guidance), glide scope vertical guidance), outer marker (final approach fix), and approach light system.

INSTRUMENT OPERATION - A landing or takeoff conducted while operating on an instrument flight plan.

ITINERANT OPERATION - All aircraft arrivals and departures other than local operations.

-J-

JET ROUTES - See High Altitude Airways.

-L-

LANDING DIRECTION INDICATOR - A device which visually indicates the direction in which landings and takeoffs should be made.

LANDING MINIMUMS/IFR LANDING MINIMUMS - The minimum visibility prescribed for landing while using an instrument approach procedure.

LDA - LOCALIZER TYPE DIRECTIONAL AID - A NAVAID used for non-precision instrument approaches with utility and accuracy comparable to a localizer but which is not a part of a complete ILS and is not aligned with the runway.

Ldn - Day-Night Average Sound Level.

Leq - Equivalent Sound Level.

LF - Linear Feet.

LOC - Localizer - Part of ILS that provides course guidance to the runway.

LOM - Compass locator at an outer marker (part of an ILS). Also called COMLO.

LOCAL OPERATION - Operations performed by aircraft which: (a) operate in the local traffic pattern or within sight of the tower; (b) are known to be departing for, or arriving from, flight in local practice area located within a 20-mile radius of the control tower; or (c) execute simulated instrument approaches or low passes at the airport.

LOW ALTITUDE AIRWAYS - Air routes below 18,000 feet MSL. These are referred to as Victor Airways.

LPA - The LPA Group Incorporated

MALS - Medium (intensity) Approach Light System.

MALSF - MALS with sequenced flashing lights.

MALSR - MALS with runway alignment indicator lights (RAILs).

MARKER BEACON - A VFR navigational aid which transmits a narrow directional beam. It is associated with an airway or an instrument approach.

MASTER PLAN - Long-range plan of airport development requirements.

MCTW - Maximum Certificated Takeoff Weight.

MGTOW - Maximum Gross Takeoff Weight.

MICROWAVE LANDING SYSTEM (MLS) - An instrument landing system operating in the microwave spectrum which provides lateral and vertical guidance to aircraft having compatible avionics equipment.

MINIMUM DESCENT ALTITUDE (MDA) - The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circling-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

MIRL - Medium Intensity Runway Edge Lighting.

MISSED APPROACH - A prescribed procedure to be followed by aircraft that cannot complete an attempted landing at an airport.

MITL - Medium Intensity Taxiway Edge Lighting.

MM - Middle Marker - Part of an ILS that defines a point along the glide slope normally located at or near the point of decision height (DII).

MOA - Military Operating Area.

MSL - Mean Sea Level.

-N-

NAS - NATIONAL AIRSPACE SYSTEM - The common system of air navigation and air traffic control encompassing communications facilities, air navigation facilities, airways, controlled airspace, special use airspace, and flight procedures authorized by Federal Aviation Regulations for domestic and international aviation.

NAVAID - See Air Navigational Facility.

NDB - NON-DIRECTIONAL BEACON - An electronic ground station transmitting in all directions in the L/MF frequency spectrum; provides azimuth guidance to aircraft equipped with direction finder receivers. These facilities are often established with ILS outer markers to provide transition guidance to the ILS system.

NEPA - National Environmental Policy Act.

NLR - Noise Level Regulation.

NM - Nautical Mile.

NOISE ABATEMENT - A procedure for the operation of aircraft at an airport which minimizes the impact of noise on the environs of the airport.

NOISE COMPATIBILITY PROGRAM (NCP) - List of actions the airport proprietor proposes to undertake to minimize noise/land use incompatibilities.

NOISE EXPOSURE MAP (NEM) - Graphic depiction of both existing and future noise exposure resulting from aircraft operations and land uses in the airport environs.

NOISEMAP - FAA-approved computer model used to generate noise contours.

NON-PRECISION APPROACH PROCEDURE/NON-PRECISION APPROACH - A standard instrument approach procedure in which no electronic glide slope is provided.

NOTICE TO AIRMEN/NOTAM - A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment of, conditions of, or change in any component (facility, service, or procedure or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

NPI - Non-Precision Instrument runway marking.

NPIAS - National Plan of Integrated Airport Systems.

NWS - National Weather Service.

-O-

O & D - Origination and Destination.

OAG - Official Airline Guide.

OBSTRUCTION - Any object/obstacle exceeding the obstruction standards specified by FAR Part 77.

OBSTRUCTION LIGHT - A light, or one of a group of lights, usually red or white, frequently mounted on a surface structure or natural terrain to warn pilots of the presence of an obstruction.

ODALS - Omni-directional Approach Light System.

OM - OUTER MARKER - A marker beacon, which is part of an ILS, located at or near the glide slope intercept altitude of an ILS approach.

OPBA - Operations per based aircraft.

OPERATION - An aircraft arrival (landing) at or departure (takeoff) from an airport.

OUTER FIX - A point in the destination terminal area from which aircraft are cleared to the approach fix or final destination.

-P-

PAPI - Precision Approach Path Indicator.

PAR - Precision Approach Radar.

PI - Precision Instrument runway marking.

POSITIVE CONTROL AREAS - Airspace wherein aircraft are required to be operated under Instrument Flight Rules.

PRECISION APPROACH - A standard approach in which an electronic glide slope is provided.

PROHIBITED AREA - Airspace defined dimensions identified by an area on the surface of the earth within flight is prohibited.

PU - Public-owned airport.

PVT - Private-owned airport.

-R-

RAIL - Runway Alignment Indicator Lights.

RAPCON - Radar Approach Control Center.

RASP - Regional Airport System Plan.

REIL - Runway End Identifier Lights.

RELIEVER AIRPORT - An airport which, when certain criteria are met, relieves the aeronautical demand on a high density air carrier airport.

RESTRICTED AREAS - Airspace of defined dimensions identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited is subject to restrictions.

RNAV - Radar navigation.

ROTATING BEACON - A visual NAVMD displaying flashes of white and/or colored light used to indicate location of an airport.

RPZ - Runway Protection Zone.

RUNWAY SAFETY AREA - An area symmetrical about the runway centerline and extending beyond the ends of the runway which shall be free of obstacles as specified.

RVR - Runway Visibility.

RW and R/W - Runway.

-S-

SALS - Short Approach Light System.

SDF - Simplified Directional Facility landing aid providing pattern direction.

SEGMENTED CIRCLE - An airport aid identifying the traffic pattern direction.

SEL - Sound Exposure Level.

SENEL - Single-event noise exposure level.

SEPARATION MINIMA - The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.

SF - Square Feet.

(S) SALS - Simplified Short Approach Light System.

SMSA - Standard Metropolitan Statistical Area.

SSALF - Simplified Short Approach Light System with Sequenced Flashing lights.

STOL - Short Takeoff and Landing.

STRAIGHT-IN APPROACH - A descent in an approved procedure in which the final approach course alignment and descent gradient permit authorization of straight-in landing minimums.

SYSTEM PLAN - A representation of the aviation facilities required to meet the immediate and future air transportation needs and to achieve the overall goals.

T & G - Touch and Go operation.

TACAN - Tactical Air Navigation.

TAF - FAA's Terminal Area Forecast.

TDZ - Touchdown Zone Lights.

TERMINAL AIRSPACE - The controlled airspace normally associated with aircraft departure and arrival patterns to/from airports within a terminal system and between adjacent terminal systems in which tower enroute air traffic control service is provided.

TERMINAL CONTROL AREA (TCA) - This consists of controlled airspace extending upward from the surface of higher to specified altitudes within which all aircraft are subject to positive air traffic control procedures.

TERMINAL RADAR SERVICE AREA (TRSA) - This area identifies the airspace surrounding an airport wherein Air Traffic Control provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. Although pilot participation is urged, it is not mandatory within the TRSA.

TERPS - Terminal Instrument Procedures.

T-HANGAR - A T-shaped aircraft hangar which provides shelter for a single airplane.

THRESHOLD - The physical end of runway pavement.

TOUCH-AND-GO OPERATION - An operation is which the aircraft lands and begins takeoff roll without stopping.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at, taxiing on, and taking off from an airport. The usual components of a traffic pattern are upwind leg, crosswind leg, downwind leg, and final approach.

TRANSIENT OPERATIONS - An operation performed at an airport by an aircraft that is based at another airport.

TRSA - Terminal Radar Service Area.

TVOR - Terminal Very High Frequency Omnirange Radio Station.

TW and T/W - Taxiway.

-U-

UHF - Ultra High Frequency.

UNCONTROLLED AIRSPACE - That portion of the airspace that has not been designated as Continental Control Area, control area, control zone, terminal control area, or transition area and within which ATC has neither the authority nor the responsibility for exercising control over air traffic.

UNICOM - Radio communications station which provides pilots with pertinent information (winds, weather, etc.) at specific airports.

USGS - United States Geological Survey.

USWB - United States Weather Bureau.

-V-

VASI - Visual Approach Slope Indicator providing visual glide path.

VECTOR - A heading issued to an aircraft to provide navigational guidance by radar.

VFR - Visual Flight Rules that govern flight procedures in good weather.

VFR AIRCRAFT - An aircraft conducting flight in accordance with Visual Flight Rules.

VHF - Very High Frequency.

VICTOR AIRWAYS - See Low Altitude Airways.

VOR - Very High Frequency Omni-directional Radio Station.

VORDME - VOR facility supplemented with Distance Measuring Equipment (DME).

VORTAC - VOR facility supplemented with Tactical Air Navigation (TACAN).

V/STOL - Vertical/Short Takeoff and Landing.

VTOL - Vertical Takeoff and Landing (includes, but is not limited to, helicopters).

WARNING AREA - Airspace which may contain hazards to non-participating aircraft in international airspace.

WIND-CONE (WIND SOCK) - Conical wind direction indicator.

WIND TEE - A visual device used to advise pilots about wind direction at an airport.

Appendix II

RUNWAY 9/27 LENGTH ANALYSIS

ATHENS/BEN EPPS AIRPORT
ATHENS, GEORGIA

RUNWAY 9-27 LENGTH ANALYSIS

T E C H N I C A L   R E P O R T

Prepared for:
Athens-Clarke County Government

Prepared by:
THE LPA GROUP INCORPORATED

MAY 1999

RUNWAY 9-27 LENGTH ANALYSIS

TABLE OF CONTENTS

RUNWAY 9-27 LENGTH ANALYSIS

LIST OF EXHIBITS

Section 1
INTRODUCTION

The Athens - Clarke County Government contracted with The LPA Group Incorporated to review in greater detail, the previous recommendations presented in the January 1995 Master Plan, as they pertain to runway length. Since its publishing, demand for additional runway length at Athens/Ben Epps Airport (*AHN*) has steadily increased as a result of general aviation business jet and non-scheduled charter operations.

As the Athens and Clarke County economy continue to closely parallel that of Atlanta both in terms of development and infrastructure needs, the requirement to support and more importantly, provide for air travel becomes more prevalent. The presence of the recently completed GA 316 corridor and the viability of light rail/commuter rail service between the Atlanta Metropolitan area and Athens, further adds to the attractiveness of the community. Growth in population and per capita income, added diversity and depth of a labor pool, availability of commercial/industrial parks, and the ever-expanding university affairs will serve as catalysts to provide first class aviation facilities within the County which are proximate to downtown Athens. It's a well known fact that the vast majority of Fortune 500 companies operate or rely on air travel via general aviation aircraft such as smaller business jets and propeller-driven aircraft. Accessibility by air to and from markets is an important decision when companies embark on site selection efforts for locating new facilities. For these reasons, it is imperative that the airport and the County position themselves to maximize all aviation assets.

This report examines the existing as well as future user profiles for the airport and analyzes the minimum runway length design standards necessary to accommodate these needs. User, manufacturer, and Federal Aviation Administration (*FAA*) specifications are considered throughout the study which are site-specific to AHN. As a follow-up to this analysis, The LPA Group has prepared a supplementary technical report (*under separate cover*) which studies the feasibility of incorporating the runway length improvements determined herein.

Section 2
SUMMARY

A future and ultimate runway length for Runway 9-27 is identified in this technical report, based on existing as well as anticipated user demand. For purposes of this analysis, user demand at Athens has effectively been subdivided into three discrete groupings:

1) small single and multi-engine aircraft defining a ***"Community Basic"*** category;
2) corporate and regional airline turbine-powered aircraft defining a ***"Community Preferred"*** category; and
3) large narrow-body airline and charter turbine-powered aircraft which define a ***"Community Ultimate"*** category.

Representative "critical aircraft" were identified for each category, accounting for a large percentage of current operators. Aircraft performance specifications from tenants and users, airlines, manufacturers, and the FAA were compiled through a series of surveys, correspondence and technical analyses.

Based on study findings (*reference Appendix C – Small airplanes*), the mix of aircraft representing the "Community Basic" needs are fully capable of operating from the existing airfield at Athens/Ben Epps Airport. Meanwhile, the mix of more sophisticated and demanding aircraft inherent to the "Community Preferred" category, require runway length in excess of that currently available in Runway 9-27 (*5,522 feet*). The recommended runway length critical to meeting this demand segment is estimated at approximately 6,500 feet. This is fully supported by FAA guidelines, manufacturer's specifications, and user comments. Finally, the runway length requirements necessary to satisfy the "Community Ultimate" demand is driven by a mix of special users, namely charter flights, potential cargo operators, and ultimately major airlines. The University of Georgia and its continuing air travel needs is one example of this category. These users exist in part today, but fail to execute the requisite volume of annual operations needed to justify airfield improvements from the perspective of the FAA. To fully accommodate the optimal aircraft configuration according to discussions with Delta Airlines (*the University's charter airline*) and others, an ultimate runway length and width of 7,000 feet and 150 feet, respectively, should be planned for and protected.

Aviation infrastructure improvements, namely runway-related construction is typically expensive, sometimes controversial, and most often requires a lengthy construction timeframe. Community understanding and acceptance of the proposal are essential to a successful implementation program. Due to the potential impacts to the community and environment, the FAA will require that an Environmental Assessment be performed to assess the significance of impacts associated with a major runway extension. These impacts/issues may include: aviation noise; land use compatibility; social impacts; induced socioeconomic impacts; air quality; water quality; DOT Section 303 lands; historic, architectural, archaeological, and cultural resources; biotic communities; endangered and threatened species of flora and fauna; wetlands; flood plains; farmland; energy supply and natural resources; light emissions; solid waste impacts; and construction impacts.

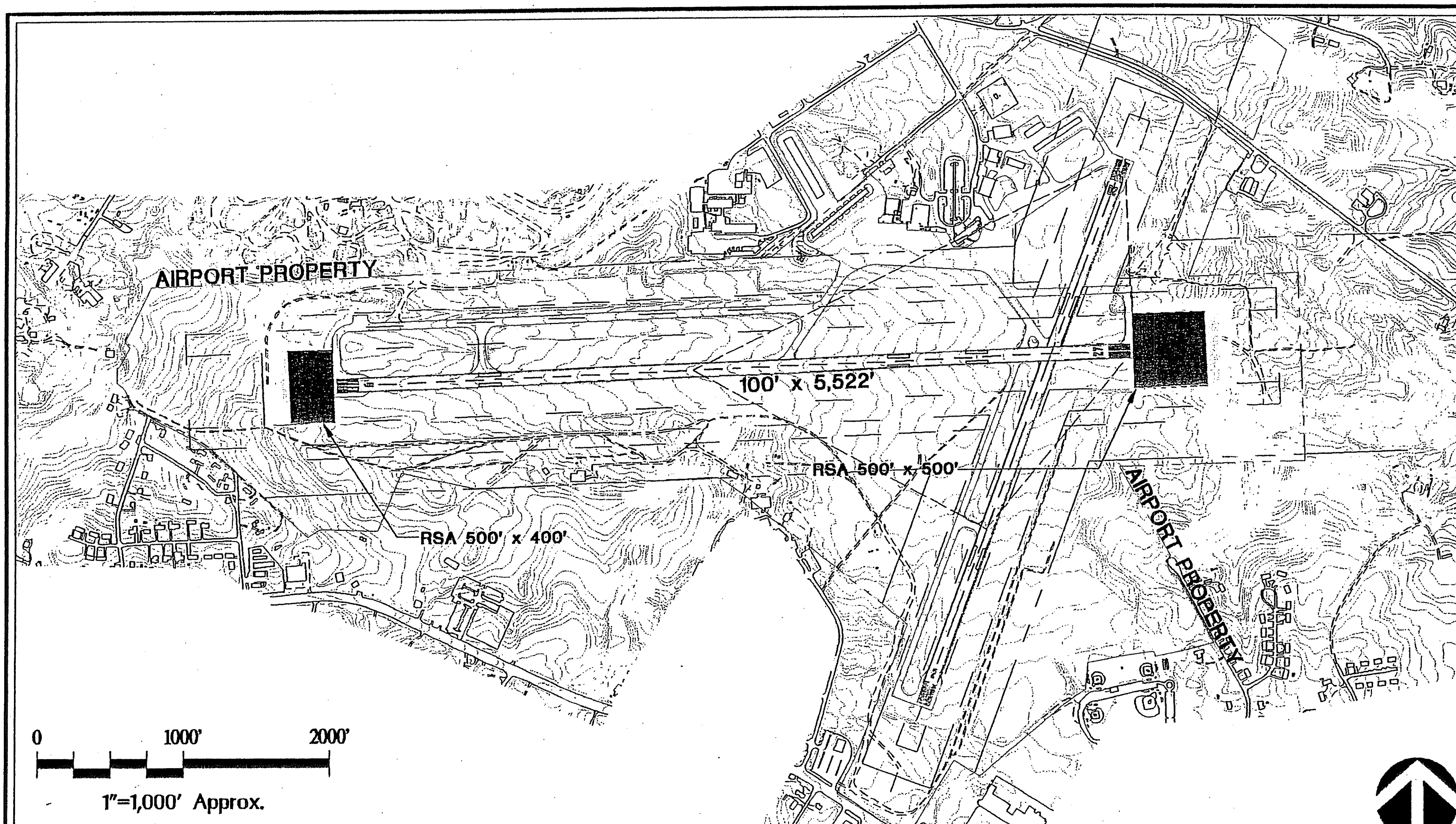
It is critical that Athens – Clarke County identify feasible alternatives to accommodate the necessary airfield expansion at AHN both in the near-term as well as long-term. Given the potential magnitude of construction costs, phased implementation may need to be identified. Following the selection of a preferred alternative, the local government should make every attempt to formulate key airspace and land use protection measures around the airport, thus maintaining the viability of the ultimate program.

Section 3

PROJECT PURPOSE & NEED

The Athens/Ben Epps Airport is a publicly owned and operated facility situated in Northeast Georgia approximately 50 miles east-northeast of the Atlanta metropolitan area. The facility currently serves as the area's only commercial service airport, while providing a home to general aviation operators and transient business and pleasure flyers. Additionally, AHN serves as a noted fuel stop for transient military operators. The combined presence of the University of Georgia, together with the rapidly expanding corporate base in Clarke County and the surrounding area, has resulted in a growing demand for additional runway length beyond the current 5,522 feet.

Within recent years the County successfully completed the installation of a glide slope facility on Runway 27 (*eastern end of the runway*), providing precision instrument landing capability for the more demanding users (*i.e., regional airlines, corporate users*). This capability has allowed AHN to advance in its pursuit of becoming a true center for corporate aviation activity, while providing improved landing capabilities for airline service during inclement weather. The remaining component to be addressed, which currently constrains the airport, is available runway length. The fundamental basis for considering an extension to Runway 9-27 is enhanced safety. Presently, the runway is equipped with non-standard runway safety areas (*RSAs*) beyond the primary runway ends, as required by FAA Advisory Circular (*AC*) 150/5300-13, "Airport Design". FAA guidelines require that a minimum 1,000-foot long by 500-foot wide RSA be provided beyond each end of Runway 9-27 at AHN; currently, only 400 feet and 500 feet of length are provided for runway ends 9 (*west end*) and 27 (*east end*), respectively, as shown in Exhibit 1. Aircraft either departing under Maximum Gross Takeoff Weight (*MGTOW*) conditions or accepting payload restrictions to operate from the current 5,522 feet, are typically doing so under a reduced margin of safety, and may be accepting unnecessary levels of risk. Given the increasing number of corporate aircraft utilizing AHN, additional runway pavement useable for takeoffs will only enhance the operational safety at AHN.



SOURCE: Planimetric and topographic mapping data from 1995 Master Plan.

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 LENGTH ANALYSIS

EXISTING CONDITIONS MAP

THE LPA GROUP AVIATION CONSULTANTS

EXHIBIT 1

The secondary purposes for considering the extension of the existing runway, center on enhancing community development potential and meeting the travel needs associated with corporate and university travel. The available runway length may either restrict, or conversely greatly enhance the function and long-term development of an airport, not to mention the associated city that it serves. Inadequate runway length, often places departure restrictions (*i.e., payload and trip/haul distance*) on various aircraft. These restrictions may directly or indirectly result in costs to the users, the airport, and even the community in the way of lost revenue/ business opportunities or increased expense to interested parties. Whereas, sufficient runway length will facilitate a local community's efforts of securing optimal levels of air service, scheduled or non-scheduled.

As pointed out previously, when considering a site for corporate business, Fortune 500 companies place a great deal of importance on the aviation assets offered by a community. Currently, the equipment operated by larger corporate and jet charter operators consist of aircraft (*i.e., Learjet 35 series, Gulfstream series, and even Boeing 727/737s*) which are considerably more demanding on runway length than the fleet of aircraft previously flying to/from Athens during the 1980s and early 1990s.

As an example, Colvin Aviation, AHN's primary business jet charter service provider, conducted an estimated 1,200 operations by such aircraft during the 1997/1998 calendar year (*reference Appendix A*). These aircraft typically departed under payload and/or destination restrictions, thus dramatically impacting Colvin's ability to service clients adequately. Reduced payload often results in utilizing less fuel and eliminating the ability to fly non-stop; this negatively impacts the airport's fuel sales and operating revenues.

Available runway length has a similar impact on bolstering community economic development. Clarke County is fortunate enough to have designated several thousand acres of commercial/industrial park property north and east of the airport. Available land combined with the expanding market outside Atlanta make Clarke County a clear choice for Fortune 500 companies. The related demand on aviation facilities requires a full complement of navigational aids and sufficient runway length to facilitate trans-continental and trans-oceanic flights.

Finally, the existence of the University of Georgia (UGA) plays a significant role in identifying potential airport enhancements. The capability of AHN to support larger aircraft operations by turboprop and turbine commercial aircraft is critical to UGA's (*and the reciprocating school's*) ability to transport sports teams, host conventions/conferences, conduct large scale training, and meet the air travel needs of dignitaries, governments officials, and celebrities. Therefore to remain competitive with southeastern colleges, the airport must accommodate, rather than limit these activities. Table 1 depicts a cursory analysis of Athens' aviation facilities when compared to other universities in the Southeastern and Atlantic Coast Conferences.

Interestingly, aside from Fayetteville, AR (*which is in the process of shifting operations to the newly opened and substantially larger Northwest Arkansas Regional Airport*), AHN is the only associated airport with a runway less than 150 feet wide. More importantly, except for Fayetteville and Charlottesville, VA (*which predominantly operate under cooler temperatures*), the Athens area is the only community served by commercial service with less than 6,500 feet of runway length. This representation helps justify the importance and purpose of considering a runway extension to the primary runway at AHN.

TABLE 1

COMPARATIVE AIRPORT ANALYSIS
Athens/Ben Epps Airport

University	Associated Airport (*w/in 30 min.*)	Longest Runway Length	Longest Runway Width	Airline Service	Carrier(s)	Aircraft Type(s)
University of Arkansas	FYV - Drake Field Airport, Fayetteville, AR	6,006'	100'	Yes	3 Regional	Emb-120 Saab 340
	XNA – Northwest Arkansas Regional Airport, AR	8,800'	150'		1 Regional	BE 1900
Auburn University	AUO - Auburn - Opelika Robert G. Pitts Airport, AL	3,987'	75'	No		
University of Alabama	TCL - Tuscaloosa Municipal Airport, AL	6,499'	150'	No		
Mississippi State University	GTR - Golden Triangle Regional Airport, Columbus, MS	6,497'	150'	Yes	2 Regional	Emb-120 Saab 340
University of Mississippi	UOX - University - Oxford Airport, MS	4,700'	100'	No[1]		
Vanderbilt University	BNA - Nashville International Airport, TN	11,030'	150'	Yes	8 Major 7 Regional	All
University of Florida	GNV - Gainesville Regional Airport, FL	7,503'	150'	Yes	3 Regional	DHC-8, ATR-72 CanadairRJ BE 1900
Louisiana State University	BTR - Baton Rouge Metropolitan, Ryan Field Airport, LA	7,000'	150'	Yes	1 Major 2 Regional	All
University of Tennessee	TYS - MC Ghee Tyson, Knoxville, TN	9,008'	150'	Yes	6 Major 3 Regional	All
University of Georgia	AHN - Athens-Ben Epps Airport, GA	5,522'	100'	Yes	1 Regional	Jetstream -31
University of Kentucky	LEX -Blue Grass Airport, Lexington, KY	7,002'	150'	Yes	1 Major 4 Regional	All
University of South Carolina	CAE - Columbia Metropolitan Airport, SC	8,602'	150'	Yes	5 Major 2 Regional	All
Clemson University	CEU - Oconee County Regional Airport, SC	4,156'	75'	No		
Duke University	RDU- Raleigh Durham International Airport, NC	10,000'	150'	Yes	9 Major 8 Regional	All
Florida State University	TLH - Tallahassee Regional Airport, FL	8,001'	150'	Yes	1 Major 3 Regional	All
Georgia Institute of Technology	ATL - The William B. Hartsfield Atlanta International Airport, GA	11,889'	150'	Yes	10 Major 6 Regional	All
University of Maryland	DCA - Washington National Airport, DC	6,869'	150'	Yes	9 Major 9 Regional	All
North Carolina State University	RDU- Raleigh Durham International Airport, NC	10,000'	150'	Yes	9 Major 8 Regional	All
University of Virginia	CHO - Charlottesville-Ablemarle Airport, VA	6,001'	150'	Yes	2 Major 4 Regional	All
Wake Forest University	GSO - Piedmont Triad International Airport, Greensboro, NC	10,000'	150'	Yes	7 Major 4 Regional	All
University of North Carolina	RDU- Raleigh Durham International Airport, NC	10,000'	150'	Yes	9 Major 8 Regional	All

[1] Limited FAR Part 139 certification, currently not receiving scheduled air carrier service.

SOURCE: The LPA Group analysis, 1998.

Section 4
DESIGN CRITERIA

4.1 USER PROFILES

The Athens/Ben Epps Airport has gradually evolved into a diverse infrastructure component within Clarke County, and serves a vital role in aviation for Northeast Georgia as well as the State. Through its evolution, operations (*takeoffs and landings*) have steadily climbed as has the size and sophistication level of aircraft operating daily from the Airport. In an effort to better identify the airport's various existing user needs, and more importantly, to identify those needs anticipated in the future, a set of user profiles (*groupings*) were chosen. For discussion purposes, these user profiles are as follows:

- Small General Aviation or ***"Community Basic"*** (*small single and multi-engine aircraft*);
- Corporate / Regional Airlines or ***"Community Preferred"*** (*small 10-50 passenger turbine-powered aircraft*); and
- Major Airline / Special Charter or ***"Community Ultimate"*** (*narrow-body 100-200 passenger turbine-powered aircraft*).

Each of these major profiles is highly representative of typical groupings found at larger/busier airports with commercial service. Aircraft which define the "Community Basic" category customarily include equipment utilized for both pleasure and business. These aircraft are normally propeller-driven, powered by piston or turbine engines, and weigh less than 12,500 pounds. Aircraft which define the "Community Preferred" category include larger aircraft usually weighing between 12,500 and 75,000 pounds and carrying as many as 50 passengers. Major corporations and smaller regional airlines most often fly this equipment, which is powered by multiple turbojet and turbofan engines. Aircraft falling into the "Community Ultimate" grouping consist of large passenger airplanes flown by the major airlines such as Delta, Continental, and US Airways. They are powered by multiple turbojet and/or turbofan engines, weigh between 100,000 and 250,000 pounds, and carry well over 100 passengers and cargo.

4.2 CRITICAL AIRCRAFT

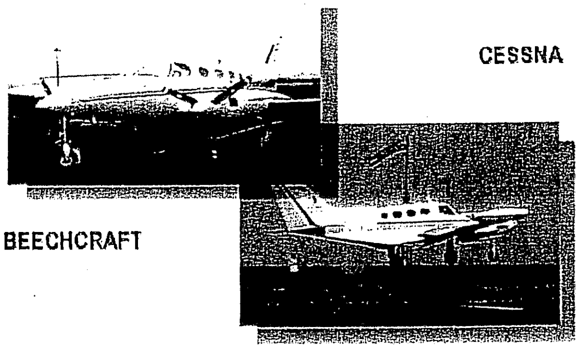
Exhibit 2 illustrates various critical aircraft which may operate into and out of AHN, given adequate airside facilities. These aircraft were identified from discussions with airport staff and users, and portray those aircraft within each category that may influence the demand placed on runway length.

The "Community Basic" or Small General Aviation category is illustrated by two commonly known multi-engine piston aircraft, produced by Cessna and Beechcraft. These aircraft are routinely seen at AHN today.

The "Community Preferred" or Corporate / Regional Airlines category makes up a diverse group in terms of equipment utilization. The Corporate aircraft shown are the Gates Learjet 35, and the Gulfstream G-IV, both of which operate at AHN. The Regional Airlines are represented by a Canadair RJ-200 and a Embraer EMB-145. Recently Mesa Airlines acquired US Airways Express, and operates from AHN. As of May 1999, Mesa's fleet of RJ-200 aircraft (*26*) was second in the Nation to Delta's ComAir fleet in terms of size. It is anticipated that these aircraft may enter the AHN market in the coming years. Due to the higher cruise speeds afforded by this category of aircraft, a swept wing technology is employed; as a result, takeoff and landing speeds are considerably higher. To reduce payload and potential degradation of airspeed, the wing area is also reduced. The smaller wing area and higher operating speeds, typically generate a requirement for significantly longer runways.

The final category, "Community Ultimate" or Major Airlines / Special Charters is depicted by the Boeing 737-400 and 757-200 jetliners. These aircraft are strongholds in the Delta and US Airways fleets and are typically utilized in markets as large, and larger than Athens. In discussions with Delta's charter group, the 737-400 was pinpointed as the select aircraft to serve UGA's charter requirements.

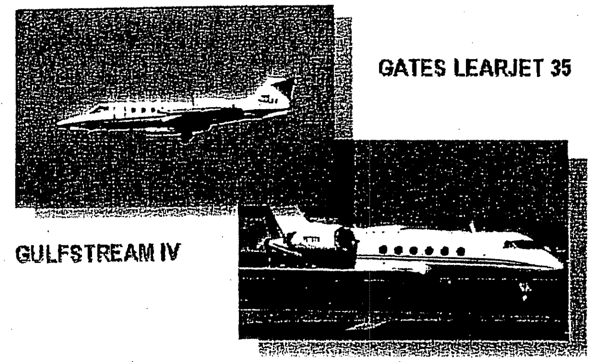
SMALL / GENERAL AVIATION



CESSNA

BEECHCRAFT

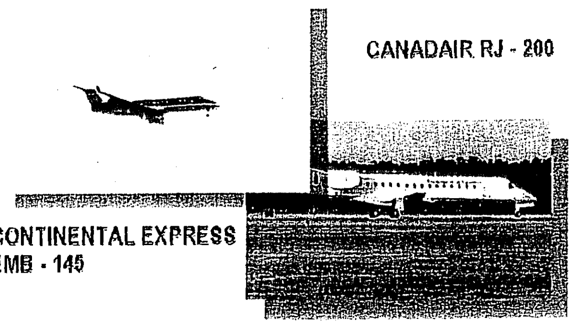
CORPORATE / GENERAL AVIATION



GATES LEARJET 35

GULFSTREAM IV

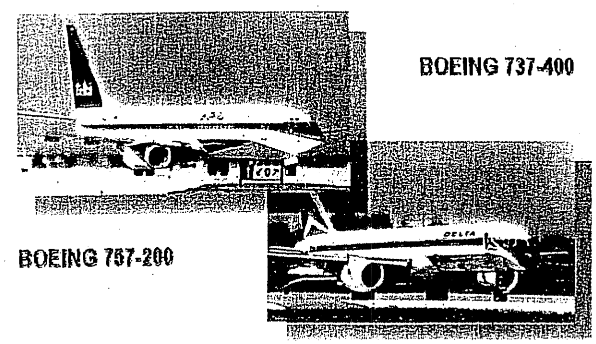
REGIONAL AIRLINES



CANADAIR RJ - 200

CONTINENTAL EXPRESS
EMB - 145

MAJOR AIRLINES / CHARTERS



BOEING 737-400

BOEING 757-200

THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 LENGTH ANALYSIS

TYPICAL CRITICAL AIRCRAFT

EXHIBIT 2

Section 5

RUNWAY LENGTH DETERMINATION

5.1 EXISTING CONDITIONS

The airport's existing runway configuration (*reference Exhibit 1*) consists of one primary runway oriented in an east-west direction (*Runway 9-27*) and one intersecting crosswind runway oriented in a northeast-southwest direction (*Runway 2-20*). Runway 9-27 was extended approximately seven years ago to its present length of 5,522 feet. The runway is 100 feet wide and is equipped with a Category I precision instrument landing system and omni-directional approach lighting system (*ODALS*) at the east end of Runway 9-27. Runway 2-20 provides a length of approximately 4,000 feet, and is also 100 feet wide. Runway 2-20 is <u>not</u> equipped for instrument landing.

Runway 9-27 is equipped with a full length parallel taxiway, Taxiway A, located approximately 400 feet north of the runway centerline. Throughout the terminal area located on the north side of the field, Taxiway A shifts to a 600/650-foot separation from the runway centerline and follows the apron edge. Extended RSAs are also provided off each end of Runway 9-27; however, as noted earlier, both are considerably shorter in length than required by the FAA for airfields accommodating turbine-powered aircraft. Currently, the available RSA lengths are approximately 400 and 500 feet at the west and east ends, respectively. Ideally, these lengths should be 1,000 feet to satisfy FAA criteria for safety.

5.2 USER REQUIREMENTS

In an effort to better assess the immediate needs of the airport users at AHN, the airport administration furnished The LPA Group with a listing of large based and transient turbine aircraft by aircraft tail (*"N"*) number. This data was utilized to identify the owner/operator of each aircraft. Wherever possible, a single page questionnaire (*see Appendix A*) was sent to each owner/operator during the month of June 1997. The questionnaire specifically addressed issues such as: type aircraft, estimated annual takeoffs and landings, takeoff weight, and required takeoff and landing lengths.

A total of 48 operators were identified and contacted by survey, of which approximately 90 percent were using turbojet equipment (*i.e., Lear 25s & 35s; G-II, III and IVs; Falcon 20s, 50s and 200s; etc.*). Thirteen total responses (*27.1% response rate*) were received from the surveys including several Fortune 500 companies: Johnson & Johnson, DuPont, AFLAC, Nexxus, Rockwell and Southwest Toyota Distributors. These responses have been analyzed in detail to identify two critical elements which may directly influence the findings of this study: 1) typical annual takeoffs, and 2) required runway length for takeoff. The conclusion resulting from the survey was that, although a limited number of current operators are capable of departing AHN unconstrained, the majority of operators incur a weight or destination penalty of varying significance to depart from 5,522 feet. Under unconstrained conditions many of the current operators would require runway lengths in excess of 6,400 feet.

Table 2 presents a summary of survey respondents together with their estimates of annual takeoffs and estimated runway length requirements for both takeoff and landing. These estimates were tabulated to determine the runway length necessary to satisfy current demand while meeting FAA's basis of justification by demonstrating a minimum of 250 annual departures (*FAA AC 150/5325-4A, "Runway Length Requirements for Airport Design"*). The results from the surveys indicate a clear need for approximately 6,400 feet of runway length to satisfy existing users. Colvin Aviation, representing an estimated 1,200 departures annually, was subsequently contacted to obtain a more current representation of his fleet due to recent aircraft additions. During the past 18 months, Colvin Aviation has increased its fleet with the addition of two Lear 35s, which further increases their earlier estimate of annual operations by as much as 800 operations. It was also noted that the data on runway lengths required for departure did not take into account gradient factors. Adjusting for runway gradient given both existing runway end elevations and likely extended end elevations, the required 6,400 feet increases by 500-630 feet for a total length of approximately 6,900-7,030 feet. These adjustments are based on adding 10 feet to the departure length for every one foot of elevation change (*FAA AC 150/5325-4A*).

TABLE 2

CORPORATE RUNWAY LENGTH ANALYSIS
Athens/Ben Epps Airport

COMPANY (*aircraft type*)	**ANNUAL TAKEOFFS**	**TAKEOFF LENGTH**	**LANDING LENGTH**
AFLAC (Falcon 50)	20	4,325’	2,900’
Image Air (Lear 25D)	2	4,770’	3,720’
Johnson & Johnson (HS-800, G-III)	2	5,200’	4,350’
Southwest Toyota (Lear 35)	6	5,341’	5,192’
Midwest Aviation (Falcon 20)	4	5,500’	4,900’
Southwest Toyota (Challenger 601-3A)	12	5,010’	5,658’
Southwest Toyota (Lear 55)	6	5,720’	5,500’
DuPont Aviation (G-IV)	6	6,250’	4,770’
Colvin Air Charter (Lear 35A)	1,200	6,400’	6,100’
Nexxus (G-III)	2	6,450’	6,400’
Reliance Electric (Sabreliner 65)	8	6,844’	6,515’
Land's End (Lear 35A)	6	6,850’	4,210’
Aviation Methods (HS-125/700)	4	7,825’	4,500’
Total Estimated Annual Takeoffs	**1,278**		
Runway Length Required		**6,400’**	**6,100’**

Source: AHN User Survey Data, 1997.
The LPA Group analysis, 1998.

Given the corporate runway length requirement may not satisfy the absolute requirements of all operators, additional research was conducted to include the review of possible requirements by regional airlines (*US Airways-now Mesa Airlines and others*). This review considered both the existing mix of traffic as well as potential operations by the carriers’ new regional jet aircraft. Reviewing the anticipated requirements of the Canadair Regional Jet, a field length of approximately 6,000 feet would be necessary to accommodate typical operations, under standard day conditions at sea level. However, given that Athens experiences hot summers and sits at approximately 808 feet above sea level, additional length may be essential.

Finally, travel generated by the University of Georgia was considered. Travel directly or indirectly generated by the University system includes: athletic department travel, large convention/conference contingencies, alumni-sponsored travel, recruiting, and dignitaries/ government officials/celebrities. The vast majority of trips generated by these various sources produce passengers/flight volumes of less than 20, originating or terminating at a similar point. The exception to these parameters is the athletic department (*UGA and visitor colleges*) and alumni-sponsored events. Alumni trips are both random in occurrence and passenger loading; however, the athletic department generates a consistent measurable demand. It should be noted that a large percentage of travel conducted by the athletic department must currently depart/arrive through Atlanta Hartsfield given AHN's limited runway length. This inconvenience results in significant measurable and non-measurable costs (*charter bus rental, unnecessary baggage handling sessions, added player and coaching staff stress, and lost time*) to all colleges involved. UGA continues to use Delta Airlines as its charter carrier for the vast majority of away games. A survey of athletic department trips generated for football, basketball, and gymnastics is presented in Table 3 below. Combining the impact of UGA and visiting colleges, annual games/events may generate between 75 and 90 trips.

Preliminary coordination with Delta Airlines, Charter Flight Control, (*reference Appendix B*) revealed that a minimum runway length of 6,500' and recommended runway width of 150' is needed to originate/terminate flights at AHN utilizing their 737 series aircraft. Further clarification of optimal runway length requirements by both the 737 and 757 series aircraft, dictate the need for a 7,000-foot runway length (*reference Appendix B*). It is anticipated that other traveling colleges would travel via charter carriers utilizing similar equipment and requiring the same operational minimums. It should also be noted that these estimates do not reflect future demand at Athens.

Based on FAA AC-150/5325-4A guidelines recommending a minimum of 250 annual takeoffs as runway length justification, the combination of corporate and university-generated annual travel adequately justify a minimum runway length of 6,500 feet. As noted previously in this subsection, the corporate response represented only 27% of the current list of airport users operating turbine powered equipment. The obvious potential that an annual takeoff demand exists (*by similar aircraft*) far in excess of the existing 1,200-plus takeoff operations, coupled with the fact that the survey responses reflect existing demand rather than anticipated growth, further adds credibility to the need for a runway extension at AHN. Based on user input, the absolute minimum recommended takeoff length for AHN should be a approximately 6,500 feet. Optimally, the future runway length and width at AHN should be planned at 7,000 feet and 150 feet, respectively. Likewise, airspace should immediately be protected for the accommodation of the ultimate runway length.

TABLE 3
ATHLETIC DEPARTMENT TRIP GENERATION
Athens/Ben Epps Airport

ACTIVITY	EST. PASSENGER LOADS (typ.)	UGA ANNUAL TRIPS	VISITOR ANNUAL TRIPS
Football	130-160	4 (+*bowl*)	7
Men's Basketball	20+	20-24 (+*tournaments*)	20-30
Women's Basketball	20+	10 (+*tournaments*)	10±
Gymnastics	20+	6	6±
TOTAL		**34-38**	**43-53±**

Source: UGA Athletic Department Survey Data, 1998.
The LPA Group analysis, 1998.

5.3 MANUFACTURER'S SPECIFICATIONS

Following the coordination and tabulation of user survey data obtained from current corporate operators, an attempt was made to review the various aircraft manufacturer's performance specifications for the aircraft presented in Table 2. This review was intended to validate user requirements and identify any potential shortfalls in optimum runway length. Additionally, manufacturer performance specifications were studied for the regional and major airline aircraft identified under Subsection 4.2, again for purposes of validation.

In the case of corporate jet aircraft, data from the manufacturer was not readily available to adequately cover the altitude and temperature for AHN; rather, the manufacturers made data available for standard day (*59°F*)/sea level conditions at MGTOW. Utilizing the following determined ranges for adjustment factors, the standard day data was extrapolated to AHN site-specific conditions:

- Approximately 0.42-0.65% increase per degree Fahrenheit above 59° F (*mean maximum temperature during the hottest month in Athens – 89.6 °F*)
- Approximately 7% increase per 1,000 feet above mean sea level

It was only necessary to validate the takeoff length estimates, as landing length is not critical. With the exception of the HS-125/700 takeoff length of 7,825 feet, estimated by Aviation Methods, the remaining corporate takeoff length estimates fell within the MGTOW ranges resulting from an application of the above adjustment factors. In the case of Colvin Aviation, approximately 6,400 feet would be necessary to depart under MGTOW conditions. Adjusting this number for the effective runway gradient at AHN would result in a length needed of 7,000 feet. It should be noted however that in most cases, corporate operators do not depart under MGTOW conditions (*reference MGTOW% in Appendix A*), thus lessening the justification for the actual maximum length.

Similar performance data for the Canadair Regional Jet and the Embraer EMB-145 equipment, was studied. The cursory analysis revealed that a length of 5,800 feet is necessary under MGTOW and standard day/sea level conditions. Adjusting for the Athens site would result in a maximum length of 6,900-7,400 feet. Again, regional airlines rarely operate under MGTOW due largely to the short haul distance (*i.e., Charlotte*). This means that although a carrier may depart completely full of passengers, they do not require a full fuel load to arrive at their destination. Given typical operating weights for a full passenger load, a trip length of less than 1,000 nautical miles, and the Athens site-specific parameters, the earlier identified takeoff length of 6,500 feet is deemed reasonable.

Manufacturer data for large commercial Boeing aircraft is more comprehensive. Runway length calculations were performed for the 737-400 and 757-200 aircraft. The takeoff length estimated from this data closely mirrors the feedback provided by Delta Airlines representatives (see Appendix B), and confirms a recommended runway length for the above aircraft of approximately 7,000 feet. Exhibit 3 graphically depicts the relationship of takeoff length requirements for the various critical aircraft.

5.4 FAA DESIGN STANDARDS

In addition to user requirements and manufacturer performance specifications, runway length requirements for AHN were calculated in accordance with criteria presented in FAA AC 150/5300-13 and AC 150/5325-4A. Design criteria are related to operational and physical characteristics of the airplanes intended to operate at a particular airport. The Airport Reference Code (*ARC*), based on critical aircraft approach speed and wing span, is presently established as C-II for Runway 9-27 at AHN; however, the ARC may increase to C-III/C-IV, contingent on Delta charter 737/757 aircraft operations.

Runway length requirements are based on several controlling factors such as: airport elevation, mean maximum daily temperature (*during the hottest month*), runway gradient, aircraft mix, runway surface conditions, aircraft haul distance, typical payloads, and the frequency of operation by various aircraft. Data presented in the January 1995 Master Plan were applied to determine these factors. Further, mix projections from the Master Plan through the year 2017 indicate that the critical aircraft (*or family of aircraft*) conducting at least 250 annual takeoffs at the Airport (*per FAA AC-150/5325-4A*), is expected to be less than 60,000 pounds and seat more than 10 passengers.

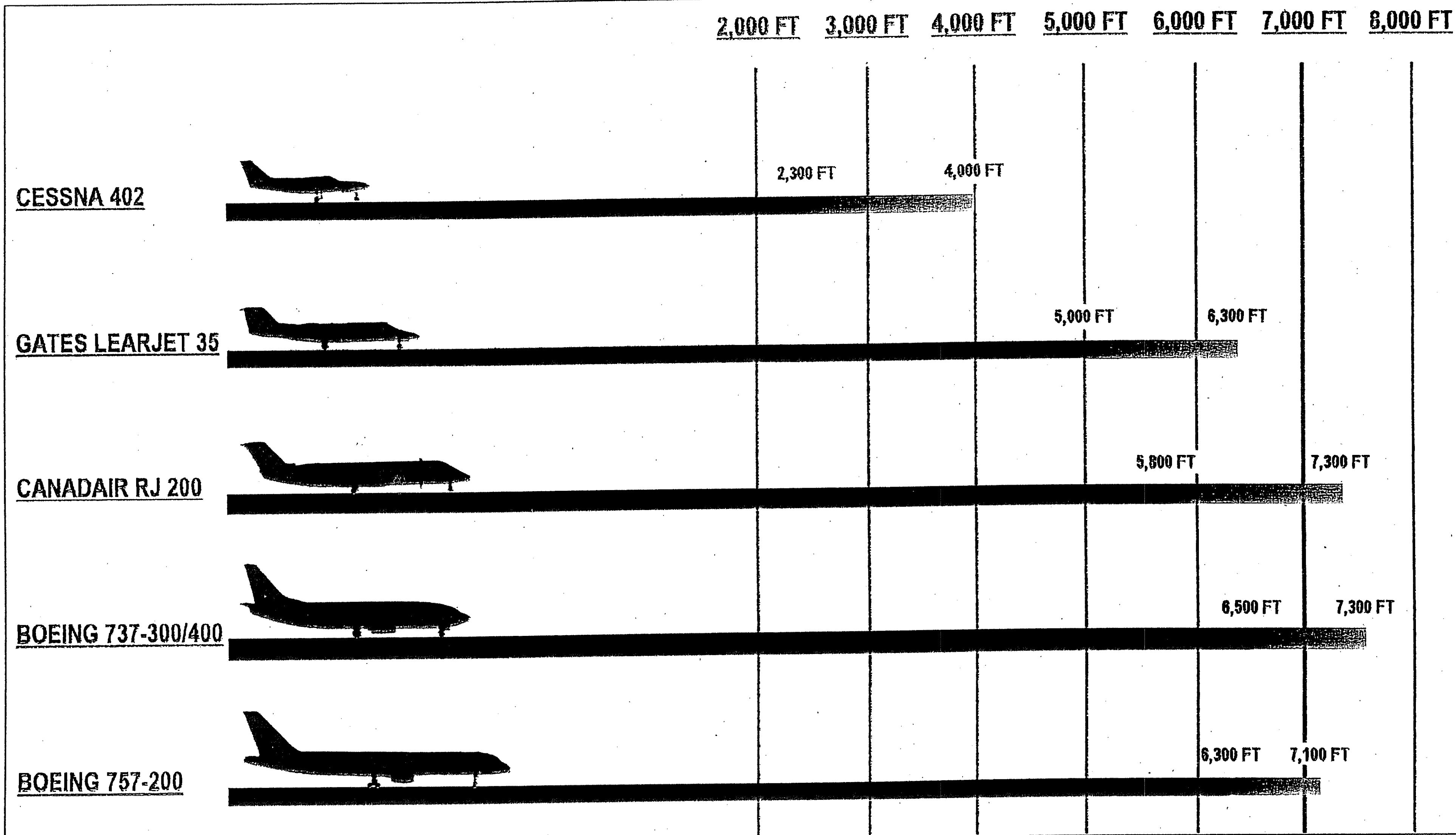
Utilizing FAA's Airport Design computer program (*version 4.2D*), a determination was made that the 5,522-foot primary runway at AHN narrowly accommodates approximately 75 percent of these type aircraft, assuming a 60 percent useful load. Conducting the same analysis, but assuming a 90 percent useful load, requires a runway length of approximately 7,400 feet. The airplanes in the national fleet which account for the remaining 25 percent were not identified in the airport operating mix for AHN. Nevertheless, should these airplanes be included, takeoff lengths of approximately 6,200 and 9,300 feet are recommended by FAA assuming 60 and 90 percent useful loads, respectively.

Runway width for ARC C-II and III requires a runway width of 100’. However, as discussed and as noted by Delta Airlines, the initiation of 737 series and/or 757 series operations at AHN would require a recommended runway width of 150’.

5.5 RUNWAY LENGTH RECOMMENDATIONS

Reviewing the user response data gathered during the survey process, indicates that the desired normal operating weights typically exceed 80 percent of MGTOW, but infrequently reach 100 percent of MGTOW. This departure weight and resulting lengths provided by the users appears to fall well within the FAA general length requirements offered above. Additionally, manufacturers performance specifications seem to offer a significant level of validation and support for the data furnished by the users.

Therefore, it is recommended that a minimum takeoff runway length of approximately 6,500 feet be developed at the Athens/Ben Epps Airport. Optimally, a takeoff runway length of 7,000 feet and a runway width of 150 feet should be preserved as a part of this recommendation. Utilized this justification, the County should proceed with identifying viable alternatives to developing these runway lengths at AHN, while also taking the necessary steps to controlling airspace and adjacent incompatible land uses near the airport.



THE LPA GROUP AVIATION CONSULTANTS

ATHENS-BEN EPPS AIRPORT
RUNWAY 9-27 LENGTH ANALYSIS

TAKEOFF LENGTHS FOR CRITICAL AIRCRAFT (BY CLASS)

EXHIBIT 3

Section 6

CONCLUSIONS

Construction of major airfield improvements (i.e., new runways, runway extensions) at airports is often times driven by factors such as capital costs and environmental concerns. A program may also be influenced by outside forces such as public perception and political decisions. At present, a runway/taxiway extension and associated RSA improvements are required by the current operators at Athens/Ben Epps Airport which most importantly provides enhancements that ensure the highest level of safety, and secondly providing an unconstrained airfield to satisfy existing and future needs of corporate, regional airline, and airline charter users. Prior to proceeding with financial programming, the benefits and costs should be considered. In a subsequent technical report, an analysis of the practical alternatives which meet this study's recommendations on runway length will be studied by The LPA Group. That study will consider the benefits of various improvements while also weighing the financial and environmental costs associated with a program of this magnitude. The program should ultimately maintain safety as the County's top priority, while attempting to expedite the most advantageous airfield components for user critical demand. Once again, it is anticipated that due to the environmental consequences associated with a 1,000 to 1,500-foot extension program, an Environmental Assessment complete with a formal public hearing will need to be conducted before receiving Federal and State approval to be eligible for funding and begin construction.

APPENDIX A

USER SURVEY QUESTIONNAIRES

Aircraft Numbers
for
The LPA Group, Inc.

Astra
1125K

BAC 111

Boeing 737 - Piedmont Aviation
P.O. Box 525
Winston-Salem, NC 27102
(800) 548-5278 - tele.
(910) 744-1257 - fax

Beech Jet
60B

Citation 525
100SC - EMJ Corp.

Citation III
500AE

Challenger
980HC

Challenger 600
175ST - S.E. Toyota

Convair 580
538JA - ERA Aviation

Falcon 20/S
500RR

Falcon 20/F
112CT - Certainteed

Falcon 50
300A
500AF - AFLAC

Falcon
40AS
48R
500J
347K

G-2
800J

G-3
87AC

G-4
584D
935SH

Gulfstream
1871R

Gulfstream IV
379XX - Nexxus Products

Hawker
25MJ
600J
913V
919P
728JW
731BW
(?) Flight Enterprises, L.L.C.
William R. Shoemaaker, Chief Pilot
2007 Flightway Drive
Atlanta, GA 30341
(770) 458-7875

HS 125-700
527AC

Lear
90AH
93LE
10AH
310P
33IN
100KK
288JE
450MC
508P
53GH
740K
742E
744E
825CA
873LP
900WA
911EM

Lear 35A
440MC

Sabreliner
3BM
265SC

Sabreliner 265
96RE - Reliance Electric

Westwind
407W
38AE
305BB
331CW
601CB
911CU

Figure 1

Athens/Ben Epps AIRPORT MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY (Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: LEARJET LR-35A.

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

   Annual Departures: 1200 Annual Landings: 1200

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 90 - 100 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

   Departure runway length needed: 6300 (DRY RWY) feet. @ 100% MTOW

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

   Landing runway length needed: 6100 feet. ~~[illegible]~~ AT MAX LANDING WT

Company/Individual Name: Colvin Air Charter Date: 6-23-97
(OPTIONAL)

(over please)

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: LEAR JET 55.

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

Annual Departures: 6 Annual Landings: 6

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 90 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

Departure runway length needed: 5720 feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

Landing runway length needed: 5600 feet.

Company/Individual Name: ROBERT R. BARNES Date: 7-1-97
(OPTIONAL) OPERATIONS CAPTAIN

(over please)

SOUTHEAST TOYOTA
AVIATION DEPT.

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: LEAR JET 35

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

Annual Departures: 6 Annual Landings: 6

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 87 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

Departure runway length needed: 5341 feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

Landing runway length needed: 5192. feet.

Company/Individual Name: ROBERT R. BARNES
(OPTIONAL) OPERATIONS CAPTAIN

Date: 7-1-97

(over please)

SOUTHEAST TOYOTA
AVIATION DEPT.

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

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1) Please list Aircraft Make and Model: CANADAIR CHALLENGER 601-3A

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

   Annual Departures: 12 Annual Landings: 12

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 82 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

   Departure runway length needed: 5010 feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

   Landing runway length needed: 5658 feet.

Company/Individual Name: ROBERT R. BARNES
(OPTIONAL) OPERATIONS CAPTAIN

Date: 7-1-97

(over please)

SOUTHEAST TOYOTA
AVIATION DEPT.

END

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: GULFSTREAM IV

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

   Annual Departures: 6 Annual Landings: 6

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: ~~50~~ 80 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

   Departure runway length needed: 4770 feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

   Landing runway length needed: 6250 feet.

Company/Individual Name: DuPont Aviation Date: 7/1/97
(OPTIONAL) Neil Andrew

(over please)

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: FALCON 20

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

Annual Departures: 4 Annual Landings: 4

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 84 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

Departure runway length needed: 4900 feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

Landing runway length needed: 5500 feet.

Company/Individual Name: Midwest Aviation Date: 7-1-97
(OPTIONAL)

Don Hunt
Chief Pilot

(over please)

Don Hunt

Please use this space to provide any additional information or comments:

We are a construction co.
If we have a job in the area we will
use the Athens Airport. When the job
is completed we will not be back until
another job is acquired. I have not
seen Athens on the schedule recently so
maby the work we had their is completed.

Please return this completed form to:

THE LPA GROUP INCORPORATED
ATTN: R. Kennedy Holt
2530 Devine Street
Columbia, SC 29205
Tel: (803) 254-2211
Fax: (803) 779-0482

or call Mr. Holt at the above telephone number with any questions.

Thank you for your assistance in this important Study.

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: HS-125 (700).

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

Annual Departures: 4 Annual Landings: 4

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 80 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

Departure runway length needed: 7825 feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

Landing runway length needed: 4500 feet.

Company/Individual Name: Gary Lacore Date: 7/1/97
(OPTIONAL)

(over please)

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: Lear 35A

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

Annual Departures: 6 Annual Landings: 6

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 100 % MTOW

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

Departure runway length needed: 6850 feet. (Part 91)

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

Landing runway length needed: 4210 feet.

Company/Individual Name: LANDS' END, INC., Date: 7/1/97
(OPTIONAL)

N93LE
N97LE

(over please)

MAX C. MELTZER
CHIEF PILOT

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: FALCON 50 N500AF

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

Annual Departures: 20 Annual Landings: 20

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 50 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

Departure runway length needed: 4325 feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

Landing runway length needed: ~~3~~ 2900 feet.

Company/Individual Name: AFLAC Incorporated Date: 7-1-97
(OPTIONAL)

(over please)

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: Lear 35 D

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

Annual Departures: 2 Annual Landings: 2

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 100 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

Departure runway length needed: 4770 feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

Landing runway length needed: 3,720 feet.

Company/Individual Name: Image Air Date: 7-1-97
(OPTIONAL)

(over please)

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: SABRELINER 65.

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

Annual Departures: 8 Annual Landings: 8

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 92 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

Departure runway length needed: 6844 feet. RUNWAY 27
8056 FEET RUNWAY 09 (1% UPSLOPE)

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

Landing runway length needed: 6515 feet.

Company/Individual Name: RELIANCE ELECTRIC Date: 7/3/97
(OPTIONAL)

(over please)

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: Gulfstream III.

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

   Annual Departures: 2 Annual Landings: 2

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 70 - 80 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

   Departure runway length needed: 6450 feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

   Landing runway length needed: 6400 feet.

Company/Individual Name: John Dachenhaus Date: 7-7-97
(OPTIONAL) Nexxus Products

(over please)

Athens/Ben Epps AIRPORT
MASTER PLAN STUDY

RUNWAY LENGTH REQUIREMENT SURVEY
(Existing Users and Tenants)

Dear Airport User/Tenant:

As part of the Master Plan Study for the Athens/Ben Epps Airport, the Consultant is evaluating the necessity and justification for a possible runway extension to better serve user requirements. Your assistance in this effort would be greatly appreciated, and we ask that you complete this survey form for each aircraft operated by your company at the Athens/Ben Epps Airport on a regular basis.

1) Please list Aircraft Make and Model: HAWKER BAe 800 & G-III

2) Please indicate the average number of annual departures and landings made by this aircraft at Athens/Ben Epps Airport:

Annual Departures: 2 Annual Landings: 2

3) If present runway length were not a limiting factor, please indicate the percent of maximum takeoff weight MTOW you would normally operate this aircraft at to complete flight missions without constraints: 65 % MTOW.

4) At a field elevation of 808 feet MSL and a temperature of 90°F with zero wind, please indicate the *departure runway length* needed for this aircraft at the % MTOW indicated in question (3) above and in compliance with FAR Part 135.379 (accelerate-stop distance) requirements:

Departure runway length needed: 5200' feet.

5) At a field elevation of 808 feet MSL and a temperature of 90°F with no wind, please indicate the *landing runway length* needed for this aircraft at maximum landing weight and in compliance with FAR Part 135.385 (60% effective length and wet runway) requirements:

Landing runway length needed: 4350 feet.

Company/Individual Name: JOHNSON & JOHNSON Date: 7/07/97
(OPTIONAL)

(over please)

Please use this space to provide any additional information or comments:

NONE

THE RUNWAY LENGTHS REQUIRED ARE FOR OUR MOST RESTRKTIVE AIRCRAFT.

JAS

Please return this completed form to:

THE LPA GROUP INCORPORATED
ATTN: R. Kennedy Holt
2530 Devine Street
Columbia, SC 29205
Tel: (803) 254-2211
Fax: (803) 779-0482

or call Mr. Holt at the above telephone number with any questions.

Thank you for your assistance in this important Study.

APPENDIX B

AIRLINE LETTERS

Delta Air Lines

Delta Air Lines, Inc.
Post Office Box 20706
Atlanta, Georgia 30320-6001

March 10, 1999

Mike Floyd, Senior Aviation Planner
The LPA Group, Inc.
5255 Triangle Parkway
Suite 300
Norcross, GA 30010

Dear Mr. Floyd:

This is a final finding on your request for Delta Air Lines (Delta) to operate a charter to Athens Municipal Airport, Athens, GA (AHN).

Delta's Flight Operations department, has made a decision, not authorizing charter operations for UGA football team at Athens airport.

The decision was based upon many factors, but the primary consideration was that a consistent, reliable, and safe operation would be difficult to achieve. It was felt that to complete the charters through-out the season, an ideal operating environment needed to exist. There were too many scenarios that would invariably place the charter back into an Atlanta operation, thus providing less than satisfactory service to UGA.

Delta would be able to provide a consistently safe and reliable charter operation for the UGA football team, under most weather conditions, if we had the following to operate with:

1. Runway length or 6500 ft or greater for 9/27.

2. Runway width of 150 ft for 9/27.

3. Increase the load bearing capabilities of runway 9/27, taxiways and parking ramp.

While 6500 ft is Delta's minimum for most operations into AHN, this should not preclude Athens airport authority from lengthening the runway beyond 6500 ft. Consideration should also be given to the runway width and load bearing capabilities for future charters. This upgrade would allow the airport to handle larger aircraft such as a B757/B767, thus providing better aircraft performance and the flexibility to carry larger charter groups.

Delta would like to offer the option of Athens airport over Atlanta and continue our long standing relationship with UGA. We strive very hard to improve upon our services to our charter customers and make all options available. Regretfully, Delta can not offer charter service for the UGA football team utilizing the Athens airport at this time.

Thank you, and feel free to contact myself or charter marketing for further questions.

Sincerely,

Michael Oberle

Michael Oberle
Charter Coordinator - Flight Control

cc: Rick Darby - Supervisor - Navigation Database Analyst
Bill Barge - Manager Special Operations
Larry Carr - Charter Marketing
Capt. Ron Korthals - B727 Program Manager
Jim Bell - Performance Engineering
Capt. Terry Cusik - System Manager Domestic - Flight Operations
Ray Redlich - Manager Domestic Operations - Flight Control

APPENDIX C

FAA DESIGN CALCULATIONS

AIRPORT AND RUNWAY DATA

Airport elevation	808 feet
Mean daily maximum temperature of the hottest month	90.00 F.
Maximum difference in runway centerline elevation	63 feet
Length of haul for airplanes of more than 60,000 pounds	1000 miles
Wet and slippery runways	

RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN

Small airplanes with approach speeds of less than 30 knots . . .	320 feet
Small airplanes with approach speeds of less than 50 knots . . .	860 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2790 feet
95 percent of these small airplanes	3320 feet
100 percent of these small airplanes	3940 feet
Small airplanes with 10 or more passenger seats	4420 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5500 feet
75 percent of these large airplanes at 90 percent useful load	7390 feet
100 percent of these large airplanes at 60 percent useful load	6280 feet
100 percent of these large airplanes at 90 percent useful load	9280 feet
Airplanes of more than 60,000 pounds . . . . Approximately	6290 feet

REFERENCE: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design, no Changes included.

APPENDIX D

GLOSSARY OF AVIATION TERMS

Glossary of Aviation Terms

-A-

AC - Advisory Circular.

ADAP - Airport Development Aid Program.

ADO - Airports District Office - administrative regional office of FAA that oversees airport development projects.

AFSFO - Airway Facilities Sector Field Office.

AFB - Air Force Base.

AGL - Above Ground Level.

AHN - Three letter identifier for Athens/Ben Epps Airport.

AIA - Annual Instrument Approach.

AIP - Airport Improvement Program.

AIR CARRIER - Aircraft operating under certificates of public convenience and necessity issued by the FAA authorizing the performance of scheduled air transportation over specified routes and a limited amount of non-scheduled air transportation over specified routes and a limited amount of non-scheduled operations.

AIRCRAFT TYPES - An arbitrary classification system which identifies and groups aircraft having similar operational characteristics for the purpose of computing runway and terminal area capacity.

AIR NAVIGATIONAL FACILITY - Any facility used for guiding or controlling flight in the air or during the landing or takeoff of aircraft.

AIR ROUTE SURVEILLANCE RADAR (ARSR) - Long-range radar which increases the capacity of air traffic control for handling heavy enroute traffic. An ARSR site is usually located at some distance from the ARTCC it serves. Its range is approximately 200 nautical miles. Also called ATC Center Radar.

AIR TAXI - Aircraft operated by a company or individual that performs air transportation on a non-scheduled basis over unspecified routes usually with light aircraft.

AIRPORT SURVEILLANCE RADAR - Radar providing position of aircraft by azimuth and range data without elevation data. It is designed for a range of *50* miles. Also called ATC Terminal Radar.

AIRPORT TRAFFIC AREA - Unless otherwise specifically designated, that airspace within a horizontal radius of five statute miles from the geographical center of any airport at which a control tower is operating, extending from the surface up to but not including 3,000 feet above the surface.

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.

AIRSPACE - The space lying above the earth or above a certain area of land or water which is necessary to conduct aerodynamic operations.

ALP - Airport Layout Plan.

ALS - Approach Light System.

ALSF-II - High intensity approach light system with sequenced flashing lights.

ANG - Army National Guard.

ANNUAL SERVICE VOLUME - Maximum number of annual aircraft operations that can theoretically be conducted at an airport, based on configuration, aircraft fleet mix, use, etc.

APPROACH FIX - The point from or over which final approach (IFR) to an airport is expected.

ARFF - Aircraft Rescue and Fire Fighting.

ARTS - Automated Radar Terminal Station.

ASNA - Aviation Safety and Noise Abatement Act of 1979.

ASPH - Abbreviation for runway surface composed of asphalt.

ASR - Airport Surveillance Radar.

ASV - Annual Service Volume.

ATA - Air Transport Association.

ATC - Air Traffic Control.

ATCT - Air Traffic Control Tower.

AVASI - Abbreviated visual approach slope indicator system.

-B-

BASED AIRCRAFT - An aircraft permanently stationed at an airport, usually by some of agreement between the aircraft owner and airport management.

BASIC TRANSPORT AIRPORT - An airport designed to serve operations by business jet aircraft.

BASIC UTILITY AIRPORT - An airport of this type is designed to accommodate 95 percent of the propeller aircraft fleet under 12,500 pounds.

BRL - Building Restriction Line.

-C-

CAB - Civil Aeronautics Board - former federal agency responsible for overseeing and regulating air carrier industry; FAA has been delegated the responsibilities that were assumed by the CAB.

CAT I - Category I Instrument Landing System.

CAT II - Category II Instrument Landing System.

CAT III A - Category III A Instrument Landing System.

CBD - Central Business District.

CIRCLING APPROACH - A descent in an approved procedure to an airport, a circle-to-land maneuver.

CL - Centerline Lighting.

COMMUTER AIRLINE - Aircraft operated by an airline that performs scheduled air transportation service over specified routes using light aircraft. Light aircraft means an aircraft having 30 seats or less and a maximum payload capacity of 7,500 pounds or less.

CONTINENTAL CONTROL AREA - This includes the airspace at and above 14,500 feet MSL of the 48 contiguous states, the District of Columbia, and Alaska, excluding the Alaskan peninsula west of longitude 160 degrees west. It does not include the airspace less than 1,500 feet above the surface of the earth nor most prohibited or restricted areas.

CONTROL AREAS - These consist of the airspace designated as VOR Federal Airways, additional Control Areas, and Control Area Extensions but do not include the Continental Control Area. Control zones that do not underlie the Continental Control Area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of 5 statute miles and any extensions necessary to include instrument departure and arrival paths.

CONTROL TOWER - A central operations facility in the terminal air traffic control system consisting of a tower cab structure (including an associated 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.

CONTROL ZONES - These are areas of controlled airspace which extend upward from the surface and terminate at the base of the Continental Control Area. Control zones that do not underlie the Continental Control Area have no upper limit. A control zone may include one or more airports and is normally a circular area with a radius of five statute miles and any extensions necessary to include instrument departure and arrival paths.

CONTROLLED AIRSPACE - Airspace designated as Continental Control Area, control area, control zones, or transition area within which some or all aircraft may be subject to air traffic control.

-D-

dB - Decibel.

dBA - A-weighted Decibel.

DECISION HEIGHT (DH) - With respect to the operation of aircraft, this means the height at which a decision must be made, using an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

DISTANCE MEASURING EQUIPMENT (DME) - An electronic installation established with either a VOR or 11-5 to provide distance information form the facility to pilots by reception of electronic signals. It measures, in nautical miles, the distance of an aircraft from a NAVMD.

DOD - Department of Defense.

-E-

ENROUTE - The route of flight from the point of departure to point of destination, including intermediate stops (excludes local operations).

ENROUTE AIRSPACE - Controlled airspace above and/or adjacent to terminal airspace.
EPA - Environmental Protection Agency.

-F-

FAA - Federal Aviation Administration.

FAR - Federal Aviation Regulations.

FBO - Fixed-Based Operator.

FINAL APPROACH IFR - The flight path of an aircraft which is inbound to the airport on an approved final instrument approach course, beginning at the point of interception of that course and extending to the airport or the point where circling for landing or missed approach is executed.

FINAL APPROACH VFR - A flight path of landing aircraft in the direction of landing along the extended runway centerline from the base leg to the runway.

FLEET MIX - The proportion of aircraft types or models expected to operate at an airport.

FLIGHT SERVICE STATION (FSS) - A facility operated by the FAA to provide flight assistance services.

-G-

GADO - General Aviation District Office.

GENERAL AVATION (GA) - Refers to all civil aircraft and operations which are not classified as air carrier.

GENERAL UTILITY (GU) AIRPORT - An airport which is designed to accommodate substantially all propeller-driven aircraft of less than 12,500 pounds.

GENERAL TRANSPORT (GT) AIRPORT - This airport designation is used when an airport is forecast to support general aviation transport aircraft between 60,000 and 175,000 pounds MGTOW.

GLIDE SLOPE (GS) - The vertical guidance component of an ILS.

-H-

HIRL - High Intensity Runway Edge Lighting.

HIGH ALTITUDE AIRWAYS - Air routes above 18,000 feet MSL. These are referred to as Jet Routes.

HOLDING - A pre-determined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

HUD - Department of Housing and Urban Development.

INSTRUMENT APPROACH - An approach conducted while the final approach fix is below VFR minimums.

IFR - Instrument Flight Rules that govern flight procedures under IFR conditions (limited visibility or other operational constraints).

INM - Integrated Noise Model.

INSTRUMENT LANDING SYSTEM (ILS) - A precision landing air consisting of localizer (azimuth guidance), glide scope vertical guidance), outer marker (final approach fix), and approach light system.

INSTRUMENT OPERATION - A landing or takeoff conducted while operating on an instrument flight plan.

ITINERANT OPERATION - All aircraft arrivals and departures other than local operations.

-J-

JET ROUTES - See High Altitude Airways.

-L-

LANDING DIRECTION INDICATOR - A device which visually indicates the direction in which landings and takeoffs should be made.

LANDING MINIMUMS/IFR LANDING MINIMUMS - The minimum visibility prescribed for landing while using an instrument approach procedure.

LDA - LOCALIZER TYPE DIRECTIONAL AID - A NAVAID used for non-precision instrument approaches with utility and accuracy comparable to a localizer but which is not a part of a complete ILS and is not aligned with the runway.

Ldn - Day-Night Average Sound Level.

Leq - Equivalent Sound Level.

LF - Linear Feet.

LOC - Localizer - Part of ILS that provides course guidance to the runway.

LOM - Compass locator at an outer marker (part of an ILS). Also called COMLO.

LOCAL OPERATION - Operations performed by aircraft which: (a) operate in the local traffic pattern or within sight of the tower; (b) are known to be departing for, or arriving from, flight in local practice area located within a 20-mile radius of the control tower; or (c) execute simulated instrument approaches or low passes at the airport.

LOW ALTITUDE AIRWAYS - Air routes below 18,000 feet MSL. These are referred to as Victor Airways.

LPA - The LPA Group Incorporated

MALS - Medium (intensity) Approach Light System.

MALSF - MALS with sequenced flashing lights.

MALSR - MALS with runway alignment indicator lights (RAILs).

MARKER BEACON - A VFR navigational aid which transmits a narrow directional beam. It is associated with an airway or an instrument approach.

MASTER PLAN - Long-range plan of airport development requirements.

MCTW - Maximum Certificated Takeoff Weight.

MGTOW - Maximum Gross Takeoff Weight.

MICROWAVE LANDING SYSTEM (MLS) - An instrument landing system operating in the microwave spectrum which provides lateral and vertical guidance to aircraft having compatible avionics equipment.

MINIMUM DESCENT ALTITUDE (MDA) - The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circling-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

MIRL - Medium Intensity Runway Edge Lighting.

MISSED APPROACH - A prescribed procedure to be followed by aircraft that cannot complete an attempted landing at an airport.

MITL - Medium Intensity Taxiway Edge Lighting.

MM - Middle Marker - Part of an ILS that defines a point along the glide slope normally located at or near the point of decision height (DII).

MOA - Military Operating Area.

MSL - Mean Sea Level.

-N-

NAS - NATIONAL AIRSPACE SYSTEM - The common system of air navigation and air traffic control encompassing communications facilities, air navigation facilities, airways, controlled airspace, special use airspace, and flight procedures authorized by Federal Aviation Regulations for domestic and international aviation.

NAVAID - See Air Navigational Facility.

NDB - NON-DIRECTIONAL BEACON - An electronic ground station transmitting in all directions in the L/MF frequency spectrum; provides azimuth guidance to aircraft equipped with direction finder receivers. These facilities are often established with ILS outer markers to provide transition guidance to the ILS system.

NEPA - National Environmental Policy Act.

NLR - Noise Level Regulation.

NM - Nautical Mile.

NOISE ABATEMENT - A procedure for the operation of aircraft at an airport which minimizes the impact of noise on the environs of the airport.

NOISE COMPATIBILITY PROGRAM (NCP) - List of actions the airport proprietor proposes to undertake to minimize noise/land use incompatibilities.

NOISE EXPOSURE MAP (NEM) - Graphic depiction of both existing and future noise exposure resulting from aircraft operations and land uses in the airport environs.

NOISEMAP - FAA-approved computer model used to generate noise contours.

NON-PRECISION APPROACH PROCEDURE/NON-PRECISION APPROACH - A standard instrument approach procedure in which no electronic glide slope is provided.

NOTICE TO AIRMEN/NOTAM - A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment of, conditions of, or change in any component (facility, service, or procedure or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

NPI - Non-Precision Instrument runway marking.

NPIAS - National Plan of Integrated Airport Systems.

NWS - National Weather Service.

-O-

O & D - Origination and Destination.

OAG - Official Airline Guide.

OBSTRUCTION - Any object/obstacle exceeding the obstruction standards specified by FAR Part 77.

OBSTRUCTION LIGHT - A light, or one of a group of lights, usually red or white, frequently mounted on a surface structure or natural terrain to warn pilots of the presence of an obstruction.

ODALS - Omni-directional Approach Light System.

OM - OUTER MARKER - A marker beacon, which is part of an ILS, located at or near the glide slope intercept altitude of an ILS approach.

OPBA - Operations per based aircraft.

OPERATION - An aircraft arrival (landing) at or departure (takeoff) from an airport.

OUTER FIX - A point in the destination terminal area from which aircraft are cleared to the approach fix or final destination.

-P-

PAPI - Precision Approach Path Indicator.

PAR - Precision Approach Radar.

PI - Precision Instrument runway marking.

POSITIVE CONTROL AREAS - Airspace wherein aircraft are required to be operated under Instrument Flight Rules.

PRECISION APPROACH - A standard approach in which an electronic glide slope is provided.

PROHIBITED AREA - Airspace defined dimensions identified by an area on the surface of the earth within flight is prohibited.

PU - Public-owned airport.

PVT - Private-owned airport.

-R-

RAIL - Runway Alignment Indicator Lights.

RAPCON - Radar Approach Control Center.

RASP - Regional Airport System Plan.

REIL - Runway End Identifier Lights.

RELIEVER AIRPORT - An airport which, when certain criteria are met, relieves the aeronautical demand on a high density air carrier airport.

RESTRICTED AREAS - Airspace of defined dimensions identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited is subject to restrictions.

RNAV - Radar navigation.

ROTATING BEACON - A visual NAVMD displaying flashes of white and/or colored light used to indicate location of an airport.

RPZ - Runway Protection Zone.

RUNWAY SAFETY AREA - An area symmetrical about the runway centerline and extending beyond the ends of the runway which shall be free of obstacles as specified.

RVR - Runway Visibility.

RW and R/W - Runway.

-S-

SALS - Short Approach Light System.

SDF - Simplified Directional Facility landing aid providing pattern direction.

SEGMENTED CIRCLE - An airport aid identifying the traffic pattern direction.

SEL - Sound Exposure Level.

SENEL - Single-event noise exposure level.

SEPARATION MINIMA - The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.

SF - Square Feet.

(S) SALS - Simplified Short Approach Light System.

SMSA - Standard Metropolitan Statistical Area.

SSALF - Simplified Short Approach Light System with Sequenced Flashing lights.

STOL - Short Takeoff and Landing.

STRAIGHT-IN APPROACH - A descent in an approved procedure in which the final approach course alignment and descent gradient permit authorization of straight-in landing minimums.

SYSTEM PLAN - A representation of the aviation facilities required to meet the immediate and future air transportation needs and to achieve the overall goals.

T & G - Touch and Go operation.

TACAN - Tactical Air Navigation.

TAF - FAA's Terminal Area Forecast.

TDZ - Touchdown Zone Lights.

TERMINAL AIRSPACE - The controlled airspace normally associated with aircraft departure and arrival patterns to/from airports within a terminal system and between adjacent terminal systems in which tower enroute air traffic control service is provided.

TERMINAL CONTROL AREA (TCA) - This consists of controlled airspace extending upward from the surface of higher to specified altitudes within which all aircraft are subject to positive air traffic control procedures.

TERMINAL RADAR SERVICE AREA (TRSA) - This area identifies the airspace surrounding an airport wherein Air Traffic Control provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. Although pilot participation is urged, it is not mandatory within the TRSA.

TERPS - Terminal Instrument Procedures.

T-HANGAR - A T-shaped aircraft hangar which provides shelter for a single airplane.

THRESHOLD - The physical end of runway pavement.

TOUCH-AND-GO OPERATION - An operation is which the aircraft lands and begins takeoff roll without stopping.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at, taxiing on, and taking off from an airport. The usual components of a traffic pattern are upwind leg, crosswind leg, downwind leg, and final approach.

TRANSIENT OPERATIONS - An operation performed at an airport by an aircraft that is based at another airport.

TRSA - Terminal Radar Service Area.

TVOR - Terminal Very High Frequency Omnirange Radio Station.

TW and T/W - Taxiway.

-U-

UHF - Ultra High Frequency.

UNCONTROLLED AIRSPACE - That portion of the airspace that has not been designated as Continental Control Area, control area, control zone, terminal control area, or transition area and within which ATC has neither the authority nor the responsibility for exercising control over air traffic.

UNICOM - Radio communications station which provides pilots with pertinent information (winds, weather, etc.) at specific airports.

USGS - United States Geological Survey.

USWB - United States Weather Bureau.

-V-

VASI - Visual Approach Slope Indicator providing visual glide path.

VECTOR - A heading issued to an aircraft to provide navigational guidance by radar.

VFR - Visual Flight Rules that govern flight procedures in good weather.

VFR AIRCRAFT - An aircraft conducting flight in accordance with Visual Flight Rules.

VHF - Very High Frequency.

VICTOR AIRWAYS - See Low Altitude Airways.

VOR - Very High Frequency Omni-directional Radio Station.

VORDME - VOR facility supplemented with Distance Measuring Equipment (DME).

VORTAC - VOR facility supplemented with Tactical Air Navigation (TACAN).

V/STOL - Vertical/Short Takeoff and Landing.

VTOL - Vertical Takeoff and Landing (includes, but is not limited to, helicopters).

WARNING AREA - Airspace which may contain hazards to non-participating aircraft in international airspace.

WIND-CONE (WIND SOCK) - Conical wind direction indicator.

WIND TEE - A visual device used to advise pilots about wind direction at an airport.

Appendix I

MASTER PLAN UPDATE AVIATION ACTIVITY FORECASTS TECHNICAL PAPER

AVIATION ACTIVITY FORECASTS TECHNICAL PAPER

Aviation forecasts the Athens/Ben Epps Airport (AHN) present estimates of future aviation-related activity. These forecasts are measures of demand to be placed on airport facilities, and are used in subsequent sections to estimate airport facility requirements throughout the 20-year study period. Due to the range of requirements to be developed, this section presents both annual and derivative (peak-hour) forecasts of general aviation and commuter activity. Future projections initially serve as a guide to facilitate the planning of airport development phasing, and later serve as a basis for financial planning.

Forecasts presented herein use estimated 1997 activity as the base year; from which a 20-year planning horizon is calculated, beginning in 1998 and ending in 2017. This section is organized into four significant subsections: forecast assumptions, socioeconomics, historic activity, and activity forecasts. Throughout the discussion, the major elements of air transportation have been grouped together. These elements are comprised of air carrier (commuter) demand, air cargo demand, general aviation demand, and military demand. As a special note, general aviation demand includes all activity associated with business and corporate flying, air taxi, flight instruction, personal flying, and charter flying.

Projections of aviation activity which follow were generated utilizing several sources of data, including: FAA Terminal Area Forecasts for AHN and the Nation; FAA National Aviation Forecasts, Fiscal Years 1997-2008; the Georgia Statewide Aviation System Plan; the 1995 Athens/Ben Epps Airport Master Plan Update; and past growth trends of various aviation demand elements together with socioeconomic factors which were extended into the future using a variety of statistical techniques. Professional judgment was also employed to determine whether or not these projections could be deemed reasonable forecasts of future activity at AHN. Many of the factors which influenced the forecasting effort are discussed in the ensuing subsection.

FORECAST ASSUMPTIONS

An understanding of the many variables which affect the aviation industry is critical from the standpoint of developing aviation demand forecasts that are reliable for planning purposes. For example, the deregulation of air service in 1978 drastically altered airline strategy throughout the U.S. Airline hubbing was subsequently adopted by all major carriers, thus impacting activity levels nationwide. Hubbing has dominated the marketplace for almost two decades, while smaller communities have relied on service by regional carriers (commuters) operating turboprop aircraft which typically seat between 19 and 60 people. Regional carriers have served the Athens community since the mid 70's; however, over the past decade absorption of regional carriers by the major carriers and code sharing have worked to further support the hubbing strategy and eliminate direct flights to major destinations from smaller communities. Currently, CCAir (a US Airways Express affiliate) is the sole provider of air service at AHN. All flights connect through US Airway's Charlotte hub.

Among the assumptions and factors considered in developing the aviation forecasts are the following:

- The air service market area includes the following Counties: Clarke, Oconee, Oglethorpe, Barrow, Elbert, Hart, Jackson, Madison, Morgan, and Walton. This equates to a distance of approximately 40 miles from the airport in some areas, or roughly an hour drive time.

- The general aviation market area covers a somewhat smaller area, given the presence of other nearby airports and the propensity of users to drive no more than 30 minutes. The area includes the counties of Clarke, Oconee, Oglethorpe, Barrow, Jackson, and Madison.

- All of the passengers utilizing the terminal facilities at AHN are and will continue to be origination/destination-type passengers. Therefore, it is assumed that the level of annual enplaned passengers shall equal deplaned passengers and that annual commercial departures (takeoffs) shall equal annual commercial arrivals (landings).

- The ability of AHN to capture originations from the established market area is significantly impacted by the proximity of Hartsfield Atlanta International Airport and Greenville-Spartanburg Airport in South Carolina. The Georgia Statewide Aviation System Plan estimates that AHN captures only 20 percent of the total passengers from Clarke County and only five percent of the passengers originating from the remaining market area counties. Although the possibility exists for infrequent use of AHN by passengers originating beyond the 10-county market area (i.e., Gwinnett, Banks, Franklin, and Greene counties), the level would be insignificant from the standpoint of enplanement forecasting.

- The potential for enhanced air service is another key factor. The Georgia Statewide Aviation System Plan evaluated the future viability of additional commuter service to the Atlanta, Cincinnati, Memphis, Nashville, Orlando, and Raleigh/Durham hubs. Based on the demand levels, this evaluation concluded that although new service could be justified, only one new point of service could be considered. Additionally, a limited incentive exists for an Atlanta carrier (Delta/Atlantic Southeast Airlines) to offer service, as they currently capture approximately 80 percent of the Clarke County originations.

- The recently completed GA Route 316 corridor between the Atlanta metropolitan area and Athens functions as a vital link between the two cities, reducing one-way travel times to a comfortable hour. Significant growth by commercial and industrial interests is predicted along this corridor, meaning increases in jobs and tax base revenues. The convenience of AHN will directly benefit from increased corporate activity; however, as air service increases, it may not occur at the historical rate.

- With the opening of the contract air traffic control tower in 1994, a more accurate measure of operational activity at AHN is now possible. Prior to the tower opening, estimates were relied upon as the basis for future projections, resulting in a great deal of uncertainty. The accuracy of this data will permit a more defined understanding of peaking characteristics.

- The employment and population statistics for Athens-Clarke County are expected to track very closely with the national average. The effective buying power (personal income) has outpaced the national and State of Georgia averages since 1980. Projections point toward a continuance of this trend.

SOCIOECONOMIC CHARACTERISTICS

Socioeconomic data for Athens-Clarke County and the encompassing area are essential inputs toward quantifying the future levels of aviation activity that may occur at AHN. In addition it provides good background information on local trends and projections. Typically, the principal socioeconomic indicators that often provide the best information on the profile of the local community are population, per capita income, and employment. Other excellent demographic indicators, which may provide an acceptable correlation with aviation activity, are unemployment, housing units, and total household income. Available data, offering both historic and projected statistics, were collected from the Northeast Georgia Regional Development Center in Athens during the inventory phase of the study. Based on this data, comparative tables were prepared which portray the socioeconomic character of Clarke County and the Northeast Georgia region as a whole. The data presented in the following subsections address population, per capita income, and total housing units. This socioeconomic information will serve as the basis for developing the forecasts of aviation demand, presented in the Section titled, Forecasts of Aviation Activity. In addition, information provided during meetings with University of Georgia representatives will be considered in the forecasting process.

Population

Table 1 presents the historic and forecasted population for Clarke County and the Northeast Georgia Region. The table shows that between 1970 and 1990 both Clarke County and the Northeast Georgia Region population has grown at an average annual rate of over 1.5%. As a reference, this growth has noticeably outpaced the population growth of the United States (0.98%) during a similar period.

Per Capita Income

Table 2 depicts a similar set of statistics for per capita income in Clarke County and the Northeast Georgia Region. Again, Clarke County and the Northeast Georgia have both yielded a strong annual growth of 2.2% and 2.4%, respectively. The average projected per capita income increase is expected to approximate 2.0% annually throughout the 20-year study period.

Table 1
POPULATION TRENDS & PROJECTIONS
Athens/Ben Epps Airport

Year	Clarke County	Northeast Georgia Region
1970	65,117	219,163
1980	74,498	267,896
1990	87,594	319,761
Forecast		
2000	100,800	378,501
2010	115,800	447,279
2020	131,800	523,491
Average Annual Growth		
1970 - 1990	1.5%	1.9%
1990 - 2000	1.4%	1.7%
2000 - 2020	1.4%	1.6%

Notes: Northeast Georgia Region comprises eleven counties: Barrow, Clarke, Elbert, Greene, Jackson, Madison, Morgan, Newton, Oconee, Oglethorpe, and Walton Counties.

Source: *Northeast Georgia Regional Comprehensive Plan - 1997, Northeast Regional Development Center.*
The LPA Group Incorporated analysis, 1997.

Housing Units

Table 3 provides a general sample of the overall average household buying power, by depicting the total number of housing units within Clarke County and the Northeast Georgia Region. Solid growth in the total number of housing units indicates a steady economy and is one of the foremost indicators utilized by the Federal government when assessing the national economy. Average annual growth rates of 2.8% and 3.0%, have been witnessed in Clarke County and the Northeast Georgia Region, respectively.

Table 2
PER CAPITA INCOME (1987 dollars) TRENDS & PROJECTIONS
Athens/Ben Epps Airport

Year	Clarke County	Northeast Georgia Region
1970	8,637	7,961
1980	10,572	10,075
1990	13,368	12,873
Forecast		
2000	14,869	14,544
2010	18,049	17,607
2020 [1]	21,910	21,320
Average Annual Growth		
1970 - 1990	2.2%	2.4%
1990 - 2000	1.1%	1.2%
2000 - 2020	2.0%	1.9%

Notes: Northeast Georgia Region comprises eleven counties: Barrow, Clarke, Elbert, Greene, Jackson, Madison, Morgan, Newton, Oconee, Oglethorpe, and Walton Counties.

[1] Extrapolated from 2010.

Source: *Northeast Georgia Regional Comprehensive Plan - 1997, Northeast Regional Development Center.*
The LPA Group Incorporated analysis, 1997.

HISTORIC AVIATION ACTIVITY

Athens/Ben Epps Airport accommodates general aviation, commuter, and occasionally military activity. Historical aviation activity data at AHN was gathered from various sources during the inventory phase of the study, including: CCAir, the fixed base operators, the ATCT, and the owner. Due to the nature of the operations conducted by both the general aviation community and the commuter operator, detailed historical data is often not available to the degree that it may be at larger hub airports. The absence of an ATCT prior to 1994, and the current hours of operation for the tower (8:00 am - 8:00 pm) impact the validity of operations related data. Wherever possible, previous data collected as part of the 1995 Master Plan Update was utilized and updated to reflect current conditions. As a minimum, this study attempted to obtain 10 years of activity data to enhance the legitimacy of future activity projections.

Table 3
HOUSING UNIT TRENDS & PROJECTIONS
Athens/Ben Epps Airport

Year	Clarke County	Northeast Georgia Region
1970	20,559	69,762
1980	27,602	96,272
1990	35,971	125,895
Forecast		
2000	43,263	162,548
2010	55,689	214,994
2020	71,939	285,702
Average Annual Growth		
1970 - 1990	2.8%	3.0%
1990 - 2000	1.9%	2.6%
2000 - 2020	2.6%	2.9%

Notes: Northeast Georgia Region comprises eleven counties: Barrow, Clarke, Elbert, Greene, Jackson, Madison, Morgan, Newton, Oconee, Oglethorpe, and Walton Counties.

Source: *Northeast Georgia Regional Comprehensive Plan - 1997, Northeast Regional Development Center.*
The LPA Group Incorporated analysis, 1997.

Commuter Activity

As noted previously, AHN has received commercial service in excess of 20 years. Since 1991, the level of service has not changed significantly; in other words, point-to-point jet service has not been initiated and all flights continue to serve a central hub operation. For these reasons, a survey of origination-destination (O&D) markets was conducted in 1991 for passenger traffic and presented in the 1995 Master Plan Update. For the purposes of this study, this survey is still believed to be valid. Acknowledging that subtle changes in ranking may have occurred, Table 4 depicts the top 20 passenger markets for Athens/Ben Epps Airport during 1991. The top five markets were New York, NY; Washington, D.C.; Philadelphia, PA; Boston, MA; and Baltimore, MD. These five O&D markets represent approximately 35% of all passengers using AHN.

Table 4
TOP 20 ORIGINATION - DESTINATION MARKETS (1991)
Athens/Ben Epps Airport

			Total O & D Air Carrier	
Rank	**Market**	**Passengers**	**Percent**	**Cumulative %**
1	New York, NY	2830	0.1118	0.1118
2	Washington, D.C.	2510	0.0991	0.2109
3	Philadelphia, PA	1220	0.0482	0.2591
4	Boston, MA	1160	0.0458	0.3049
5	Baltimore, MD	1110	0.0438	0.3487
6	Chicago, IL	930	0.0367	0.3855
7	Charlotte, NC	700	0.0276	0.4131
8	Pittsburgh, PA	620	0.0245	0.4376
9	Raleigh, NC	520	0.0205	0.4581
10	Richmond, VA	520	0.0205	0.4787
11	Denver, CO	470	0.0186	0.4972
12	Norfolk, VA	440	0.0174	0.5146
13	Hartford, CT	430	0.017	0.5316
14	Cleveland, OH	420	0.0166	0.5482
15	Indianapolis, IN	410	0.0162	0.5644
16	Detroit, MI	400	0.0158	0.5802
17	San Francisco, CA	400	0.0158	0.596
18	Syracuse, NY	360	0.0142	0.6102
19	Los Angeles, CA	350	0.0138	0.624
20	Nashville, TN	310	0.0122	0.6363
	Total of Top 20	**16,110**		
	Other Markets	**9,210**	**0.3637**	**1**
	TOTAL O & D	**25,320**	**1**	**1**

Source: Athens/Ben Epps Airport Master Plan Update, January 1995, Howard Needles Tammen & Bergendoff..

Table 5 presents the total number of commuter enplaned passengers since 1975. The total number of passengers has increased an average of over 2.5% annually since 1980. During the 1988-1990 timeframe, the airport, like most other airports throughout the United States enjoyed its best years for commercial enplanements. From 1991-1995 the airline industry experienced widespread losses of revenue, consequently resulting in major restructuring of most carriers. Contributing factors to this decrease in enplanements are: proximity of Hartsfield Atlanta International Airport, type of equipment flown by the carrier, and marketing of the available service to the community and neighboring areas. The enplanement levels from 1995-1997 have appeared to flatten out in the 13-14,000 range. Discussions with CCAir indicate that enplanements are stabilizing and they expect a continued effort to market their service. In addition, efforts to enhance the quality of service to AHN patrons will soon be offered by a new fleet of Jetstream Super 31 aircraft procured by CCAir. These aircraft are scheduled to be phased into the system in the next two years.

Table 5
HISTORIC COMMUTER ENPLANEMENTS
Athens/Ben Epps Airport

Year	Enplanements	Percent Change
1975	10,303	N/A
1976	8,257	-22.00%
1977	10,328	31.38%
1978	15,482	41.16%
1979	11,347	-27.70%
1980	8,473	-20.95%
1981	6,305	-27.46%
1982	3,834	-37.09%
1983	4,629	18.83%
1984	4,986	6.06%
1985	8,816	77.43%
1986	11,239	25.21%
1987	12,267	9.92%
1988	17,739	40.55%
1989	19,439	14.20%
1990	18,756	-4.13%
1991	16,249	-14.40%
1992	15,383	-5.76%
1993	14,958	-2.76%
1994	15,964	6.73%
1995	13,552	-15.11%
1996	14,037	3.58%
1997 (Est.)[1]	13,300	-5.25%
Average Annual Growth		
1975 - 1980	-3.84%	
1980 - 1990	8.27%	
1980 - 1997	2.69%	

[1] Estimate based on enplanement activity through September 1997.

Source: *1975-1992: Airline Service History, Athens/Ben Epps Airport, Georgia.*
1993-1996: FAA DOT/TSC Enplanement Data.

As time progresses the Jetstream 31s will experience a phased replacement by larger DeHavilland Dash 8 and Dornier turbine airplanes, which provide more seats (34), a roomier cabin, and an improved ride. Factors such as these are anticipated to increase enplanements in coming years.

Table 6 presents the historic average passengers per commuter aircraft departure. This table is a useful precursor to the forecasts which follow in the Section titled, Forecasts of Aviation Activity. Combining enplanement and departure data, the table shows how the use of commuter service has grown. An average of 10.7 passengers now board each departing commuter aircraft; that is a considerable increase from the 8.8 passengers per departure yielded in 1988. This reflects an average load factor per departure in 1997 of approximately 56 percent.

Table 6
HISTORIC AVERAGE PASSENGERS PER AIRCRAFT DEPARTURES
Athens/Ben Epps Airport

Year	Commuter Enplanements	Commuter Carrier Departures	Average Passengers per Departure
1988	17,739	2,026	8.8
1989	19,439	2,297	8.5
1990	18,756	1,873	10.0
1991	16,249	1,831	8.9
1992	15,383	1,372	11.2
1993	14,958	1,404	10.7
1994	15,964	1,373	11.6
1995	13,552	1,342	10.1
1996	14,037	1,310	10.7
1997 (Est.)	13,300	1,248	10.7
Average Annual Growth			
1988 - 1997	-3.1%	-5.2%	2.2%

- denotes estimated departures and average passengers/departure

Source: *Airline Service History, Athens/Ben Epps Airport, Georgia.*
Georgia Statewide Aviation System Plan: Air Carrier Activity Forecasts, Working Papers Number 4, WSA Project Team, August 1993.
The LPA Group Incorporated analysis, 1997.

Air Cargo Activity

Air cargo is defined as the volume of freight, express, and mail shipped by air. Historically, air freight activity at AHN has been minimal and has consisted of cargo either carried by air taxi operators or carried in the cargo bay carrier (referred to as "belly cargo") of the commuter. Based on user surveys the volume of cargo is not believed to have exceeded 55-60 annually enplaned tons over the past five years. With the presence of Hartsfield Atlanta International Airport the future levels of air cargo shipments are not expected to change significantly over the next 20 years.

General Aviation Activity

General aviation activity at AHN consists of aircraft basings and operations conducted for both business and personal reasons. Four aspects of such demand are identified as part of this master planning effort. These factors are: based aircraft, based aircraft fleet mix, annual operations, and peak period operations. Table 7 presents the estimated number of itinerant and local operations (takeoffs and landings) for the Athens/Ben Epps Airport. During 1997, the total itinerant operations accounted for an estimated 57% of the total estimated 49,700 operations. The ratio of itinerant operations to total operations has fluctuated between 55% and 80% over the past 13 years. Since local operations occur within approximately 20 miles of an airport, local operations are often equated with student pilot training activities, including "touch and go's". It should once again be noted that the validity of the annual operational counts prior to the ATCT opening in 1994 are questionable. Since 1994 itinerant operations have averaged approximately 58%.

A tabulation of historic based aircraft by type is depicted in Table 8. The total number of based aircraft has grown from 70 aircraft in 1983 to 97 based general aviation aircraft in 1997. This growth in general aviation based aircraft at AHN has averaged 2.4% per year during the period, principally due to the increase in single engine piston and turbojet based aircraft. In the case of multi engine based aircraft, AHN has lost tenants within the last year due to recently constructed enclosed hangar space provided at other airports in the local vicinity. On a positive note, the dramatic increase in based turbojet equipment is due principally to the available runway length and ILS equipment at AHN, which exceeds the facilities available at other airports in the general aviation service area.

Table 7

HISTORIC GENERAL AVIATION OPERATIONS
Athens/Ben Epps Airport

Fiscal Year	Itinerant Operations	Local Operations	Ratio of Itinerant/Total	Total Operations
1985	48,000	32,800	0.59	80,800
1986	31,200	20,800	0.60	52,000
1987	48,000	25,000	0.66	73,000
1988	55,000	25,000	0.69	80,000
1989	60,000	15,000	0.80	75,000
1990	36,300	15,000	0.71	51,300
1991	36,300	15,000	0.71	51,300
1992	36,300	15,000	0.71	51,300
1993	36,300	15,000	0.71	51,300
1994[1]	24,967	20,280	0.55	45,247
1995	28,906	20,747	0.58	49,653
1996	28,383	17,194	0.62	45,577
1997[1]	28,112	21,589	0.57	49,700
Average Annual Growth				
1985 - 1992	-3.9%	-10.6%	N/A	-6.3%
1994 - 1997	4.0%	2.1%	N/A	3.2%

[1] Represents total operations projected from 10 months of ATCT data.
NOTE: Years 1994-1997 are actual tower counts inflated (by 3%) to account for nighttime traffic occurring during hours the tower was closed.

Source: *FAA Form 5010 Airport Master Record.*
Air Traffic Control Tower records.
The LPA Group Incorporated, 1997.

Table 8
HISTORIC BASED GENERAL AVIATION AIRCRAFT
Athens/Ben Epps Airport

Year	Single Engine	Multi Engine	Turbo Jet	Rotor	Total
1983	44	25	1	0	70
1988	73	14	5	0	92
1992	71	23	1	1	96
1993	76	37	4	1	118
1994	69	37	3	0	109
1995	69	37	3	0	109
1996	69	37	3	0	109
1997 (est.)	75	13	8	1	97
Average Annual Growth					
1983 - 1997	3.9%	-4.6%	16.0%	N/A	2.4%

Source: *FAA Form 5010 Airport Master Record.*

Military Activity

Military activity at AHN has historically consisted of itinerant traffic enroute to/from military bases located in southern Georgia and Alabama to/from military bases located in North Carolina and Kentucky. AHN is a convenient stopping point for fueling and is occasionally used for flight training (touch-and-go's). Operations are conducted typically by single and multi engine piston aircraft, turboprop, turbojet and rotorcraft equipment. As shown in Table 9, prior to the opening of the ATCT approximately 600 operations were estimated annually. Based on year-to-date ATCT records, the estimated annual military operations for 1997 are 1,760, resulting in an average annual growth of 9.4%. This activity is anticipated to increase in the future as military pilots become aware of the ILS equipped Runway 27 and utilize it for additional flight training.

Table 9
HISTORICAL TOTAL OPERATIONS
Athens/Ben Epps Airport

Fiscal Year	Commuter	General Aviation	Military	Air Taxi	Total Operations
1985	3,300	54,500	600	100	58,500
1986	4,000	52,000	600	100	56,700
1987	4,000	73,000	600	100	77,700
1988	4,052	80,000	600	100	84,752
1989	4,594	75,000	600	100	80,294
1990	3,746	51,300	600	100	55,746
1991	3,662	51,300	600	100	55,662
1992	2,744	51,300	200	100	54,344
1993	7,225	51,300	600	100	54,748
1994	2,748	45,247	600	100	48,695
1995	2,740	49,653	952	100	53,445
1996	3,744	45,577	1,099	100	50,520
1997 (est.)	3,920	49,700	1,760	100	55,480
Average Annual Growth					
1985 - 1997	1.4%	-0.8%	9.4%	0.0%	-0.4%

Source: *FAA Form 5010 Estimates, Airport Authority Records (1988-1992). ATCT partial records (1994-1997). The LPA Group Incorporated analysis, 1997.*

FORECASTS OF AVIATION ACTIVITY

Forecasting aviation demand is accomplished by developing projections of historical trends in aviation activity and related factors that affect aviation into the future by employing a number of varying statistical techniques. Linear regression, which considers an independent variable in developing projections, is one of the most common methodologies utilized for aviation forecasting. Typically, population, personal income and employment are considered when attempting to identify variables with a high correlation value. The other common methodology employed is that of time series or trend analysis, which best fits a growth curve through historical data and extends this growth curve into the future.

Due to the propensity for change typical in the aviation industry, the level of confidence in forecasts tends to lessen as the planning period extends beyond the 5 to 10 year timeframe. For this reason, it is prudent to periodically update these forecasts with new historical data and reevaluate all projections and the facility demands which result.

Commuter Activity Forecasts

Projections of commuter activity demand is performed for enplaned passengers, commuter aircraft departures, and peaking characteristics. Forecasting of these demand elements provides the basis for identifying passenger terminal facility needs through the year 2017.

A history of AHN commuter passenger enplanements, was reported in the previous subsection. During the period from 1985 to 1989, significant growth was witnessed; however, since that timeframe (1990-present) the airport has experienced relatively stagnant growth, and in some instances declining growth. Further, an analysis of the 1980-1997 time period reveals an average annual growth rate of approximately 2.69%. However, during the same period, commuter passenger traffic on a national level has experienced growth approximately three times that of AHN.

In 1993, an outside consultant performed an air service market analysis study for the Airport Authority to specifically address the market potential of the area and recommend methods of capturing a higher percentage of the originations through the enhancement of air service. Consistent with this study, CCAir is currently making efforts to increase its marketing efforts with hopes of retaining existing patrons and attracting new passengers to AHN. Despite the efforts by CCAir and local travel agencies, the proximity of Hartsfield Atlanta International Airport will continue to impact the potential originations at AHN. The anticipated long-term growth scenario for commercial enplanements at AHN will continue to reflect a lag behind the U.S. as a whole. The commuter activity forecasts are presented in the following paragraphs and tables.

Forecasts prepared through the year 2008, as a minimum, were obtained for AHN from several sources: the Georgia Statewide Aviation System Plan (GSASP), the FAA's Terminal Area Forecast (TAF), and a forecast that applies the FAA's national commuter growth rate to AHN base year enplanements. Table 10 presents these forecasts through the year 2017. In the case of FAA data, the 2017 estimated enplanement levels were extrapolated from the 2008 level. In a similar manner, the 2017 GSASP level was extrapolated from 2012 data. The resulting 2017 commuter forecasts range from a low of approximately 14,200 enplanements to a high or nearly 37,400 enplanements. As an additional note, the previous master plan projected an average annual growth rate of 3.8% per year over the 20 years (1992-2012). For comparison, although this forecast was considered somewhat conservative in comparison to the FAA forecasts (both the National and the TAF), the enplanement level projected for 1997 was roughly 19,300 passengers. This compares with the actual estimated level of 13,300 for 1997.

The GSASP forecast passenger enplanements presented in Table 10 reflect a market-share analysis which assumed that AHN would capture a predetermined amount of statewide originations. These originations would come from approximately 10 different counties in the northeast Georgia area. The state study utilized 1992 activity data as a base year and by comparison estimated that the 1997 passenger enplanements would approximate 18,800. Although the near-term projections did not materialize, the methodology associated with the projections is considered valid. Therefore, for the purposes of this study, the GSASP passenger enplanements forecast will be referred to as the "optimistic" forecast. These projections will serve as a prudent tool by which future facilities will be evaluated.

Table 10
COMPARISON OF COMMUTER ENPLANEMENT PROJECTIONS
Athens/Ben Epps Airport

Year	FAA TAF (Low)	System Plan (Optimistic)	FAA National Rate (High)	Master Plan Recommended
1997 (Est.)	13,300	13,300	13,300	13,300
2002	14,192	21,877	17,218	15,190
2007	14,192	25,453	22,291	17,340
2017	14,192[2]	34,453[1]	37,361[2]	22,620
Average Annual Growth				
1997 - 2017	0.3%	4.9%	5.3%	2.7%

[1] Extrapolation from 2012.
[2] Extrapolation from 2008.

Source: *Georgia Statewide Aviation System Plan; Air Carrier Activity Forecasts, Working Paper Number 4. WSA Project Team, August 1993.*
Terminal Area Forecasts, FY 1996-2010, US Dept. of Transportation, FAA.
FAA Aviation Forecasts, FY 1997-2008.
The LPA Group Incorporated analysis, 1997.

Based on the historic trend analysis since 1980, this master plan update recommends an enplanement forecast which assumes an average annual growth rate of approximately 2.7%. This forecast exceeds the TAF forecast, but is more conservative than both the GSASP and the National forecasts.

During 1997 all commuter flights were conducted using aircraft which were configured to seat 19 passengers. As mentioned previously, these aircraft are anticipated to be phased out over the next 10 years, and replaced with larger DeHavilland Dash 8 aircraft configured to seat 34 passengers. By the end of the 20-year horizon the Dornier 328, a regional jet aircraft, is projected to account for three-fourths of the available flights. Table 11 describes these changes in the commuter operating fleet mix at AHN over the next 20 years.

The anticipated impact that this change in fleet mix will have on the future level of commuter departures in shown in Table 12. This table presents the forecast of commuter aircraft departures as derived from enplanements, average aircraft seat-size, and anticipated aircraft load factors for both the recommended and optimistic forecast. The table depicts the use of larger aircraft, and a slightly declining load factor over the planning period. Therefore, while commuter departures are expected to experience somewhat slower growth rates, 0.3% and 2.4% annually, respectively for the recommended and the optimistic forecasts, the number of seats available to/from the Athens market is projected to grow at a higher rate of approximately 3.0% annually.

Table 11

FORECAST COMMUTER FLEET MIX
Athens/Ben Epps Airport

Aircraft	Seats per Aircraft	1997 (Est.)	2002	2007	2017
BAe Jetstream 31	19	100%	60%	10%	0%
DeHavilland Dash 8	34	0%	40%	60%	25%
Dornier 328 Jet	34	0%	0%	30%	75%
TOTAL		100.0%	100.0%	100.0%	100.0%
AVERAGE SEATS PER AIRCRAFT		19	25	32.5	34

Source: *The LPA Group Incorporated analysis, 1997.*

Table 12
FORECAST COMMUTER DEPARTURES
Athens/Ben Epps Airport

Year	Enplanements	Aircraft Seat Size	Aircraft Load Factor	Aircraft Departures
1997 (Est.)	13,300	19	0.56	1,248
2002	15,190	25	0.54	1,125
2007	17,340	32.5	0.52	1,026
2017	22,620	34	0.50	1,331
Optimistic Forecast [1]				
1997 (Est.)	13,300	19	0.56	1,248
2002	15,190	25	0.54	1,621
2007	17,340	32.5	0.52	1,506
2017	22,620	34	0.50	2,027

[1] Optimistic forecasts reflect GSASP passenger enplanement forecast activity.

Source: *Table 11.*
Airline Service History, Athens/Ben Epps Airport. Table 5, 6, 10.
The LPA Group Incorporated analysis, 1997.

Table 13 and 14 present the key commuter forecasts used for developing terminal area facility requirements. Table 13 denotes the peaking characteristics associated with the recommended commuter forecasts, while Table 14 reflects similar data associated with the optimistic commuter forecasts generated from the GSASP total enplanement projections. Because terminal facilities are driven by peak period demand, the key forecasts formulated are: peak hour operations (split into departures and arrivals), and peak hour passenger (split into enplanements and deplanements). Unlike large hub airports, activity expected at AHN will focus on providing adequate service spread throughout the day. Therefore, passenger and operational peaking will not experience drastic changes over the course of the study under either forecast scenario. The key component at AHN which will have the single largest impact on peak movements will be the size of the aircraft and the available seats. For the purposes of this study, assumptions were kept constant between the scenarios when determining peaking characteristics.

4.2 Air Cargo Activity Forecasts

As previously noted, historic enplaned cargo at AHN has been minimal. Consequently, the existence of historic data from which to base forecasts upon is not available. In the absence of enplaned tonnage data, a correlation was developed between the existing population of the Northeast Georgia Region and the estimated annual enplaned tonnage (60 tons or 120,000 pounds) for 1997. In addition, development of the GA 316 corridor, the desire of technology-based companies to locate in the area, and the anticipated Athens' area strong economic growth is believed to increase air cargo shipments in the years to come.

Utilizing population projections for the Northeast Georgia Region found in Table 1, it was determined that a ratio of approximately 0.33 pounds per each Northeast Georgia resident are shipped annually. Based on the anticipated increase in shipments during future years, this ratio is forecast to more than double by 2017 to a level of 0.75 pounds per each Northeast Georgia resident. Forecasts of annual air cargo in both pounds and tonnage were prepared for 2002, 2007, and 2017, and are presented in Table 15. The increase in shipments is forecast to grow at a rate of 5.9% annually.

Table 13
COMMUTER PEAKING CHARACTERISTICS
RECOMMENDED FORECAST
Athens/Ben Epps Airport

	1997 (Est.)	2002	2007	2017
AIRCRAFT OPERATIONS				
Aircraft Departures				
Annual	1,248	1,125	1,026	1,331
Peak Month	130	117	107	138
Average Day of Peak Month	4	4	4	4
Peak Hour	1	1	1	1
Aircraft Arrivals				
Annual	1,248	1,125	1,026	1,331
Peak Month	130	117	107	138
Average Day of Peak Month	4	4	4	4
Peak Hour	1	1	1	1
Aircraft Operations				
Annual	2,496	2,250	2,052	2,662
Peak Month	260	234	214	276
Average Day of Peak Month	8	8	8	8
Peak Hour	2	2	2	2
PASSENGER ACTIVITY				
Enplanements				
Annual	13,300	15,190	17,340	22,620
Peak Month	1,386	1,580	1,803	2,352
Average Day of Peak Month	45	51	58	76
Peak Hour	11	15	18	25
Deplanements				
Annual	13,300	15,190	17,340	22,620
Peak Month	1,386	1,580	1,803	2,352
Average Day of Peak Month	45	51	58	76
Peak Hour	11	15	18	25
Total Passengers				
Annual	26,600	30,380	34,680	45,240
Peak Month	2,772	3,160	3,606	4,704
Average Day of Peak Month	90	102	116	152
Peak Hour	21	23	28	38

Source: *Table 10, 12. Airline Service History, Athens/Ben Epps Airport.*
The LPA Group Incorporated analysis, 1997.

Table 14
COMMUTER PEAKING CHARACTERISTICS
OPTIMISTIC[1] FORECAST
Athens/Ben Epps Airport

	1997 (Est.)	2002	2007	2017
AIRCRAFT OPERATIONS				
Aircraft Departures				
Annual	1,248	1,621	1,506	2,027
Peak Month	130	169	157	211
Average Day of Peak Month	4	5	5	7
Peak Hour	1	1	1	2
Aircraft Arrivals				
Annual	1,248	1,621	1,506	2,027
Peak Month	130	169	157	211
Average Day of Peak Month	4	5	5	7
Peak Hour	1	1	1	2
Aircraft Operations				
Annual	2,496	3,242	3,012	4,054
Peak Month	260	338	314	422
Average Day of Peak Month	8	10	10	14
Peak Hour	2	2	2	3
PASSENGER ACTIVITY				
Enplanements				
Annual	13,300	21,877	25,453	34,453
Peak Month	1,386	2,275	2,647	3,583
Average Day of Peak Month	45	73	85	116
Peak Hour	11	20	26	38
Deplanements				
Annual	13,300	21,877	25,453	34,453
Peak Month	1,386	2,275	2,647	3,583
Average Day of Peak Month	45	73	85	116
Peak Hour	11	20	26	38
Total Passengers				
Annual	26,600	43,754	50,906	68,906
Peak Month	2,772	4,550	5,294	7,166
Average Day of Peak Month	90	146	170	232
Peak Hour	21	31	40	58

[1] Optimistic forecasts reflect GSASP passenger enplanement forecast activity.

Source: *Table 10, 12. Airline Service History, Athens/Ben Epps Airport.*
The LPA Group Incorporated analysis, 1997.

Table 15
FORECAST ENPLANED AIR CARGO
Athens/Ben Epps Airport

Year	NEGA Population	Enplaned Pounds	Enplaned Tonnage
1997 (Est.)	359,828	120,000	60.0
2002	391,354	156,540	78.3
2007	425,427	212,710	106.4
2017	499,356	374,520	187.3

Source: *Table 1.*
The LPA Group Incorporated analysis, 1997.

General Aviation Activity Forecasts

One of the most vital activities at AHN is general aviation. As part of this master plan four aspects of general aviation demand were identified and evaluated. These include: based aircraft, aircraft fleet mix, general aviation operations, and peak period characteristics.

The number of aircraft owners projected to use AHN as their primary basing location is an important consideration in the planning of future airside and landside facilities. The importance of these based aircraft numbers should reflect the overall strategy of the airport sponsor to develop AHN into a premiere business and pleasure aviation hub. The number of based aircraft forecast will have a direct bearing on the type and number of private aircraft storage facilities and tiedown apron.

Table 8, provides a history of based aircraft by type since 1988. As a whole the total number of based aircraft has increased an average of over 2% annually. Using this historic trend and a base year level of 97 total aircraft, future based aircraft at AHN may be determined. Table 16 depicts the forecast of based aircraft through the year 2017 utilizing an average annual growth rate of approximately 2.4%. The resulting total number of aircraft is projected to grow to approximately 155 by the end of the study period. Although this estimate far exceeds the forecast in the previous master plan, it is somewhat conservative when compared with the GSASP based aircraft forecast (which in 1997 predicted 145 total based aircraft). Given the sponsor's commitment to quality general aviation facilities and services in the future, 155 aircraft appears achievable.

Table 16
FORECAST BASED AIRCRAFT
Athens/Ben Epps Airport

Year	# of Based Aircraft
1997 (Est.)	97
2002	109
2007	122
2017	155

Source: *Table 8.*
The LPA Group Incorporated analysis, 1997.

Of the total based aircraft, history has shown that growth by type equipment may vary and is often contingent on other related factors in the aviation industry. Until just recently, single engine aircraft had been declining throughout the U.S. due principally to cost of initial ownership and liability insurance costs. As a result of recent legislative changes that indirectly drove these costs, aircraft manufacturers are now reporting a turnaround in sales and production. Nationally, single and multi-engine aircraft should experience growth better than previous years while jet aircraft sales are expected to slow somewhat. The forecast fleet mix at AHN through 2017 is shown in Table 17.

Table 17
FORECAST BASED AIRCRAFT FLEET MIX
Athens/Ben Epps Airport

Year	Single Engine Piston	Multi Engine Piston	Turbo Jet	Rotorcraft	Total
1997 (Est.)	75	13	8	1	97
2002	84	15	9	1	109
2007	94	17	10	1	122
2017	118	22	13	2	155

Source: *Tables 8, 16.*
The LPA Group Incorporated analysis, 1997.

The forecast of total based aircraft is further used to estimate the total number of general aviation operations annually throughout the study period. This is performed by reviewing the historic utilization rate of the general aviation aircraft fleet (the ratio of annual operations to based aircraft) and relating this rate to the forecast of based aircraft. An analysis of the previous five years reveals that the ratio - operations per based aircraft (OPBA) at AHN has been approximately 461. Comparing this ratio to national averages indicates that the utilization rate at AHN slightly lower than the U.S. It is estimated that over the course of the next 20 years this rate will experience a nominal increase as owners log more flight hours and as the number of itinerant operations at the airport increases. By the year 2017, the OPBA is forecast to reach a level of 525, which is more consistent with the current national average. Applying the OPBA and its expected growth to the general aviation based aircraft forecast yields an increase in general aviation operations from the 1997 level of approximately 49,700 to the 2017 level of over 81,300 annually.

Table 18
FORECAST GENERAL AVIATION TOTAL OPERATIONS
Athens/Ben Epps Airport

Fiscal Year	Based Aircraft	Operations per Based Aircraft	Total Operations
1997 (est.)	97	461.7 [1]	49,700
2002	109	475	51,780
2007	122	500	61,000
2017	155	525	81,380
Average Annual Growth			
1997-2007	2.3%	0.8%	2.1%
1997-2017	2.4%	0.6%	2.5%

[1] Represents the average Operations per Based Aircraft over the previous 5 years.

Source: Tables 4, 5, 10.
The LPA Group Incorporated analysis, 1997.

As a manner of comparison, a number of general aviation operations projections have been assembled for AHN. The FAA's Terminal Area Forecast (TAF), a forecast reflecting the FAA's forecast national rate, and final forecasts prepared as part of the 1993 Georgia Statewide Aviation System Plan are presented in Table 19.

Table 19
GENERAL AVIATION TOTAL OPERATIONS COMPARISON
Athens/Ben Epps Airport

Year	FAA TAF	FAA National Rate	Georgia System Plan	Master Plan Recommended
1997 (est.)	49,700	49,700	49,700	49,700
2002	49,729	51,464	62,394	51,780
2007	51,641	53,291	65,590	61,000
2017	55,506[1]	57,141[1]	72,176[2]	81,380
Average Annual Growth				
1997-2017	0.6%	0.7%	2.3%	2.5%

[1] Extrapolated from 2008.
[2] Extrapolated from 2012.

Source: Georgia Statewide Aviation System Plan; Air Carrier Activity Forecasts, Working Paper Number 4, WSA Project Team, August 1993.
Terminal Area Forecasts, FY 1992-2005, US Department of Transportation, FAA July 1992.
Table 18.
The LPA Group Incorporated analysis, 1997.

The total general aviation operations forecast are further broken down between operations which are considered to be local (normally associated with pilot training) and itinerant operations. The section titled, General Aviation Activity indicated that during the period that the ATCT has been in operation, itinerant operations have been historically representing approximately 58% of the total general aviation operations at AHN.

The forecast presented in Table 20 depicts an anticipation that a greater proportion of itinerant operations will occur over time. The level of increased corporate activity and other related business flying at AHN over the ensuing 20 years is the critical element impacting this projection. Over the planning horizon itinerant operations are forecast to increase to 70% of total general aviation operations. Both itinerant and local operations are anticipated to increase, but with local operations growing at a slower rate. This breakdown will later be used in assessing the demand by general aviation users on airside facilities such as airfield capacity and apron tiedown space requirements.

Table 20
FORCAST GENERAL AVIATION ITINERANT AND LOCAL OPERATIONS
Athens/Ben Epps Airport

Fiscal Year	Itinerant Operations	Local Operations	Total Operations
1997 (est.)	28,112	21,589	49,700
2002	31,070	20,710	51,780
2007	39,650	21,350	61,000
2017	56,970	24,410	81,380
Average Annual Growth			
1997 - 2007	3.5%	0.1%	2.1%
1997 - 2017	3.6%	0.6%	2.5%

Source: *Table 7, 18.*
The LPA Group Incorporated analysis, 1997.

In a similar manner as presented in the section titled, Commuter Activity Forecasts peaking characteristics associated with general aviation annual activity have been forecast and are presented in Table 21. These projections are critical as most general aviation related facility requirements are based on demand occurring during short intervals throughout the day. Environments designed to accommodate corporate activities, should focus on these peak periods rather than sizing facilities for the average or normal periods to alleviate dissatisfied customers. The table depicts both general aviation operational data together with estimated passenger activity.

Operational estimates were based predominantly on historic ATCT data from early 1994 through the Fall of 1997. The anticipated peak month operations represent roughly 10.9% of the annual total. Peak hour operations currently total approximately 20% of the daily total; however, as activity increases at the airport and operations spread out more uniformly throughout the day, the hourly split is projected to decrease to approximately 16% of the total day's operations as well as peak period forecasts of general aviation passenger volumes. Passenger activity is estimated based on an average number of passengers aboard each general aviation flight. Presently this ratio is estimated to be approximately 2.25. Once again as AHN expands and the level of business/corporate activity increases, this average number of passengers is anticipated to grow to approximately 2.75 per operation, which more closely typifies airports around the U.S. serving a higher percentage of itinerant flights.

Table 21
FORECAST GENERAL AVIATION PEAKING CHARACTERISTICS
Athens/Ben Epps Airport

	1997 (Est.)	2002	2007	2017
AIRCRAFT OPERATIONS				
Annual	49,700	51,780	61,000	81,380
Peak Month	5,437	5,660	6,670	8,900
Average Day of Peak Month	181	188	222	297
Peak Hour	36	38	40	48
PASSENGER ACTIVITY				
Annual	111,800	124,300	155,600	223,800
Peak Month	12,230	13,580	17,010	24,480
Average Day of Peak Month	410	450	570	820
Peak Hour	80	90	100	130

Source: The LPA Group Incorporated analysis, 1997.

Military Activity Forecasts

As described in the section titled, Military Activity, military activity has increased by approximately 9.4% since 1985. Over the last three years military operations have averaged over 1,200 landings and takeoffs annually. Military traffic is expected to increase at considerable rates during the initial 10 years as pilots become aware of the ILS equipment available at AHN. Military fueling and the attractiveness of the Athens area will continue to make AHN a desirable stopping point for transient flights. Military operations are projected to increase above the 1997 level to approximately 2,300 annual operations in 2002, 2,900 annual operations in 2007 and 3,700 operations by 2017. Table 22 presents a summary table of all non-scheduled aviation activity (general aviation, military, and air taxi) projected for AHN through the 20-year planning horizon. Historic indications that air taxi operations will experience growth at AHN were not available during the major tenant survey period. Nevertheless, as other related general aviation activity and services increase, air taxi operations will inevitably experience some increases also. Table 22 provides for one additional air taxi flight per week during 2002-2007 and two additional air taxi flights per week by 2017.

Table 22
FORECAST TOTAL AIRCRAFT OPERATIONS
Athens/Ben Epps Airport

Category	1997 (Est.)	2002	2007	2017
General Aviation	49,700	51,780	61,000	81,380
Air Taxi	100	200	200	300
Military	1,670	2,300	2,900	3,700
TOTAL	**51,470**	**54,280**	**64,100**	**85,380**

Source: Table 18.
The LPA Group Incorporated analysis, 1997.

SUMMARY OF FORECAST AVIATION ACTIVITY

The major elements associated with the forecasting effort for the AHN Master Plan Update are presented in Table 23 for simple reference. Those elements shown include the commuter enplanements and operations, the enplaned air cargo tonnage, the general aviation passengers and operations, and the military and air taxi operations. In summary, by the year 2017 an estimated 22,260 annual enplanements and The forecasts result in a total of 32,268 enplaned passengers and nearly 78,000 total aircraft operations by planning year 2012.

Chapter 4 applies these forecasts and assesses the need for, and the extent of additional aviation-related facilities at Athens/Ben Epps Airport.

Table 23
SUMMARY OF ANNUAL FORECAST
Athens/Ben Epps Airport

	1997 (Est.)	2002	2007	2017
COMMUTER:				
Enplaned Passengers (Recommended)	13,300	15,190	17,340	22,620
Enplaned Passengers (Optimistic[1])	13,300	21,877	25,453	34,453
Aircraft Operations (Recommended)	1,248	1,125	1,026	1,331
Aircraft Operations (Optimistic[1])	1,248	1,621	1,506	2,027
AIR CARGO:				
Enplaned Tons	60.0	78.3	106.4	187.3
GENERAL AVIATION:				
Based Aircraft	97	109	122	155
Itinerant Operations	28,112	31,070	39,650	56,970
Local Operations	21,589	20,710	21,350	24,410
Total Aircraft Operations	49,700	51,780	61,000	81,380
Passengers	111,800	124,300	155,600	223,800
MILITARY:				
Aircraft Operations	1,670	2,300	2,900	3,700
AIR TAXI:				
Aircraft Operations	100	200	200	300
GRAND TOTAL				
Aircraft Operations (Recommended)	52,718	55,405	65,126	86,711
Aircraft Operations (Optimistic[1])	52,718	55,901	65,606	87,407

[1]Optimistic forecasts reflect GSASP passenger enplanement forecast activity.

Source: *Table 12, 15, 16, 20, 21, 22.*
The LPA Group Incorporated analysis, 1997.

Section 7
AIRPORT PLANS

The Airport Layout Plan drawing set is discussed below and included in a reduced format at the end of this Section. This drawing set graphically depicts the development requirements presented in Section 3 and staged in Section 6. In addition to the title sheet, the complete set of drawings consists of the following:

- Airport Layout Plan;
- Terminal Area Plan;
- Airport Airspace Plan;
- Inner Portion of the Approach Surface Plan;
- Land Use and Access Plan; and,
- Exhibit "A" Property Map.

7.1 AIRPORT LAYOUT PLAN

The Airport Layout Plan (ALP) drawing is the most utilized plan sheet of the drawing set and must be accepted by the FAA for depicted projects to be eligible for Airport Improvement Program (AIP) funding. The plan has been prepared in accordance with FAA AC 150/5300-13 Change 6, *Airport Design*. In addition to the existing Airport layout, this ALP presents a 20-year, three-stage program that has been developed to support the projected activity at Athens-Ben Epps Airport. The stages of development correspond in years as follows: Stage I - 0 to 5 years; Stage II - 6 to 10 years; and, Stage III - 11 to 20 years.

Examples of principal improvement projects include:

- Extension of Runway 9/27 by 1,000 feet;
- Widening of Runway 9/27 from 100 feet to 150 feet and strengthening; and,
- Widening of Taxiways A, A1, A3, and A4 from 50 feet to 75 feet.

Results of the runway length analysis indicate that runway improvements will be needed over the 20-year planning period. Considering both the FAA computer model results and input received from current Airport users gathered during the survey process, it is recommended that a runway length of 6,500 feet be provided. Therefore, a 500-foot extension to Runway 9, including land acquisition, relocation of associated NAVAIDS, and extension of Taxiway A is planned for Stage I. In addition, a 500-foot extension to Runway 27 including land acquisition, and relocation or replacement of associated NAVAIDS is planned for Stage II.

As discussed in Section 3, FAA design standards require a runway width of 150 feet for airplanes in Aircraft Design Group (ADG) II with a maximum certificated takeoff weight of greater than 150,000 pounds as well as those in ADG IV. Therefore, a widening of Runway 9/27 from 100 feet to 150 feet is planned for Stage I.

Based on design criteria found in FAA AC 150/5300-13 Change 6, all taxiways supporting operations by aircraft utilizing Runway 9/27 should be 75 feet in width. Therefore, a widening and strengthening of Taxiways A, A1, A3, and A4 is planned for Stage I.

7.2 TERMINAL AREA PLAN

This drawing depicts the proposed terminal area development, as shown on the ALP, for both the commercial terminal area and general aviation terminal area. They are presented at a larger scale than the ALP so that greater detail of the terminal area improvements can be discerned. Examples of improvements that are depicted include:

- General aviation terminal building;

- ARFF facility;
- South commercial terminal development; and,
- Rental car maintenance facility and remote storage lot.

Based on identification of a critical need to more adequately and conveniently provide for various general aviation services, a new general aviation terminal building is being planned for the Airport. As previously discussed, in September 2000, a detailed study of the general aviation facility was initiated. This study, which is provided in Appendix VI, determined that in order to accommodate activity levels for the twenty-year planning period, the overall dimensions of this facility needed to be 6,700 square feet. Therefore, construction of such is shown to occur in Stage I.

The B757-200 jetliner is anticipated to perform charter operations at Athens-Ben Epps Airport. Should this aircraft conduct less than five daily departures at the Airport, reasonable accommodations of its firefighting needs should be met. This aircraft is classified as an Index B, if the number of scheduled departures is less than five. This Index requires either one or two vehicles. Therefore, future ARFF facilities should be sized to approximately 5,000 square feet and planned to accommodate two vehicles. Construction of such is recommended to occur in Stage I.

Results of the existing terminal building evaluation indicate that an additional 8,500 square feet will be required for the terminal building over the planning period. In addition, based on anticipated demand over the 20-year study-period, approximately 17,000 square yards of pavement was determined to be necessary to accommodate aircraft parking and maneuvering lanes. Therefore, construction of the south commercial terminal development, specifically the terminal apron and taxiways is planned for Stage I. Construction of the commercial terminal building; access road; loop road; and public, employee; and rental car ready return parking lots are planned for Stage II.

Based on results of interviews with rental car company representatives, rental car parking facility requirements include 300 remote storage spaces and a rental car maintenance facility. Therefore, construction of such is planned to occur in Stage II and Stage III.

7.3 AIRPORT AIRSPACE PLAN

In order to protect the airspace and approaches to each runway from hazards that could affect the safe and efficient operation of the Airport, federal criteria were established and are known as Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*. This drawing shows the imaginary surfaces associated with FAR Part 77. Known obstacles to navigable airspace off-airport have also been identified. These regulations enable the establishment of imaginary surfaces, which no object, manmade or natural, should penetrate. FAR Part 77 surfaces are utilized in zoning and land use planning adjacent to an airport. In fact such was utilized in the current height-zoning ordinance, which was adopted by the County. As a part of this Study, the ordinance was reviewed and a suggested revised ordinance and map are provided in Appendix VIII.

To help plan for potential future airport development, ultimate design levels (Year 2022) were utilized during the airspace analysis. The specific imaginary surfaces, which should be protected from obstructions, include:

> **Primary Surface** - A rectangular area symmetrically located about each runway centerline and extending a distance of 200 feet beyond each runway threshold. Width of the Primary Surface is based on the type of approach a particular runway has, while the elevation is the same as that of the runway centerline at all points. The primary surface width for Runway 9/27 is 1,000 feet, and 500 feet for Runway 2/20.
>
> **Approach Surface** - This surface begins at each end of the Primary Surface (200 feet beyond the runway threshold) and slope upward at a ratio determined by the runway category and type of approach available to the runway. The width and elevation of the inner end conforms to that of the Primary Surface while approach surface length and width of the outer end are governed by the runway category and approach

procedure available. Approach slopes are outlined with the appropriate dimensions indicated for a 20:1 approach to Runway 2/20 and 34:1 approach to Runway 9. The approach to Runway 27 is 50:1 for the inner 10,000 feet and 40:1 for an additional 40,000 feet.

Transitional Surface - A sloping area beginning at the sides of the Primary and Approach Surfaces and sloping upward and outward at a ratio of 7:1 until it intersects the Horizontal Surface.

Horizontal Surface - A level oval-shaped area situated 150 feet above the airport elevation, extending 5,000 or 10,000 feet outward, depending on the runway category and approach procedure available. The Horizontal Surface for Athens-Ben Epps Airport extends outward 10,000 feet and is at an elevation of 957.7 feet AMSL.

Conical Surface - Extends outward for a distance of 4,000 feet beginning at the outer edge of the Horizontal Surface, and sloping upward at a ratio of 20:1.

7.4 INNER PORTION OF THE APPROACH SURFACE PLAN

This drawing depicts plan and profile views of selected obstructions relative to both the existing and ultimate runway ends; each obstruction is depicted with a numerical identifier. Obtructions depicted on this plan were provided by the NOAA, dated October 1994, and an obstruction survey was performed on April 21, 1994. Data from these two sources have has been provided in the obstruction data tables on the drawing for each runway and corresponds to the numbers depicted on the plan and profile views.

7.5 LAND USE AND ACCESS PLAN

This drawing shows the proposed utilization of property within the vicinity of the Airport. It is intended to consider optimum utilization of land uses while achieving a logical and orderly development of the Airport. There are 17 land uses depicted on the Land Use Drawing.

These land use areas, and their location on the airfield, are depicted using various patterns of hatching on the ALP.

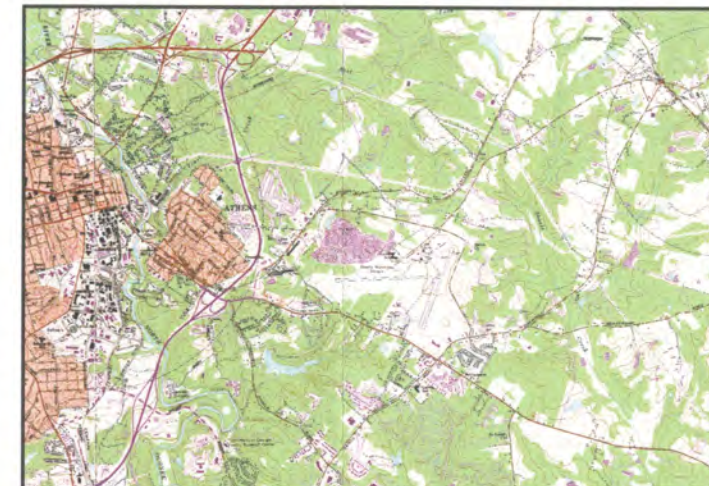
7.6 EXHIBIT "A" PROPERTY MAP

This drawing is intended to accurately show the airport property line and all current lease boundaries. The Property Map not only displays the existing inventory of property on the airport but also identifies those tracts of land that have been recommended for future acquisition. These tracts have been identified for acquisition to allow the Airport the ability to ensure its future viability and capability to meet development both during the period covered under this ALP Update as well as beyond the planning horizon of this document. Given the continued expansion of developed land uses in the immediate airport environs, it is important that a property envelop sufficient to provide for airport needs well into the future, be defined and acquired. This minimizes the acquisition of costly developed property in the future to meet airport development needs.

ATHENS-BEN EPPS AIRPORT
ATHENS, GEORGIA

LOCATION MAP
SCALE: 1 INCH = 7.9 MILES

ATHENS CLARKE COUNTY
ATHENS-BEN EPPS AIRPORT



VICINITY MAP
SCALE: 1 INCH = 4,000 FEET

AIRPORT LAYOUT PLAN UPDATE

INDEX OF DRAWINGS

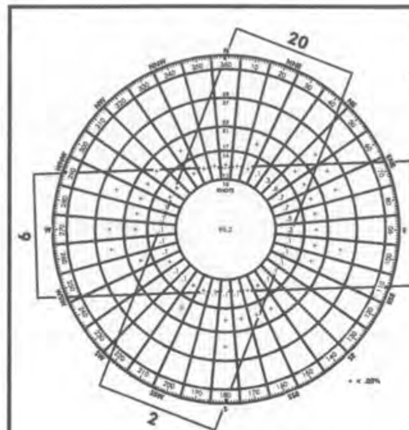
SHEET NO.	DESCRIPTION
1.	COVER
2.	AIRPORT LAYOUT PLAN
3.	TERMINAL AREA PLAN
4.	AIRPORT AIRSPACE PLAN
5.	INNER PORTION OF APPROACH SURFACE PLAN
6.	LAND USE AND ACCESS PLAN
7.	EXHIBIT "A" PROPERTY MAP

PREPARED FOR

THE CLARKE COUNTY AIRPORT COMMISSION

THE LPA GROUP
TRANSPORTATION CONSULTANTS

IFR WIND ROSE

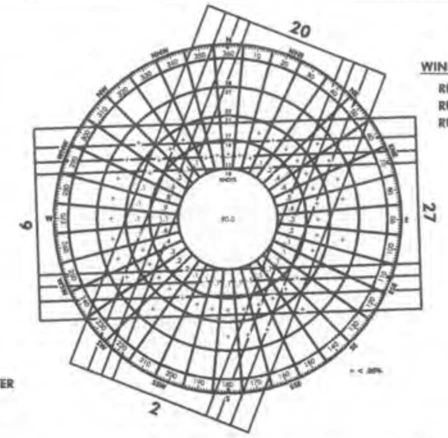


WIND COVERAGE	15 MPH / 13 KNOTS
RUNWAY 2 *	93.59%
RUNWAY 20 *	86.52%
RUNWAY 9 *	94.70%
RUNWAY 27 *	82.47%
RUNWAY 2/20	99.26%
RUNWAY 9/27	99.64%
RUNWAY 2/20 & 9/27	99.96%

* BASED ON A 5 KNOT TAILWIND COMPONENT

80915 OBSERVATIONS MADE
OVER THE PERIOD 1991 - 2000
STATION 72311 ATHENS, GA, US

SOURCE: NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NC

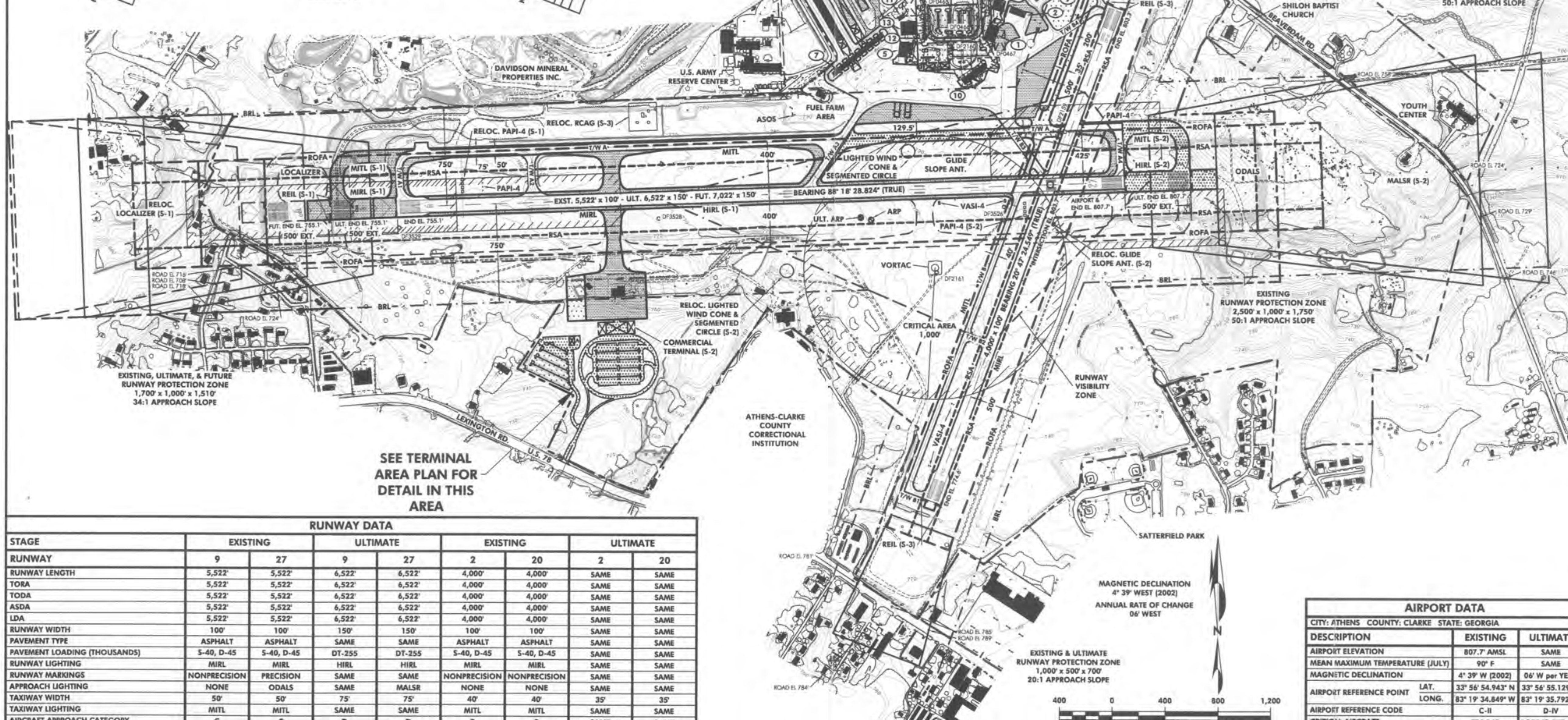


ALL WEATHER WIND ROSE

WIND COVERAGE	12 MPH / 10.5 KNOTS	15 MPH / 13 KNOTS	18 MPH / 16 KNOTS	23 MPH / 20 KNOTS
RUNWAY 2/20	93.73%	96.64%	99.36%	99.88%
RUNWAY 9/27	98.72%	99.51%	99.93%	99.99%
RUNWAY 2/20 & 9/27	99.68%	99.95%	99.99%	100%

CONSTRUCTION NOTICE REQUIREMENT

To protect operational safety and future development, all proposed construction on the airport must be coordinated by the airport owner with the FAA Airports District Office prior to construction. FAA's review takes approximately 60 days.



SEE TERMINAL AREA PLAN FOR DETAIL IN THIS AREA

STAGING

- STAGE 1 (S-1) 0-5 YEARS
- STAGE 2 (S-2) 6-10 YEARS
- STAGE 3 (S-3) 11-20 YEARS

RUNWAY DATA

STAGE		EXISTING		ULTIMATE		EXISTING		ULTIMATE	
RUNWAY		9	27	9	27	2	20	2	20
RUNWAY LENGTH		5,522'	5,522'	6,522'	6,522'	4,000'	4,000'	SAME	SAME
TORA		5,522'	5,522'	6,522'	6,522'	4,000'	4,000'	SAME	SAME
TODA		5,522'	5,522'	6,522'	6,522'	4,000'	4,000'	SAME	SAME
ASDA		5,522'	5,522'	6,522'	6,522'	4,000'	4,000'	SAME	SAME
LDA		5,522'	5,522'	6,522'	6,522'	4,000'	4,000'	SAME	SAME
RUNWAY WIDTH		100'	100'	150'	150'	100'	100'	SAME	SAME
PAVEMENT TYPE		ASPHALT	ASPHALT	SAME	SAME	ASPHALT	ASPHALT	SAME	SAME
PAVEMENT LOADING (THOUSANDS)		S-40, D-45	S-40, D-45	DT-255	DT-255	S-40, D-45	S-40, D-45	SAME	SAME
RUNWAY LIGHTING		MIRL	MIRL	HIRL	HIRL	MIRL	MIRL	SAME	SAME
RUNWAY MARKINGS		NONPRECISION	PRECISION	SAME	SAME	NONPRECISION	NONPRECISION	SAME	SAME
APPROACH LIGHTING		NONE	ODALS	SAME	MALSR	NONE	NONE	SAME	SAME
TAXIWAY WIDTH		50'	50'	75'	75'	40'	40'	35'	35'
TAXIWAY LIGHTING		MITL	MITL	SAME	SAME	MITL	MITL	SAME	SAME
AIRCRAFT APPROACH CATEGORY		C	C	D	D	B	B	SAME	SAME
AIRPLANE DESIGN GROUP		II	II	IV	IV	I	I	SAME	SAME
CRITICAL AIRCRAFT		EMB-145	EMB-145	BOEING 757-200	BOEING 757-200	CESSNA 421	CESSNA 421	SAME	SAME
RUNWAY END ELEVATION		755.1' AMSL	807.7' AMSL	SAME	SAME	774.6' AMSL	803.3' AMSL	SAME	SAME
EFFECTIVE GRADIENT		+0.953%	-0.953%	+0.807%	-0.807%	+0.718%	-0.718%	SAME	SAME
TOUCHDOWN ZONE ELEVATION		778.3' AMSL	807.7' AMSL	774.4' AMSL	SAME	805.2' AMSL	807.0' AMSL	SAME	SAME
APPROACH VISIBILITY MINIMUMS		1 MILE	3/4 MILE	SAME	1/2 MILE	1 MILE	1 MILE	SAME	SAME
NAVIGATIONAL AND VISUAL AIDS		PAPI-4, VOR/DME, RNAV, GPS	VASI-4, LOC, GS, ODALS, VOR, NDB, GPS	PAPI-4, VOR/DME, RNAV, GPS, REIL	PAPI-4, LOC, GS, MALSR, VOR, NDB, GPS	VASI-4, VOR, GPS	PAPI-4, VOR/DME, RNAV, GPS	VASI-4, VOR, GPS, REIL	PAPI-4, VOR/DME, RNAV, GPS, REIL
APPROACH SLOPE		34:1	50:1	SAME	SAME	20:1	20:1	SAME	SAME
FAR PART 77 CATEGORY		C(NP)	PI	SAME	SAME	A(NP)	A(NP)	SAME	SAME
RUNWAY PROTECTION ZONE (RPZ)	LENGTH	1,700'	2,500'	SAME	SAME	1,000'	1,000'	SAME	SAME
	WIDTH 1	1,000'	1,000'	SAME	SAME	500'	500'	SAME	SAME
	WIDTH 2	1,510'	1,750'	SAME	SAME	700'	700'	SAME	SAME
OBJECT FREE AREA (OFA) WIDTH		500'	500'	SAME	SAME	500'	500'	SAME	SAME
OFA LENGTH BEYOND RUNWAY END		1,000'	1,000'	SAME	SAME	300'	300'	SAME	SAME
RUNWAY SAFETY AREA (RSA) WIDTH		800'	800'	SAME	SAME	150'	150'	SAME	SAME
RSA LENGTH BEYOND RUNWAY END		1,000'	1,000'	SAME	SAME	300'	300'	SAME	SAME
OBSTACLE FREE ZONE (OFZ) WIDTH		400'	400'	SAME	SAME	250'	250'	SAME	SAME
OFZ LENGTH BEYOND RUNWAY END		200'	200'	SAME	SAME	200'	200'	SAME	SAME
RUNWAY END (NAD 83)	LATITUDE	33° 56' 56.081" N	33° 56' 57.689" N	33° 56' 55.936" N	33° 56' 57.833" N	33° 56' 33.763" N	33° 57' 10.756" N	SAME	SAME
	LONGITUDE	83° 20' 17.550" W	83° 19' 12.034" W	83° 20' 23.482" W	83° 19' 06.100" W	83° 19' 29.548" W	83° 19' 12.694" W	SAME	SAME

LEGEND

DESCRIPTION	EXISTING	ULTIMATE
FENCE		
AIRPORT PAVEMENT		
PROPERTY LINE		
GROUND CONTOURS	710	
TREE LINE		
BUILDINGS		
WATER		
RUNWAY SAFETY AREA	RSA	RSA
RUNWAY OBJECT FREE AREA	ROFA	ROFA
BUILDING RESTRICTION LINE	BRL	BRL
TAXIWAY OBJECT FREE AREA		
THRESHOLD LIGHTS		
POWER POLE		
LIGHT POLE		
MANHOLE		
CATCH BASIN		
NATIONAL GEODETIC SURVEY MONUMENT		

AIRPORT DATA

CITY: ATHENS COUNTY: CLARKE STATE: GEORGIA

DESCRIPTION		EXISTING	ULTIMATE
AIRPORT ELEVATION		807.7' AMSL	SAME
MEAN MAXIMUM TEMPERATURE (JULY)		90° F	SAME
MAGNETIC DECLINATION		4° 39' W (2002)	06' W per YEAR
AIRPORT REFERENCE POINT	LAT.	33° 56' 54.943" N	33° 56' 55.129" N
	LONG.	83° 19' 34.849" W	83° 19' 35.792" W
AIRPORT REFERENCE CODE		C-II	D-IV
CRITICAL AIRCRAFT		ERJ-145	BOEING 757-200
AIRPORT & TERMINAL NAVAIDS		VORTAC, NDB, RNAV, GPS	CHANGE
SERVICE LEVEL		COMM.SERVICE-PRIMARY	SAME

BUILDING TABLE

#	DESCRIPTION	SIZE (S.F.)	TOP ELEV.
1	SONNY'S AIR SERVICE	9,600	-
2	EXECUTIVE HANGARS	6,500	-
3	GEORGIA AVIATION	5,400	-
4	US JETS	10,200	-
5	GENERAL AVIATION TERMINAL	8,600	-
6	T-HANGAR - 20 UNIT	27,840	-
7	T-HANGAR - 16 UNIT	17,568	-
8	T-HANGAR - 4 UNIT	6,643	-
9	T-HANGAR - 12 UNIT	13,230	-
10	AIR CARRIER TERMINAL	7,860	-
11	AIRPORT ADMINISTRATION	1,500	-
12	AIRCRAFT RESCUE & FIRE FIGHTING	1,200	-
13	WINDSHIP HANGAR	12,000	-
14	GEORGIA STATE PATROL HANGAR	8,000	-

ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

ATHENS, GEORGIA

THE LPA GROUP
TRANSPORTATION CONSULTANTS

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SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: TGM
Technician: TGM
Checked by: RKH

Project Number: PL207015

NOTES

1. COORDINATES SHOWN HEREON ARE IN NAD83.
2. ELEVATIONS SHOWN ARE ABOVE MEAN SEA
3. SEE EXHIBIT "A" PROPERTY MAP (DRAWING 7) FOR PROPERTY LINE METES AND BOUNDS.
4. HOLDING POSITION MARKINGS FOR RUNWAY/ TAXIWAY INTERSECTIONS ARE 125' FROM RUNWAY 2/20 CENTERLINE AND 250' FROM RUNWAY 9/27 PERPENDICULAR TO TAXIWAY CENTERLINE.
5. NO EXISTING THRESHOLD SITING SURFACE OBJECT PENETRATIONS.
6. NO OBJECT FREE ZONE OBJECT PENETRATIONS.
7. THE EXISTING PAVEMENT CAN SUPPORT OPERATIONS BY HEAVIER AIRCRAFT ON OCCASION, SUCH AS THE C-130, DC-9, B-737, AND THE GULFSTREAM II, III, IV, AND V. FOR MORE DETAILS CONTACT THE AIRPORT MANAGER.

REVISIONS

No.	Description	Date	By

Project Name: AIRPORT MASTER PLAN UPDATE

Drawing Name: AIRPORT LAYOUT PLAN

FAA A.I.P. Project Number:

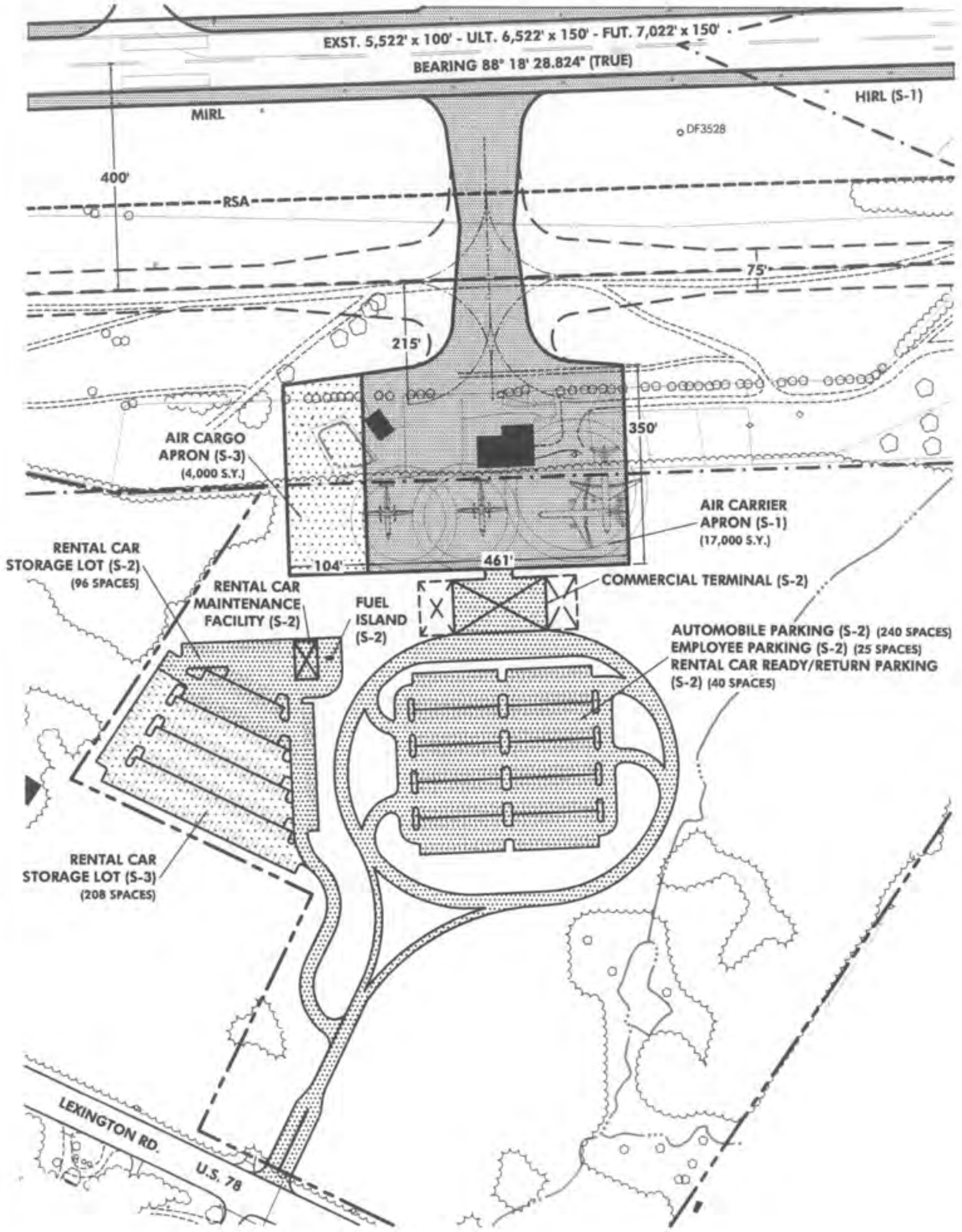
Autocad Drawing Reference:

Date: AUGUST 2003

Division: PLANNING

Scale: 1" = 400'

Drawing Number: 2



STAGING

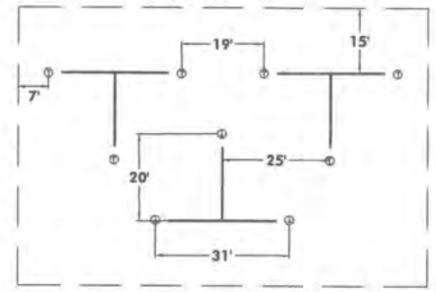
- STAGE 1 (S-1) 0-5 YEARS
- STAGE 2 (S-2) 6-10 YEARS
- STAGE 3 (S-3) 11-20 YEARS

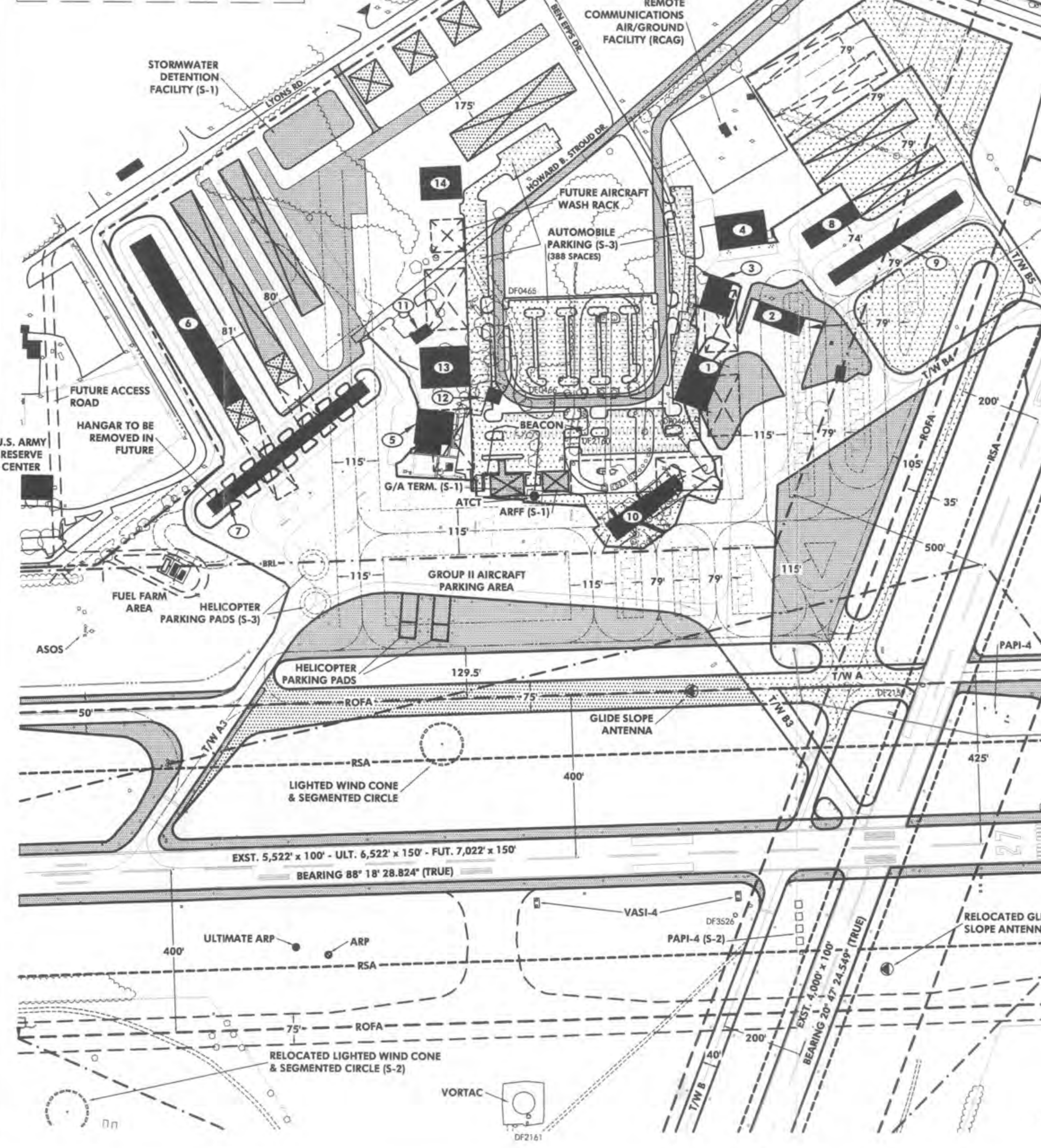
MAGNETIC DECLINATION
4° 39' WEST (2002)
ANNUAL RATE OF CHANGE
06' WEST

150 0 150 300 450
SCALE IN FEET

LEGEND		
DESCRIPTION	EXISTING	ULTIMATE
FENCE		
AIRPORT PAVEMENT		
PROPERTY LINE		
GROUND CONTOURS	710	
TREE LINE		
BUILDINGS		
WATER		
RUNWAY SAFETY AREA	RSA	RSA
RUNWAY OBJECT FREE AREA	ROFA	ROFA
BUILDING RESTRICTION LINE	BRL	BRL
TAXIWAY OBJECT FREE AREA		
POWER POLE		
LIGHT POLE		
MANHOLE		
CATCH BASIN		
NATIONAL GEODETIC SURVEY MONUMENT		

BUILDING TABLE			
#	DESCRIPTION	SIZE (S.F.)	TOP ELEV.
1	SONNY'S AIR SERVICE	9,600	-
2	EXECUTIVE HANGARS	6,500	-
3	GEORGIA AVIATION	5,400	-
4	US JETS	10,200	-
5	GENERAL AVIATION TERMINAL	8,600	-
6	T-HANGAR - 20 UNIT	27,840	-
7	T-HANGAR - 16 UNIT	17,568	-
8	T-HANGAR - 4 UNIT	6,643	-
9	T-HANGAR - 12 UNIT	13,230	-
10	AIR CARRIER TERMINAL	7,860	-
11	AIRPORT ADMINISTRATION	1,500	-
12	AIRCRAFT RESCUE & FIRE FIGHTING	1,200	-
13	WINDSHIP HANGAR	12,000	-
14	GEORGIA STATE PATROL HANGAR	8,000	-





ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

ATHENS, GEORGIA

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SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer:	TGM
Technician:	TGM
Checked by:	RKH
Project Number:	PL207015

NOTES

1. COORDINATES SHOWN HEREON ARE IN NAD83.
2. ELEVATIONS SHOWN ARE ABOVE MEAN SEA LEVEL (AMSL).
3. HOLDING POSITION MARKINGS FOR RUNWAY/TAXIWAY INTERSECTIONS ARE 125' FROM RUNW Y 2/20 CENTERLINE AND 250' FROM RUNWAY 9/27 PERPENDICULAR TO TAXIWAY CENTERLINE.

REVISIONS			
No.	Description	Date	By

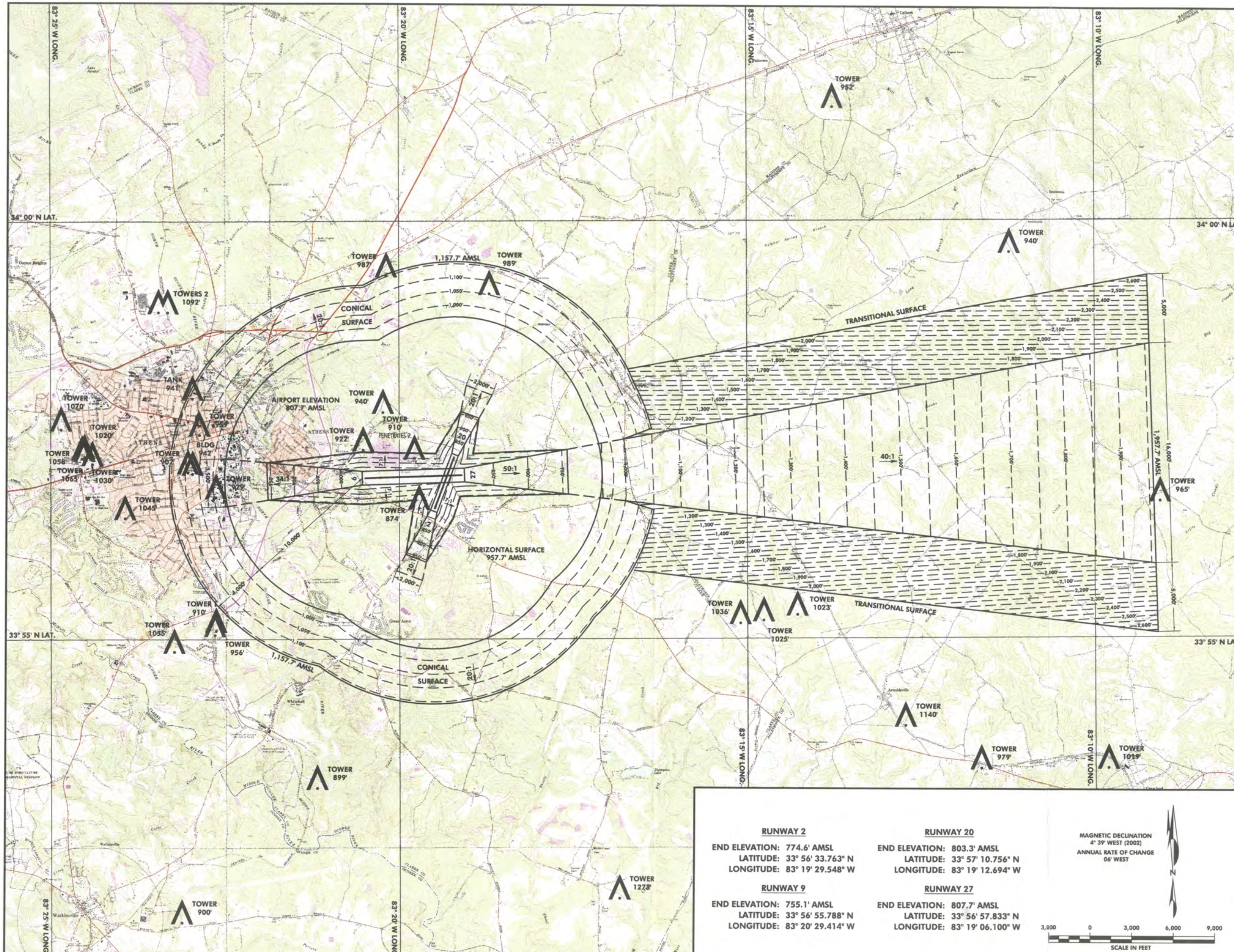
Project Name:
AIRPORT MASTER PLAN UPDATE

Drawing Name:
TERMINAL AREA PLAN

FAA A.I.P. Project Number:

Autocad Drawing Reference:

Date: AUGUST 2003	Division: PLANNING
Scale: 1" = 150'	Drawing Number: 3



ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

ATHENS, GEORGIA

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SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: TGM
Technician: TGM
Checked by: RKH
Project Number: PL207015

NOTES

1. COORDINATES SHOWN HEREON ARE IN NAD83.
2. ELEVATIONS SHOWN ARE ABOVE MEAN SEA LEVEL (AMSL).
3. OBSTACLES TAKEN FROM N.O.A.A. DIGITAL OBSTACLE FILE DATED MARCH 18, 2002.
4. BASE MAP TAKEN FROM THE U.S.G.S. 7.5 MINUTE SERIES QUADS:
   ATHENS EAST, GA 1986;
   ATHENS WEST, GA 1984;
   BARNETT SHOALS, GA 1986;
   CRAWFORD, GA 1971;
   DANIELSVILLE SOUTH, GA 1972;
   HULL, GA 1964;
   MAXEYS, GA 1971;
   NICHOLSON, GA 1985;
   WATKINSVILLE, GA 1986.
5. RUNWAY 9/27 IS SHOWN AT THE FUTURE LENGTH OF 7,022' TO PROTECT THE AIRSPACE FOR THE FUTURE CONDITION.
6. REFER TO THE ATHENS-CLARKE COUNTY CODE OF ORDINANCES CHAPTER 9-13 (AIRPORT OVERLAY DISTRICT) FOR HEIGHT RESTRICTIONS AROUND THE AIRPORT.

REVISIONS

No.	Description	Date	By

Project Name: AIRPORT MASTER PLAN UPDATE

Drawing Name: AIRPORT AIRSPACE PLAN

FAA A.I.P. Project Number:

Autocad Drawing Reference:

Date:	Division:
AUGUST 2003	PLANNING
Scale: 1" = 3,000'	Drawing Number: 4

RUNWAY 2

END ELEVATION: 774.6' AMSL
LATITUDE: 33° 56' 33.763" N
LONGITUDE: 83° 19' 29.548" W

RUNWAY 9

END ELEVATION: 755.1' AMSL
LATITUDE: 33° 56' 55.788" N
LONGITUDE: 83° 20' 29.414" W

RUNWAY 20

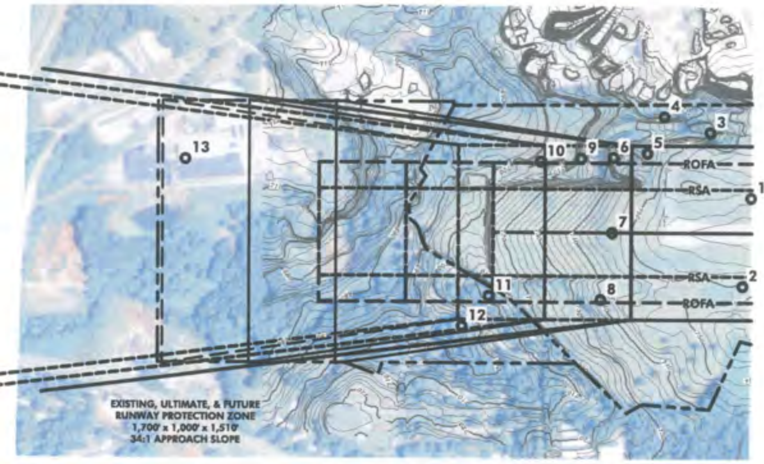
END ELEVATION: 803.3' AMSL
LATITUDE: 33° 57' 10.756" N
LONGITUDE: 83° 19' 12.694" W

RUNWAY 27

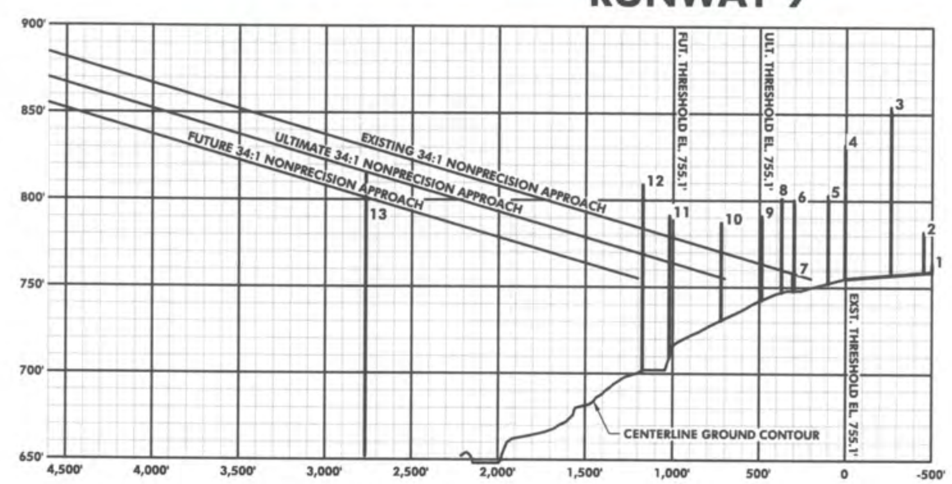
END ELEVATION: 807.7' AMSL
LATITUDE: 33° 56' 57.833" N
LONGITUDE: 83° 19' 06.100" W

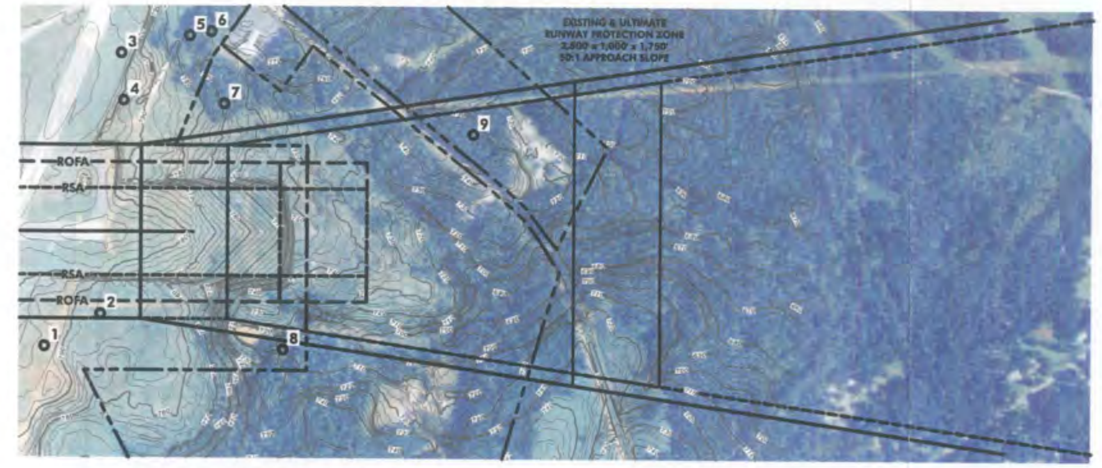
MAGNETIC DECLINATION
4° 39' WEST (2002)
ANNUAL RATE OF CHANGE
06' WEST

3,000 0 3,000 6,000 9,000
SCALE IN FEET

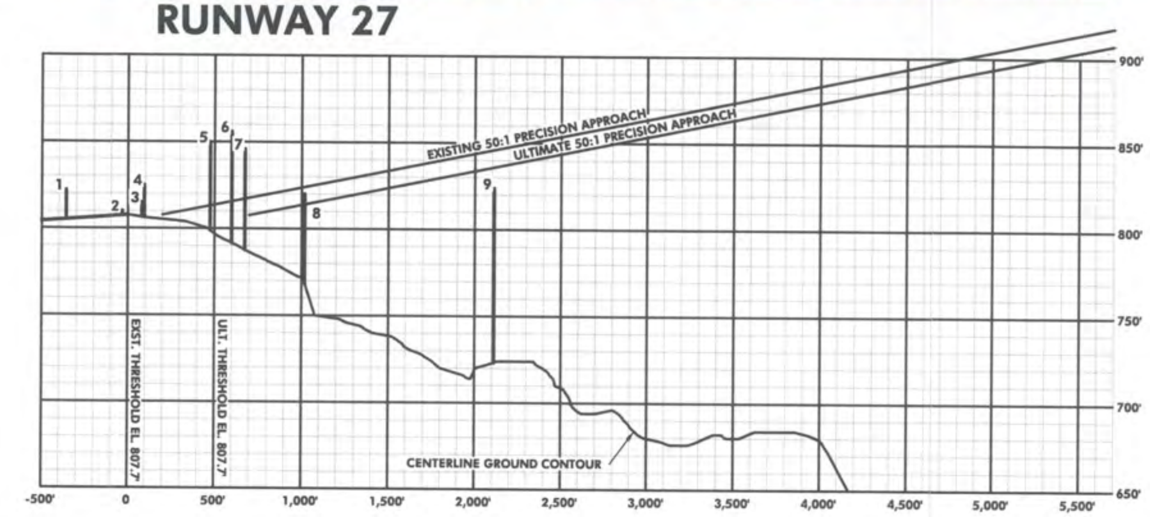


RUNWAY 9



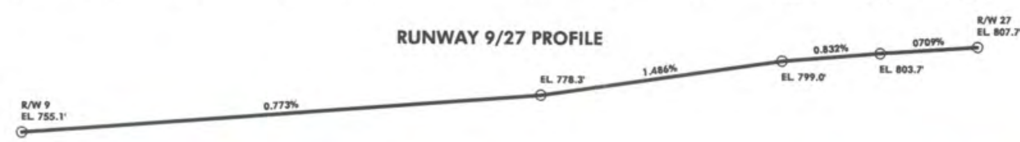


RUNWAY 27

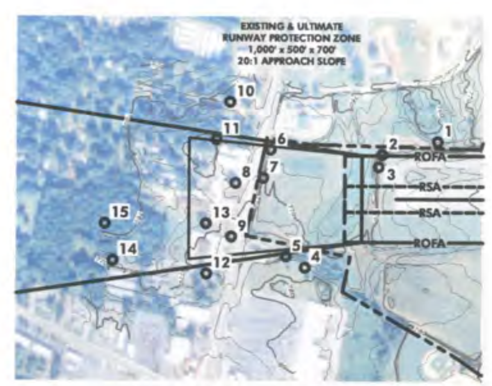


RUNWAY 9 OBSTRUCTION TABLE						
#	DESCRIPTION	TOP OF OBJECT ELEV.	EXISTING PENETRATION PART 77 SURFACE	ULTIMATE PENETRATION PART 77 SURFACE	FUTURE PENETRATION PART 77 SURFACE	DISPOSITION
1	WINDSOCK	763'	4.0'	4.0'	4.0'	NO ACTION
2	TREE	782'	23.4'	23.4'	23.4'	TRIM / REMOVE
3	TREE	854'	86.1'	86.1'	86.1'	TRIM / REMOVE
4	TREE	832'	53.2'	53.2'	53.2'	TRIM / REMOVE
5	TREE	803'	47.9'	47.9'	47.9'	TRIM / REMOVE
6	TREE	800'	42.0'	44.9'	44.9'	TRIM / REMOVE
7	LIGHT ON LOCALIZER	757'	NONE	1.9'	1.9'	RELOCATE
8	TREE	801'	40.8'	45.9'	45.9'	TRIM / REMOVE
9	TREE	791'	27.5'	35.9'	35.9'	TRIM / REMOVE
10	TREE	787'	16.5'	31.2'	31.9'	TRIM / REMOVE
11	ANTENNA	791'	11.8'	26.5'	35.9'	REMOVE / RELOCATE
12	TREE	809'	25.2'	40.0'	48.2'	TRIM / REMOVE
13	STACK	815'	NONE	NONE	13.8'	REMOVE IN FUTURE

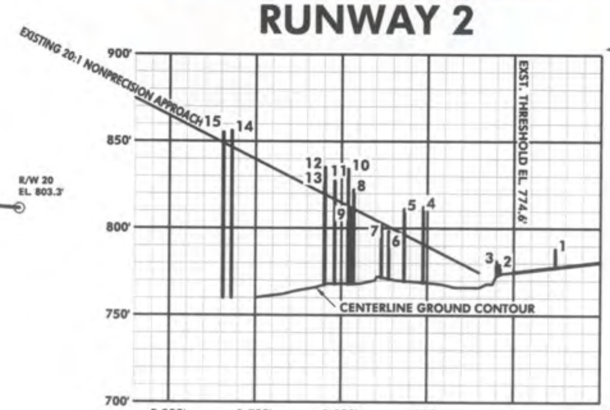
RUNWAY 9/27 PROFILE

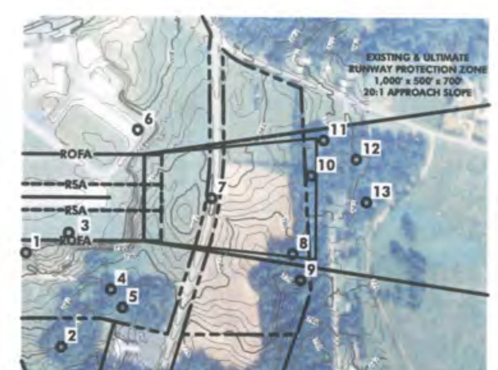


RUNWAY 27 OBSTRUCTION TABLE					
#	DESCRIPTION	TOP OF OBJECT ELEV.	EXISTING PENETRATION PART 77 SURFACE	ULTIMATE PENETRATION PART 77 SURFACE	DISPOSITION
1	TREE	822'	NONE	NONE	NO ACTION
2	TREE	810'	2.5'	2.5'	TRIM / REMOVE
3	WINDSOCK	815'	NONE	NONE	NO ACTION
4	TREE	825'	NONE	NONE	NO ACTION
5	TREE	850'	NONE	NONE	NO ACTION
6	TREE	856'	NONE	NONE	NO ACTION
7	TREE	846'	4.9'	4.2'	TRIM / REMOVE
8	TREE	820'	NONE	NONE	NO ACTION
9	TREE	824'	NONE	NONE	NO ACTION

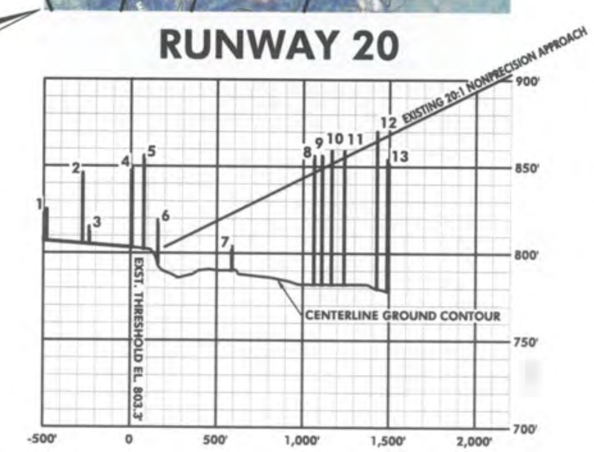


RUNWAY 2



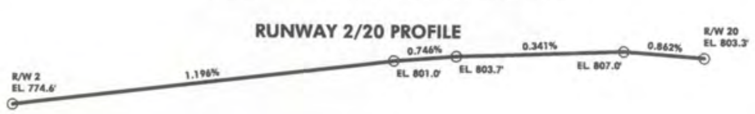


RUNWAY 20

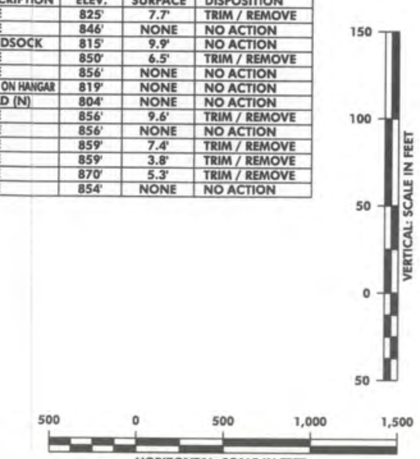


RUNWAY 2 OBSTRUCTION TABLE				
#	DESCRIPTION	TOP OF OBJECT ELEV.	EXST. & ULT. PENETRATION PART 77 SURFACE	DISPOSITION
1	TREE	788'	NONE	NO ACTION
2	BUSH	779'	3.6'	TRIM / REMOVE
3	BUSH	781'	6.4'	TRIM / REMOVE
4	POLE	812'	7.1'	RELOCATE
5	POLE	811'	12.1'	RELOCATE
6	POLE	798'	NONE	NO ACTION
7	POLE	801'	NONE	NO ACTION
8	TREE	822'	11.0'	TRIM / REMOVE
9	POLE	810'	NONE	NO ACTION
10	TREE	834'	NONE	NO ACTION
11	TREE	827'	10.5'	TRIM / REMOVE
12	TREE	835'	8.5'	TRIM / REMOVE
13	TREE	825'	5.5'	TRIM / REMOVE
14	TREE	856'	9.4'	TRIM / REMOVE
15	TREE	855'	6.1'	TRIM / REMOVE

RUNWAY 2/20 PROFILE



RUNWAY 20 OBSTRUCTION TABLE				
#	DESCRIPTION	TOP OF OBJECT ELEV.	EXST. & ULT. PENETRATION PART 77 SURFACE	DISPOSITION
1	TREE	825'	7.7'	TRIM / REMOVE
2	TREE	846'	NONE	NO ACTION
3	WINDSOCK	815'	9.9'	NO ACTION
4	TREE	850'	6.5'	TRIM / REMOVE
5	TREE	856'	NONE	NO ACTION
6	LIGHT ON HANGAR	819'	NONE	NO ACTION
7	ROAD (N)	804'	NONE	NO ACTION
8	TREE	856'	9.6'	TRIM / REMOVE
9	TREE	856'	NONE	NO ACTION
10	TREE	859'	7.4'	TRIM / REMOVE
11	TREE	859'	3.8'	TRIM / REMOVE
12	TREE	870'	5.3'	TRIM / REMOVE
13	TREE	854'	NONE	NO ACTION



LEGEND		
DESCRIPTION	EXISTING	ULTIMATE
PROPERTY LINE	— — —	— — —
GROUND CONTOURS	———	
RUNWAY SAFETY AREA	---RSA---	---RSA---
RUNWAY OBJECT FREE AREA	— —ROFA— —	— —ROFA— —

ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

ATHENS, GEORGIA

THE LPA GROUP
TRANSPORTATION CONSULTANTS

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CHARLOTTE, NC • CHICAGO, IL • COLUMBIA, SC
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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: TGM
Technician: TGM
Checked by: RKH
Project Number: PL207015

NOTES

1. COORDINATES SHOWN HEREON ARE IN NAD83.
2. ELEVATIONS SHOWN ARE ABOVE MEAN SEA LEVEL (AMSL).
3. BASED ON GENERAL PART 77 FIELD SURVEY FOR PLANNING PURPOSES ONLY. SURVEY BASE IS NOT A DETAILED OBSTRUCTION ANALYSIS COVERING ALL INDIVIDUAL OBSTRUCTIONS.
4. OBSTACLES TAKEN FROM THE NATIONAL GEODETIC SURVEY, AERONAUTICAL DATA SHEET DATED OCTOBER 1994. OBSTRUCTION SURVEY PERFORMED ON APRIL 21, 1994.

REVISIONS			
No.	Description	Date	By

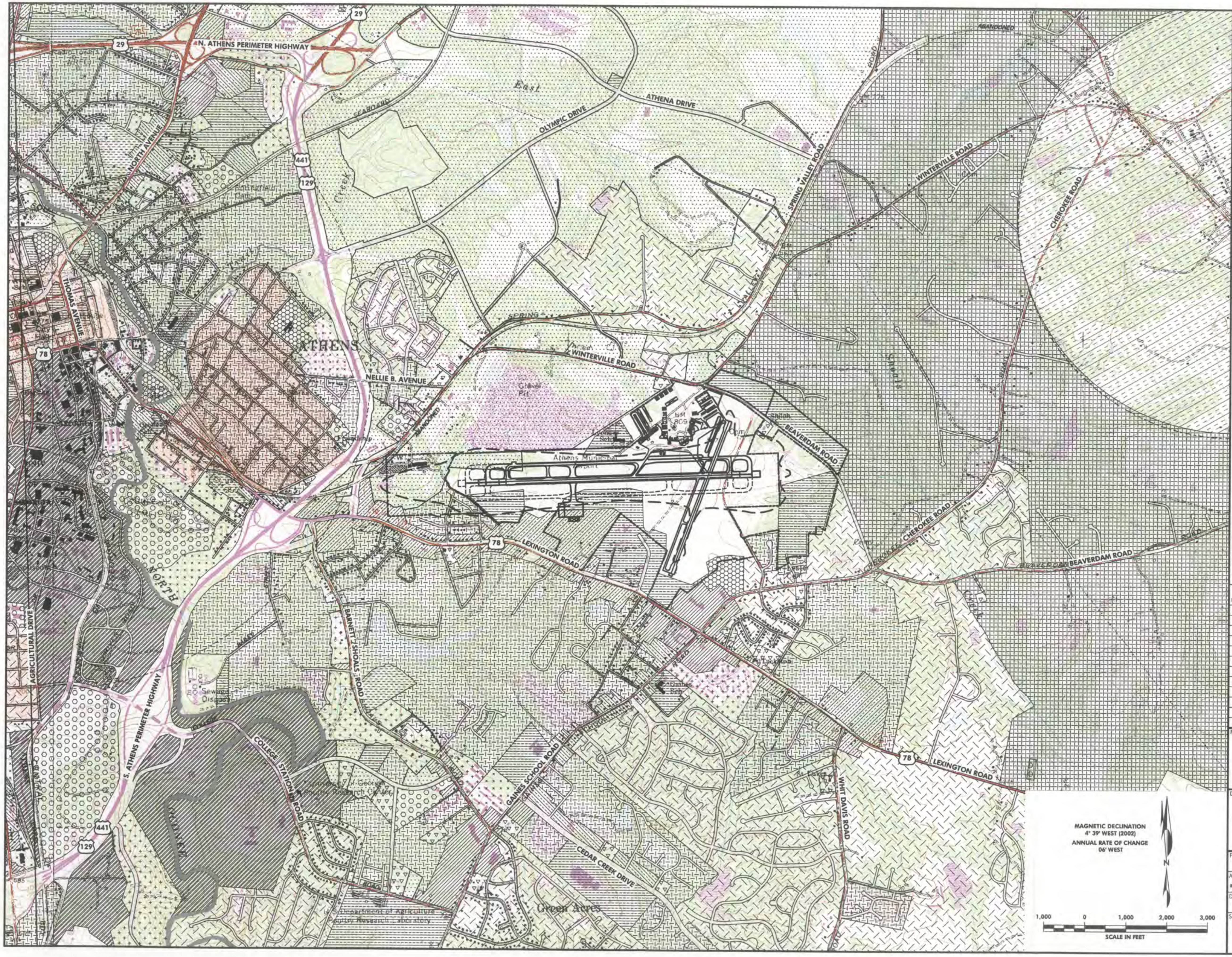
Project Name: AIRPORT MASTER PLAN UPDATE

Drawing Name: INNER PORTION OF THE APPROACH SURFACE PLAN

FAA A.I.P. Project Number:

Autocad Drawing Reference:

Date: AUGUST 2003
Division: PLANNING
Scale: HORIZONTAL: 1" = 500' VERTICAL: 1" = 50'
Drawing Number: 5



ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

ATHENS, GEORGIA

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SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: TGM
Technician: TGM
Checked by: RKH
Project Number: PL207015

NOTES

1. BASE MAP TAKEN FROM THE U.S.G.S. 7.5 MINUTE SERIES QUADS:
   ATHENS EAST, GA 1986;
   ATHENS WEST, GA 1984;
2. LAND USE CATEGORIES TAKEN FROM THE ATHENS-CLARKE COUNTY PLANNING DEPARTMENT GIS LAYER ENTITLED ATHENS-CLARKE FUTURE LAND USE, DATED DECEMBER 2000.

- COMMUNITY CENTER MIXED USE
- COMMUNITY INSTITUTIONAL
- CORRIDOR BUSINESS
- CORRIDOR RESIDENTIAL
- DOWNTOWN
- EMPLOYMENT
- GOVERNMENT
- MAIN STREET BUSINESS
- NEIGHBORHOOD MIXED USE
- OTHER PARKS ANS OPEN SPACE
- PUBLICLY OWNED PARKS AND OPEN SPACE
- RESIDENTIAL MIXED USE
- RURAL
- SINGLE FAMILY RESIDENTIAL
- TRADITIONAL NEIGHBORHOOD
- TRANSPORTATION, COMMUNICATION, UTILITIES
- UNIVERSITY DISTRICT
- WATER
- WINTERVILLE
- ULTIMATE 65 DNL NOISE CONTOUR
- EXISTING AIRPORT PROPERTY LINE
- ULTIMATE AIRPORT PROPERTY LINE

REVISIONS

No.	Description	Date	By

Project Name: **AIRPORT MASTER PLAN UPDATE**

Drawing Name: **LAND USE AND ACCESS PLAN**

FAA A.I.P. Project Number:

Autocad Drawing Reference:

Date: AUGUST 2003
Division: PLANNING
Scale: 1" = 1,000'
Drawing Number: 6

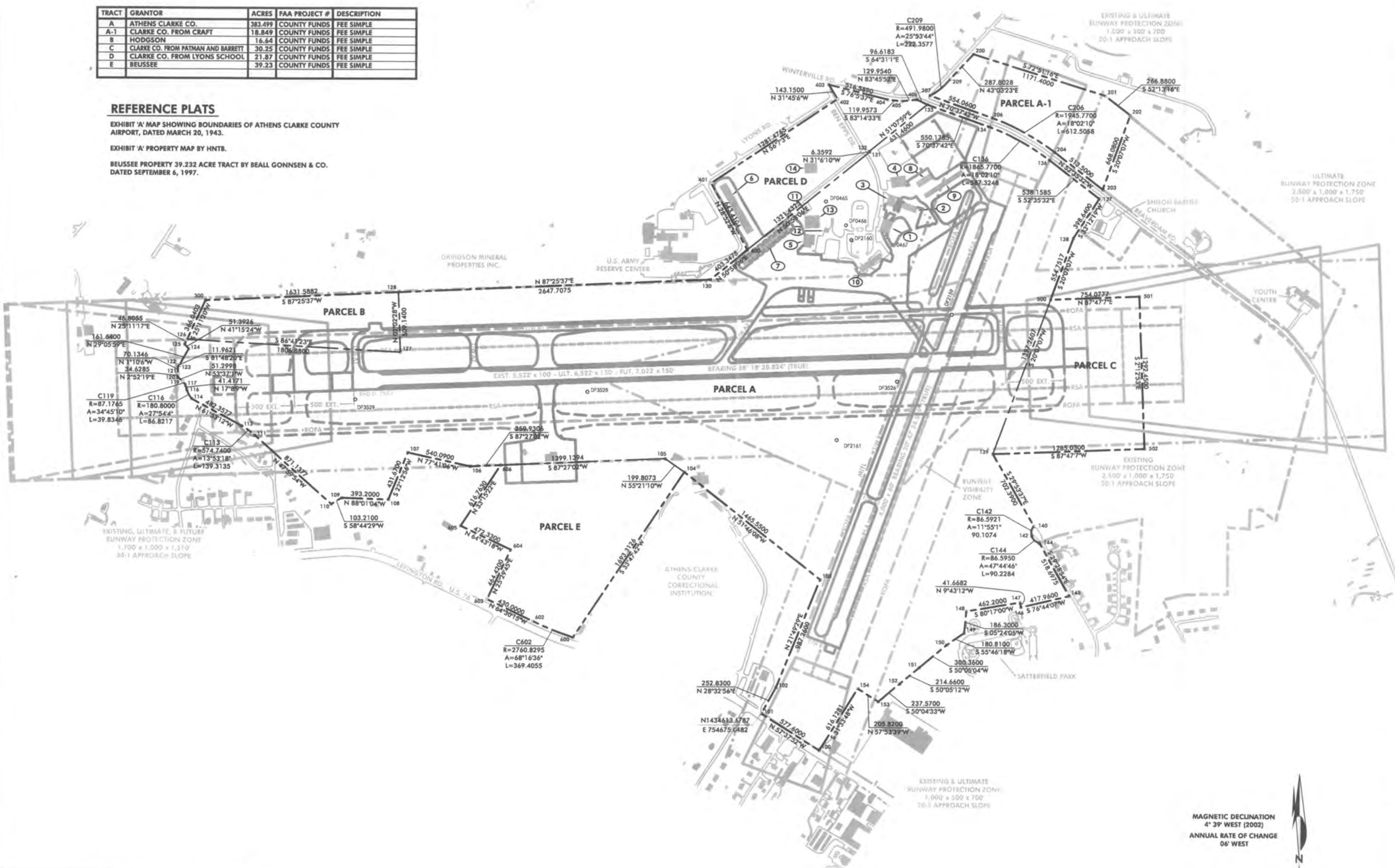
TRACT	GRANTOR	ACRES	FAA PROJECT #	DESCRIPTION
A	ATHENS CLARKE CO.	383.499	COUNTY FUNDS	FEE SIMPLE
A-1	CLARKE CO. FROM CRAFT	18.849	COUNTY FUNDS	FEE SIMPLE
B	HODGSON	16.64	COUNTY FUNDS	FEE SIMPLE
C	CLARKE CO. FROM PATMAN AND BARRETT	30.25	COUNTY FUNDS	FEE SIMPLE
D	CLARKE CO. FROM LYONS SCHOOL	21.87	COUNTY FUNDS	FEE SIMPLE
E	BEUSSEE	39.23	COUNTY FUNDS	FEE SIMPLE

REFERENCE PLATS

EXHIBIT 'A' MAP SHOWING BOUNDARIES OF ATHENS CLARKE COUNTY AIRPORT, DATED MARCH 20, 1943.

EXHIBIT 'A' PROPERTY MAP BY HNTB.

BEUSSEE PROPERTY 39.232 ACRE TRACT BY BEALL GONNSEN & CO. DATED SEPTEMBER 6, 1997.



LEGEND

DESCRIPTION	EXISTING	ULTIMATE
AIRPORT PAVEMENT		
PROPERTY LINE		
BUILDINGS		
RUNWAY SAFETY AREA	RSA	RSA
RUNWAY OBJECT FREE AREA	ROFA	ROFA
BUILDING RESTRICTION LINE		
TAXIWAY OBJECT FREE AREA		
NATIONAL GEODETIC SURVEY MONUMENT	o	

ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

ATHENS, GEORGIA

THE LPA GROUP
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MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer: TGM
Technician: TGM
Checked by: RKH
Project Number: PL207015

NOTES

1. ALL METES AND BOUNDS SHOWN HEREON WERE COMPILED FROM RESOURCE DOCUMENTS, OR WERE ESTIMATED USING INFORMATION FOUND IN THOSE DOCUMENTS. THE COMPILED METES AND BOUNDS DO NOT FORM A CLOSED SURVEY. THIS DRAWING IS NOT A PLAT OF SURVEY, AND MAY NOT BE RECORDED AS SUCH IN PUBLIC RECORDS IN THE STATE OF GEORGIA.

2. THE BEARING AND DISTANCE INFORMATION ON THIS DOCUMENT WAS OBTAINED FROM OLD AND RECENT PLATS, ALL BEARINGS HAVE BEEN MATHEMATICALLY TRANSFORMED TO A COMMON BEARING SYSTEM. ON THIS DOCUMENT, THAT BEARING SYSTEM IS GEORGIA STATE PLANE COORDINATE SYSTEM GRID NORTH (NORTH AMERICAN DATUM OF 1983 DEFINITION). NO GROUND SURVEYS WERE PERFORMED BY OTHERS TO TIE THE PROPERTY LINE TO THE STATE PLANE GRID.

REVISIONS			
No.	Description	Date	By

Project Name: AIRPORT MASTER PLAN UPDATE

Drawing Name: EXHIBIT "A" PROPERTY MAP

FAA A.I.P. Project Number:

Autocad Drawing Reference:

Date: AUGUST 2003

Division: PLANNING

Scale: 1" = 400'

Drawing Number: 7

Section 6
IMPLEMENTATION PLAN

The previous sections of this Master Plan Update present a logical, step-by-step explanation of how the long-range improvement plan was developed for Athens-Ben Epps Airport. This implementation plan is designed to assist Airport management in achieving their primary goals to maximize revenues and minimize operating expenditures, while at the same time providing facilities to accommodate the flying public. The implementation plan presented in this Section both describes the staging of proposed improvements and provides the basic capital requirements of each. Over the 20-year planning period, the implementation plan may serve as general financial guidance in making policy decisions regarding the development of the Airport.

6.1 PROGRAM STAGING AND COST ESTIMATING

An initial development schedule was prepared based upon facility needs presented in Section 3, which in most cases are dependant upon passenger or operations forecasts. Therefore, since actual activity levels realized at the Airport may vary, the staging must remain sensitive to such variation. It is quite possible for some projects to move up in priority, while at the same time, others move down. A prioritization of improvements considered the urgency of need, ease of implementation, logic of sequence, and input received from Airport representatives. The objective was to establish an efficient order for project development and implementation that satisfied forecasted activity and Airport desires. The development schedule is divided into three general stages that represent the short (2002-2006), intermediate (2007-2011), and long- term (2012+).

The next step focused on identifying costs associated with each capital improvement project. These project-specific development costs were then further broken down considering conventional aviation funding sources, such as the FAA, local share, and other participation, including PFC funding.

6.1.1 Capital Improvement Program

The Capital Improvement Program (CIP) development schedule and cost summary are presented in Tables 6-1 and 6-2, which provide an itemized breakdown of the FAA, local, and other funding for the improvements proposed by this Study.

As noted, cost projections are based on year 2002 dollars and include estimated engineering fees and contingencies. These projections however, should be used for planning purposes only and do not imply that funding for these will necessarily be available. Each year indicates construction initiation and therefore, any environmental/design efforts will need to precede construction.

Table 6-1 CAPITAL IMPROVEMENT PROGRAM Athens-Ben Epps Airport				
DEVELOPMENT ITEM	**TOTAL COST**	**FAA SHARE**	**LOCAL SHARE**	**OTHER**
Stage I (2002-2006)				
Runway 9 extension (500') including land acquisition, relocation of the localizer, PAPI-4, MIRL, and extension of Taxiway A	$6,700,000	$6,030,000	$670,000	$0
East general aviation apron expansion adjacent to Sonny's Flight Service (6,200 SY)	$140,000	$0	$0	$140,000 [1]
20-Unit T-Hangar taxilanes (1,160')	$110,000	$99,000	$11,000	$0
Georgia State Patrol taxiway (450')	$40,000	$36,000	$4,000	$0
West general aviation area including stormwater detention facilities	$380,000	$342,000	$38,000	$0
T-Hangars (36-unit)	$600,000	$0	$600,000	$0
General aviation terminal building	$1,000,000	$0	$1,000,000	$0
ARFF Facility (5,000 SF two-story structure)	$700,000	$630,000	$70,000	$0
REIL Runway 9	$25,000	$22,500	$2,500	$0
Taxiways A, A1, A3, and A4 widening from 50' to 75' and strengthening	$2,600,000	$2,340,000	$260,000	$0
Runway 9/27 widening from 100' to 150', strengthening, and install HIRL	$4,500,000	$4,050,000	$450,000	$0
Entrance road	$1,080,000	$972,000	$108,000	$0
East general aviation apron expansion (13,000 SY)	$210,000	$189,000	$21,000	$0
South general aviation apron expansion (13,500 SY) and strengthening of large aircraft (Group II) parking area	$420,000	$378,000	$42,000	$0
South commercial terminal development - apron (17,000 SY) and taxiways including land acquisition (38.5 acres)	$2,300,000	$2,070,000	$230,000	$0
Subtotal Short-Term	**$20,805,000**	**$17,158,500**	**$3,506,500**	**$140,000**

[1] PFC Funded

NOTES:
1. All estimates are in 2002 dollars.
2. Costs include fees and contingencies.
3. Year indicates construction initiation (any environmental/design efforts will need to precede construction).
4. Rounding has occurred

Table 6-2 **CAPITAL IMPROVEMENT PROGRAM** Athens-Ben Epps Airport				
DEVELOPMENT ITEM	**TOTAL COST**	**FAA SHARE**	**LOCAL SHARE**	**OTHER**
Stage II (2007-2011)				
South commercial terminal development • Access road (850') connecting loop road to Lexington Road/Hwy 78 • Loop road (1,750') • Public parking (240 spaces) • Commercial terminal (16,407 SF) • Employee parking (25 spaces) • Rental car ready/return parking (40 spaces)	$4,900,000	$4,410,000	$490,000	$0
Rental car maintenance facility and remote storage facility (96 Spaces)	$550,000	$0	$550,000	$0
Hangars (10) and taxilanes (360')	$280,000	$99,000	$181,000	$0
Runway 27 extension (500' by 150') including land acquisition, HIRL, PAPI-4, and replacement of ODALS with MALSR	$8,600,000	$7,740,000	$860,000	$0
Glideslope antenna relocation	$6,800,000	$6,120,000	$680,000	$0
Taxiway A extension (1,300') connecting A3 and B3	$1,400,000	$1,260,000	$140,000	$0
Subtotal Intermediate-Term	**$22,530,000**	**$19,629,000**	**$2,901,000**	**$0**
Stage III (2012+)				
T/W B extension (1,100'), T/W A relocation (400') between T/W A3 and R/W 2/20 and removal of T/W B3	$1,200,000	$1,080,000	$120,000	$0
General aviation apron expansion (18,100 SY) including demolition of old commercial terminal	$760,000	$684,000	$76,000	$0
Helicopter parking pads	$80,000	$72,000	$8,000	$0
T-Hangars (20-unit)	$340,000	$0	$340,000	$0
General aviation automobile parking (388 spaces)	$390,000	$0	$390,000	$0
Air cargo apron (4,000 SY)	$500,000	$450,000	$50,000	$0
Rental car remote storage facility (208 spaces)	$210,000	$0	$210,000	$0
REIL Runways 2 and 20	$50,000	$45,000	$5,000	$0
Subtotal Long-Term	**$3,530,000**	**$2,331,000**	**$1,199,000**	**$0**
TOTAL	**$46,865,000**	**$39,118,500**	**$7,606,500**	**$140,000**

NOTES:
1. All estimates are in 2002 dollars.
2. Costs include fees and contingencies.
3. Year indicates construction initiation (any environmental/design efforts will need to precede construction).
4. Rounding has occurred

6.2 FINANCIAL OVERVIEW

6.2.1 Introduction

This Section provides an overview to financial aspects of recommended capital improvements for the short-term planning period set forth in Section 6.1 of this Master Plan Update. The purpose of this Section is to provide an overview to the Unified Government of Athens-Clarke County (UGACC), Airport Authority, Airport Manager and staff, FAA, State of Georgia (State), and other interested parties with respect to the financial circumstances under which the short-term recommended development program may be accomplished. The proposed financial plan included herein was developed after taking into consideration the financial structure of the Airport, the estimated costs of the recommended improvements, and the potential funding sources, which may be available to fund such improvements.

6.2.2 Financial Organizational Structure

The Athens-Ben Epps Airport is a department of the UGACC. The Airport operates as an enterprise fund, which is used by public entities to account for financial operations, which are similar to a private business enterprise. The UGACC transfers funds from the General Fund to the Airport Enterprise Fund if operating revenues are not sufficient to pay for operating expenses. Capital projects and matching funds for Federal and State grants-in-aid are funded through the UGACC capital account. All binding contracts for the Airport must be approved by the UGACC Mayor and County Council and executed by signature of the Mayor.

6.2.3 Recommended Capital Improvements

This Section identifies the individual projects recommended in Section 6.1 of this Master Plan Update and sets forth their estimated costs and phasing.

Schedule of Recommended Improvements

In the process of compiling this Airport Master Plan Update, the Airport's capital needs have been evaluated and certain capital improvements to satisfy these needs have been identified. The recommended capital improvements are presented in three planning phases. For the purpose of this Master Plan Update, the short-term planning period includes all capital improvement projects starting between 2002 and 2006 (Stage I). Stage I improvements are followed by projects required to meet demands expected between planning years 2007 through 2011 designated as the intermediate-term (Stage II). The long-term needs are those, which would exist after 2012 (Stage III).

Each of the capital improvements are described in detail throughout this Master Plan and are therefore described in abbreviated or list form only in this Section. Each planning period is set forth separately so that the financial requirements of each may be more clearly defined. Tables 6-1 and 6-2 lists the various projects of the recommended CIP broken down by planning period. The estimated cost of each improvement is provided accordingly. All costs are presented in constant 2002 dollars.

Development Summary

Stage I of the CIP includes two key projects: (1) a 500-foot extension of Runway 9 including land acquisition, relocation of the localizer, PAPI-4, MIRL, and extension of Taxiway A ($6,700,000); and (2) strengthening and widening of Runway 9/27 from 100 feet to 150 feet, and equipping the Runway with HIRL ($4,500,000). These two projects ($11,200,000) represents 54 percent of all recommended Stage I improvements, which are collectively estimated to cost $20,805,000.

Stage II of the CIP will provide for extensive airside and landside improvements at the Airport. The two primary airside improvements expected to be undertaken in Stage II include (1) an extension of Runway 27 by 500 feet, which includes land acquisition and associated NAVAID improvements ($8,600,000); and (2) the relocation of the glideslope antenna ($6,800,000).

Also included in Stage II is a commercial terminal development program, which includes the construction of a 16,407 square-foot commercial terminal building, Airport access and Loop roads, public and employee parking lots, and rental car ready/return parking ($4,900,000). Collectively, the Stage II improvements are estimated to cost $22,530,000.

Stage III recommendations include no large-scale development programs. As currently foreseen, the major elements of development of this phase involve further airside expansion, as well as general aviation, air cargo and rental car projects. Improvements anticipated during the long-term planning period (Stage III) are estimated to cost $3,530,000.

A summary of the capital improvement costs for each Stage of development is provided on Table 6-3 above.

6.2.4 Potential Funding Sources

Few airports provide all needed capital development funds from internal sources. Federal, State, and private funding together with Airport funds and bond proceeds (supported by airport revenues and/or municipal support) are usually combined to produce the total funds required to undertake a CIP. The Airport has planned for the future by programming its estimated development costs and identifying potential outside funding sources for assistance in the cost of individual projects as appropriate.

Typically, these sources are: FAA, State, private funds (tenant provided), Airport funds, PFC's, and bond proceeds. These sources are heavily relied upon by commercial airports for funding support, although said sources are subject to change by Congress or other political bodies. Some, such as the FAA Airport Improvement Program, have been modified significantly from time to time. One source, the Passenger Facility Charge program, was authorized by Congress in 1991 and has rapidly become a major source of capital funds for airport development.

In identifying the potential sources of funds it is necessary to examine each project element to determine the eligibility of each. It is also important to consider the availability of funds for each funding source. The following paragraphs briefly discuss the primary external funding sources which may be available for the Airport's CIP.

Federal Aviation Administration

Congress began appropriating money for airport development in 1946 through the enactment of the Federal Airport Act. Since that time, Congress has passed multiple types of legislation, which were intended to develop the National Air Transportation System. Congress enacted the Airport and Airway Revenue Act of 1970, which established the Airport and Airways Trust Fund (Trust Fund), which was intended to pay for these improvements and be supported by users of the National Air Transportation System through a system of aviation user taxes.

The Airport and Airway Improvement Act of 1982 authorized the capital grant program called the Airport Improvement Program (AIP). The AIP is supported in part by the Trust Fund. Congress authorizes and appropriates funds used for airport improvements, which are administered by the FAA. Congress amends the Act as required to authorize funding levels on an annual or multi-year basis.

On April 6, 2000, the President signed into law the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century commonly referred to as AIR-21. With AIR-21, Congress reauthorized the AIP for a period of five years, from 2000 through 2005.

The AIP provides the following projects are eligible for funding at the 90 percent level at all airports included in the National Plan of Integrated Airport Systems, with exception to large and medium hub airports which are eligible for funding at the 75 percent level [13]: (1) Airport Planning; (2) Airport Development; (3) Noise Compatibility Programs (80 percent at large and medium hub airports); and, (4) Terminal Development at all but large hub airports. It

[13] The Athens-Ben Epps Airport is a primary non-hub airport included in the National Plan of Integrated Airport Systems, meaning that the Airport enplanes at least 10,000 passengers and represents less than .05 percent of the total number of enplaned passengers in the United States in a given year.

should be noted however, that Terminal Development is only eligible for Federal aid at commercial service airports and is limited to a maximum of $200,000 at non-primary airports (airports enplaning between 2,500 and 10,000 annual enplaned passengers).

Within the AIP grants program, there are two major sub-categories, which are generally used for improvement programs: entitlement grant and discretionary grant programs.

Entitlement Grants

Entitlement grants are essentially an allocation of available funds based upon an airport's total number of annual enplaned passengers. Only airports defined by the FAA as primary airports (those having 10,000 or more enplanements) are eligible to receive AIP entitlement grants. Under AIR-21, in any Federal fiscal year in which Congress appropriates funding for the AIP program at the $3.2 billion level or more, primary airports receive apportionments based on the following number of enplaned passengers:

$15.60 for each of the first 50,000 enplanements;
$10.40 for each of the next 50,000 enplanements;
$5.20 for each of the next 400,000 enplanements; and,
$1.20 for each additional enplanement.

Given the AIP appropriation level of $3.2 billion, AIR-21 sets a maximum entitlement of $26,000,000 and a minimum of $1,000,000 per Federal fiscal year for primary airports. Actual final amounts may be affected by the total amounts periodically allocated by Congress for this program. Entitlement funds may be carried over from one year to the next, used to pay eligible debt service and among other provisions, future allocation may be earmarked for repayment of current expenditures if the FAA concurs and issues a Letter of Intent (LOI).

The FAA utilizes the Air Carrier Airport Information System (ACAIS) for the purpose of calculating each airport's Federal entitlement apportionment. The ACAIS is a database, which includes the number of enplaned passengers for every airport in the United States that enplaned (and reported to the FAA) at least one passenger. The ACAIS considers both scheduled enplanements and non-scheduled charter/air taxi enplanements. The FAA utilizes calendar-year enplanements two years prior to the current Federal fiscal year for the purpose of calculating Entitlement apportionments for each primary airport. For example, the FAA will use calendar year 2001 enplanement data to determine an airport's entitlement apportionment for Federal fiscal year 2003. In 2000, the Airport enplaned 10,551 passengers according to the ACAIS. Given this level of passenger activity, the Airport is eligible for the minimum Entitlement apportionment of $1,000,000 in 2002.

Should an Airport's annual enplanement level drop below 10,000, the airport may ultimately lose its status as a primary airport and therefore eligibility to receive its share of Entitlement apportionments. According to Airport records, the number of enplaned passengers at the Airport fell to 9,585 in Calendar Year 2001. However, given the adverse impacts on commercial air transportation in the United States resulting from the terrorists attacks on September 11, 2001, the FAA has granted a waiver, for one year, to all airports who fell below the 10,000 enplanement level in 2001, provided said airports were designated primary airports before 2001.

For the purpose of this Master Plan Update, it is assumed that the Airport will continue to receive entitlement grants at the minimum level of $1,000,000 per annum, which is at least $5,000,000 in the short-term planning period (Stage I).

Discretionary Grants

Discretionary grants, as the name implies, are based upon commitments to certain eligible development projects at the discretion of the FAA. Both the entitlement and discretionary grant programs are operated on a system which is designed to allocate the available funding based upon priorities beginning with safety, security, etc. as described in FAA Order 5100.38A.

The Master Plan Update estimates that $17,298,500 is eligible for funding by the Airport Improvement Program. In consideration of the assumed application of $5,000,000 in

Entitlement Grants and $140,000 through other funding sources over the Stage I planning period, this Master Plan Update assumes that the remaining FAA eligible amount of $12,158,500 will be funded with proceeds from the FAA discretionary grant program.

Georgia Department of Transportation [14]

The State of Georgia (State) operates the Georgia Airport Aid Program (GAAP) within the Office of Intermodal Programs of the Department of Transportation. The purpose of the GAAP is to provide for planning, capital improvements, maintenance, and approach aids to publicly owned airports.

The GAAP serves all of the 103 airports within the State airport system except Hartsfield Atlanta International, which is currently the largest airport in the world in terms of enplaned passengers. The State General Assembly annually appropriates GAAP funds for a specific fiscal year (July 1 - June 30). The State-funding program has in recent years operated on an annual funding appropriation of approximately $2.2 million to $2.4 million. Of this amount, approximately $1.2 million to $1.4 million is set aside for support of smaller airports not included in areas designated in the U.S. census as Urban (87 airports in the State are in this non-urban category).

With respect to funding priority, all projects funded by the FAA which are eligible for State funding assistance are given the highest priority for GAAP funds. However, within the federally funded programs, general aviation (GA) airport projects are given priority for State funding assistance over the commercial service airport projects because of the State's position that GA airports normally generate less local revenue and are thus more dependant upon assistance from the State. Because of the limited nature of GAAP funds and in consideration of the fact that the Airport is a primary commercial service airport (resulting in a lower priority with respect to general aviation facilities) the funding plan assumes that the Airport will not receive funds from the GAAP in the short-term planning period (Stage I).

[14] Georgia Airport Aid Program - Policies and Standards Guide, Aviation Programs Georgia Department of Transportation. October 1999.

None the less, the UGACC should continue to examine means to maximize State participation in the Airport's development program.

Local/Sponsor

The UGACC will be required to provide for the remaining funds after the application of all Federal and State (if any) grants have been applied to the cost of completing the Stage I improvements. Several local funding sources have been identified and are set forth in the funding plan. In the case of financially self-sufficient airports, which have positive cash flows and accumulated cash reserves, a portion of the local share may be funded by any such cash reserves and the remaining local share requirements may be funded by a debt instrument. The resulting annual debt service would be paid from cash flow surpluses.

Historically, however, the Airport has not operated on a financially self-sustaining basis. Specifically, the Airport has operated at a cash flow deficit after depreciation expense each year from fiscal year 1997 through 2001. If the non-cash depreciation expense were removed from this determination, the Airport would generate a small surplus in fiscal years 1997 and 2000.

Accordingly, the UGACC has transferred cash from its General Fund in amounts each year sufficient to cover the Airport's operating requirements and it is expected that the UGACC will need to continue this financial support. As a result of deficit operations, there are three primary mechanisms, which the UGACC may utilize to provide for the local share required to complete projects recommended in Stage I and therefore minimize the amount of General Fund transfers. These mechanisms include Passenger Facility Charges, Local Option Sales Tax, and debt financing.

Passenger Facility Charge

The Aviation Safety and Capacity Expansion Act of 1990 (ASECEA) authorized the Secretary of Transportation to grant public agencies which control commercial service airports enplaning more than 2,500 annual passengers the authority to impose a Passenger Facility Charge (PFC) for each passenger boarding an aircraft (enplanement) at a given airport. The purpose of the PFC program is to preserve or enhance safety, security, capacity, competition, and mitigate the impact of aircraft noise. The ACT provides that PFC revenues may only be used for projects approved by the FAA including: payment of all or part of allowable project costs, an airport's AIP matching funds, augmentation of AIP funded projects, and payment of debt service or financing costs associated with eligible airport development bonds. The ACT provided that public agencies may impose a PFC at the levels of $1, $2, or $3 per enplaned passenger with a maximum PFC charge on any one passenger ticket of $12. AIR-21 amended, among other things, the maximum level of PFC which may be collected by authorized public agencies from $3 to $4.50 per enplaned passenger. These fees are collected by the air carriers when tickets are sold and are later remitted to the airport, minus an $0.08 per PFC handling fee.

In January 1997, the UGACC applied to the FAA for authority to impose and use PFC revenue at the level of $3.00 per enplaned passenger to pay for the eligible portion of certain projects on a pay-as-you-go basis. In September 2001, the Airport reached its collection authority and discontinued collection of PFCs.

The UGACC anticipates the preparation of a new application to the FAA for the authority to impose and use PFC revenues for its east general aviation apron expansion project on a pay-as-you-go basis. The UGACC will request authority to impose a PFC at the level of $4.50 per enplaned passenger. Based on the forecast of enplaned passengers set forth in Section 2, it is estimated that the Airport will collect at least $140,000 in passenger facility charge revenue over the short-term planning period.

Special Purpose Local Option Sales Tax (SPLOST) [15]

The Special Purpose Local Options Sales Tax (SPLOST) is a significant local funding mechanism available to the UGACC. As of July 1, 1985, State law allows local jurisdictions to use SPLOST proceeds for capital improvement projects that would otherwise be paid from the General Fund and property tax revenues. In some cases, the cost of these types of community enhancements would present too great of a burden on taxpayers to be undertaken.

[15] Athens-Clarke County Online. SPLOST IV and SPLOST 2000 Program summary.

SPLOST also allows the UGACC the opportunity to provide local share funding without incurring interest associated with debt financing.

SPLOST Recent History and Application

In 1994, voters in Athens-Clarke County approved SPLOST IV, which was a one-cent sales tax to fund a package of 29 miscellaneous community projects over five years. To date, UGACC has used SPLOST IV funds as the local contribution to bring approximately $27 million in Federal and State money to assist in the funding of certain transportation related projects.

On November 2, 1999, voters approved the SPLOST 2000 referendum, which allowed for the continuation of a one-cent sales tax to fund a diverse list of 40 different community projects. The projects funded with proceeds of the SPLOST are divided into three categories: Public Safety; Basic Facilities/Infrastructure; and, Quality of Life. Generally, Airport projects fall under the category of Basic Facilities/Infrastructure. Among the 40 projects funded with proceeds from the SPLOST 2000 are three Airport related projects. Following is a summary and cost for each Airport project:

SPLOST 2000 Project 9: Airport Water Main

This project consists of an extension of an appropriately sized water main from the Runway 9/27 safety area to the commercial terminal. It will provide water flow necessary to meet fire flow regulations for current and proposed future airport development and the Winterville Road area. The budget for these improvements is $776,010.

SPLOST 2000 Project 10: Airport Sanitary Sewer

The Airport Sanitary Sewer project consists of an extension of a sanitary sewer line from U.S. 78 to the Airport commercial terminal area. It will provide necessary connection to the Athens-Clark County Sanitary Sewer System to serve the current and proposed future Airport development. The budget for these improvements is $882,340.

SPLOST 2000 Project 11: Airport Land Acquisition

This project consists of the land acquisition of approximately 40 acres of land necessary to construct the future Airport commercial terminal facility with an entrance from U.S. 78. The budget for this acquisition is $1,067,822.

Collectively, the three Airport projects represent $2,726,172 of total SPLOST 2000 proceeds. However, in the absence of confirmation of Stage I improvements to be included in the next SPLOST, no SPLOST monies have been programmed to reduce the local portion of the funding plan. However, according to Airport Management, the UGACC intends to include certain, yet undetermined, Stage I projects in the next SPLOST referendum.

Debt Financing

Another alternative available to the UGACC to fund the local share is through a debt instrument, most likely through either the issuance of general obligation bonds (G.O. Bonds) by the UGACC or a financing arranged through a local financing institution. Regardless of the financing mechanism utilized, it is likely the UGACC will need to finance at least a portion of its Stage I improvements to provide for the future development of the Airport. The funding plan assumes the maximum utilization of debt financing for the local share funding requirement (less applicable PFC revenues and UGACC contributions).

6.2.5 Funding Plan

As previously discussed, the Master Plan Update recommends projects to be completed in three stages of development. However, due to the uncertainty associated with the actual implementation and funding of the local share in the intermediate and long-term, no attempt has been made to provide detailed local funding source estimates for Stage II and Stage III of the CIP.

Table 6-2 depicts a funding plan and identifies each element of the Stage I improvements, and a probable funding scenario for Federal and local funds (PFCs and G.O. Bonds/other long-term debt). As presented on Table 6-1, recommended Stage I improvements are expected to cost approximately $20,805,000.

With respect to the Stage I of the CIP, Federal eligibility is estimated to be $17,158,500 and PFC eligibility is estimated to be $140,000. Federal eligibility has been estimated at the 90 percent level for each element pursuant to the Airport and Airways Improvement Act of 1982. This Master Plan Update funding plan assumes that the FAA will fund 100 percent of the federally eligible Stage I improvements ($17,158,500). PFC eligibility for the east general aviation apron expansion project is expected to be at the 100 percent level pursuant CFR 14 Part 158. The balance ($3,506,500) represents the remaining local funding requirement.

The UGACC has budgeted $1,000,000 from its General Fund for the general aviation terminal building project, as depicted on Table 6-2. This UGACC General Fund contribution will reduce the remaining local funding requirement from $3,506,500 to $2,506,500.

According to Airport Management, UGACC provides the Airport a 10 percent match on annual FAA entitlements for projects that will be funded with such. Since FAA entitlements are expected to be $5,000,000 over the Stage I planning period, the UGACC match is expected to be $500,000 over the same period, thereby reducing the remaining local funding requirement to $2,006,500.

For the purpose of this Master Plan Update, it is assumed that the local share (less applicable PFCs for the east GA apron expansion and UGACC contributions) will be funded by the UGACC through a debt instrument, most likely through a debt financing or a line of credit made available by a local financing institution. Table 6-4 and Table 6-5 present the local financing requirement.

Table 6-3
CAPITAL IMPROVEMENT PROGRAM
Athens-Ben Epps Airport

Stage I – (2002 – 2006) Funding Plan

PROJECT ELEMENT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE	LOCAL SHARE SOURCE				
					SPLOST	UGACC	PFC	FINANCING	TOTAL LOCAL SHARE
Runway 9 extension	$6,700,000	$6,030,000	$0	$670,000	$0	$500,000	$0	$170,000	$670,000
East general aviation apron expansion (6,200 SY)	$140,000	$0	$0	$140,000	$0	$0	$140,000	$0	$140,000
20-Unit T-Hangar taxilanes	$110,000	$99,000	$0	$11,000	$0	$0	$0	$11,000	$11,000
GSP taxiway (450')	$40,000	$36,000	$0	$4,000	$0	$0	$0	$4,000	$4,000
West general aviation area	$380,000	$342,000	$0	$38,000	$0	$0	$0	$38,000	$38,000
T-Hangars	$600,000	$0	$0	$600,000	$0	$0	$0	$600,000	$600,000
General aviation terminal building	$1,000,000	$0	$0	$1,000,000	$0	$1,000,000	$0	$0	$1,000,000
ARFF Facility	$700,000	$630,000	$0	$70,000	$0	$0	$0	$70,000	$70,000
REIL Runway 9	$25,000	$22,500	$0	$2,500	$0	$0	$0	$2,500	$2,500
Taxiway widening	$2,600,000	$2,340,000	$0	$260,000	$0	$0	$0	$260,000	$260,000
Runway 9/27 widening, strengthening, HIRL	$4,500,000	$4,050,000	$0	$450,000	$0	$0	$0	$450,000	$450,000
Entrance road	$1,080,000	$972,000	$0	$108,000	$0	$0	$0	$108,000	$108,000
East general aviation apron expansion (13,000 SY)	$210,000	$189,000	$0	$21,000	$0	$0	$0	$21,000	$21,000
South general aviation apron expansion (13,500 SY)	$420,000	$378,000	$0	$42,000	$0	$0	$0	$42,000	$42,000
South commercial terminal development	$2,300,000	$2,070,000	$0	$230,000	$0	$0	$0	$230,000	$230,000
Total	$20,805,000	$17,158,500	$0	$3,646,500	$0	$1,500,000	$140,000	$2,006,500	$3,646,500

NOTE: Rounding has occurred
SOURCE: Newton & Associates, Inc.

Table 6-4 CAPITAL IMPROVEMENT PROGRAM Athens-Ben Epps Airport Stage I (2002-2006) Financing Plan	
Sources of Funds:	
Cash on hand	$0
Local financing proceeds	$2,417,470
Total Sources:	**$2,417,470**
Uses of Funds:	
Stage I – (2002 – 2006) local share financing requirement	$2,006,500
Capitalized interest during construction	$169,223
Issuance expense	$241,747
Total Uses:	**$2,417,470**
Estimated Average Annual Debt Service Requirement	**$228,192**
NOTE: Rounding has occurred SOURCE: Newton & Associates, Inc.	

As presented by Table 6-4, the $2,006,500 local share will be funded with a local financing in the amount of $2,417,470, which includes associated financing costs and one year of capitalized interest. A term of 20 years and an interest rate of 7.0 percent were assumed with the resulting average annual debt service amounting to $228,192.

An allocation of the average annual debt service among the project elements being financed is necessary so that the UGACC can consider cost recovery mechanisms and the impact on future rental requirements with respect to the Capital Improvement Program. Table 6-5 presents the allocation of the average annual debt service among the Stage I project elements.

6.2.6 <u>Historical Financial Information</u>

A summary of the Airport's financial information from each of the past five years (Study Period) is provided for a historical perspective. From this information, the financial position of the Airport may be more clearly viewed in the context of future financing requirements.

Table 6-5 CAPITAL IMPROVEMENT PROGRAM Athens-Ben Epps Airport			
Stage I (2002-2006) Annual Debt Service Allocation			
PROJECT ELEMENT	**LOCAL SHARE FINANCIAL REQUIREMENT**	**PERCENTAGE BY ELEMENT**	**ANNUAL DEBT SERVICE ALLOCATION**
Runway 9 extension (500') including land acquisition, relocation of the localizer, PAPI-4, MIRL, and extension of Taxiway A	$170,000	8.47	$19,333
East general aviation apron expansion adjacent to Sonny's Flight Service (6,200 SY)	$0	0.00	$0
20-Unit T-Hangar taxilanes (1,160')	$11,000	.55	$1,251
GSP taxiway (450')	$4,000	.20	$455
West general aviation area including stormwater detention facilities	$38,000	1.89	$4,322
T-Hangars (36-unit)	$600,000	29.90	$68,236
General aviation terminal building	$0	0.00	$0
ARFF Facility (5,000 SF two-story structure)	$70,000	3.49	$7,961
REIL Runway 9	$2,500	0.12	$284
Taxiway A, A1, A3, and A4 widening from 50' to 75' and strengthening	$260,000	12.96	$29,569
Runway 9/27 widening from 100' to 150', strengthening, and install HIRL	$450,000	22.43	$51,177
Entrance road	$108,000	5.38	$12,282
East general aviation apron expansion (13,000 SY)	$21,000	1.05	$2,388
South general aviation apron expansion (13,500 SY) and strengthening of large aircraft (Group II) parking area	$42,000	2.09	$4,777
South commercial terminal development - apron (17,000 SY) and taxiways including land acquisition (38.5 acres)	$230,000	11.46	$26,157
Total:	$2,006,500	100.00	**$228,192**
Estimated Average Annual Debt Service Requirement			**$228,192**
NOTE: Rounding has occurred SOURCE: Newton & Associates, Inc.			

Table 6-6 provides a detailed review of the Airport's revenues and expenses over the past five years.

Operating Revenues

Airport operating revenues include FBO sales and fuel flowage fees; and general aviation, airline, and other operating revenue. In addition to these unrestricted operating revenues, the Airport collected a PFC through most of the study period.

FBO Sales and Fuel Flowage Fees

The FBO is the Airport's largest source of revenue generation. FBO sales include the sale of aviation fuel (both Avgas and Jet A products) and oil as well as pilot supplies. FBO sales represented between 72 percent and 80 percent of total operating revenue over the study period. The sale of aviation products, particularly aviation fuel, is a good indicator of aviation activity at the Airport. Collectively, FBO sales have grown from $843,924 in 1997 to $1,052,297 in 2001, representing an average annual rate of 5.7 percent.

The Airport also collects a fuel flowage fee in the amount of $0.10 per gallon of fuel sold by private FBOs at the Airport. Fuel flowage fee revenue declined from $114,070 in 1997 to $27,563 in 2001, representing an average annual rate of -29.9 percent.

General Aviation, Airline, and Other Operating Revenues

a. Hangar Rentals

According to the Airport Manager, the Airport currently enjoys 100 percent occupancy of its existing hangars. The Airport maintains a waiting list, which currently consists of 55 people desiring hangar space. The UGACC executes annually renewable Hangar Lease Agreements with each of its hangar tenants. The UGACC owns and leases two executive hangars; four medium hangars; and 48 T-hangars at the Airport.

Table 6-6
HISTORICAL AIRPORT FINANCIAL INFORMATION
Athens-Ben Epps Airport

	1997	1998	1999	2000	2001	Average Annual Growth Rate
Operating Revenues						
FBO Sales & Fuel Flowage Fees:						
Avgas-trans A/C	$402,069	$380,877	$439,180	$562,458	$472,381	4.1%
Jet Fuel - tran A/C	436,655	374,462	341,572	502,273	571,335	7.0%
Oil/piston	2,063	1,861	2,421	2,257	2,060	0.0%
Pilot supplies	3,137	3,461	5,248	6,653	6,521	20.1%
Sub-total FBO sales	$843,924	$760,661	$788,421	$1,073,641	$1,052,297	5.7%
Fuel flowage fees	114,070	63,577	30,066	18,908	27,563	-29.9%
Sub-total FBO sales and fuel flowage	$957,994	$824,238	$818,487	$1,092,550	$1,079,860	3.0%
General Aviation, Airline, and Other Operating Revenues:						
Airport Rentals:						
Terminal	$40,830	$41,617	$37,484	$33,923	$48,527	4.4%
FBO	43,061	41,813	37,983	53,916	54,554	6.1%
Storage	691	756	693	816	816	4.2%
Executive hangars	8,088	1,953	7,788	9,840	9,840	5.0%
Medium hangars	8,155	8,892	9,139	8,892	8,892	2.2%
T-Hangars	84,196	88,819	80,180	97,506	100,118	4.4%
Tiedowns	3,793	3,028	5,322	2,130	2,490	-10.0%
Concession - Southern Bell	1,087	614	274	0	12	-67.3%
Airline landing fees	15,024	9,707	1,507	22,139	10,154	-9.3%
Ramp Overnight (RON)	2,780	924	754	626	405	-38.2%
Towing	0	15	25	537	260	n/a
Auxiliary power unit	610	910	440	777	1,171	17.7%
Baggage handling	3,300	3,500	1,000	3,167	3,561	1.9%
Passenger facility charges						
Facility	0	0	550	864	1,303	n/a
Other	0	0	5,026	1,884	2,875	n/a
Credit card service charges	(7,051)	(3,730)	319	(4,015)	(12,685)	15.8%
Interest charges	4,889	8,068	5,493	1,930	1,303	-28.2%
Adjustments to reconcile with audited financials	1,607	(484)	21,786	0	361	
Sub-total General Aviation, Airline, and Other Operating Revenues	$211,060	$206,402	$215,763	$234,932	$233,955	2.6%
Total Operating Revenues	$1,169,054	$1,030,640	$1,034,250	$1,327,482	$1,313,815	3.0%
Restricted operating revenues						
Passenger facility charge revenue	$0	$16,644	$27,389	$17,648	$0	n/a
FAA - contract tower grant	198,267	214,180	133,632	133,366	133,632	-9.4%
Total restricted operating revenues	$198,267	$230,824	$161,021	$151,014	$133,632	-9.4%
Operating Revenue (+ Restricted Operating Revenue)	$1,367,321	$1,244,820	$1,167,882	$1,460,848	$1,447,447	1.4%
Operating Expenses						
Personal services	$292,031	$430,973	$431,474	$466,214	$496,511	14.2%
Contractual services	231,972	72,961	44,530	39,803	37,988	-36.4%
Facilities operating	83,679	171,926	66,619	81,017	84,332	0.2%
Education and training	2,388	3,013	3,626	3,505	5,632	23.9%
Vehicle/equipment	2,903	3,393	2,447	4,009	1,933	-9.7%
Insurance	9,795	11,000	0	0	0	n/a
Rental/lease	16,922	21,946	14,199	20,986	26,041	11.4%
Supplies and materials	9,663	22,325	26,574	17,880	26,481	28.7%
Travel	0	0	0	107	3,018	n/a
Noncapital	20,177	12,954	7,148	7,492	5,870	-26.6%
Purchases for resale	547,320	459,852	448,550	655,699	752,085	8.3%
Depreciation	43,050	42,749	46,448	46,447	45,669	1.5%
Indirect	109,183	101,418	145,578	147,672	179,319	13.2%
Other	30,745	85,133	0	5,292	272	-69.3%
Total Operating Expenses	$1,399,828	$1,439,643	$1,237,193	$1,496,123	$1,665,151	4.4%
Operating Income	($32,507)	($194,823)	($69,311)	($35,275)	($217,704)	60.9%
Non-operating Revenues (Expenses)						
Intergovernmental revenue	$0	$0	$0	$0	$0	n/a
Insurance recoveries	0	71,547	0	0	0	n/a
Interest revenue	1,591	4,855	4,525	5,245	61	-55.7%
Other revenue	0	25,975	3,144	143	688	n/a
Interest rxpense	0	0	0	0	0	n/a
Net Gain (Loss) on disposition of Fixed Assets	26,551	0	0	0	0	n/a
Total Non-operating Revenues (Expenses)	$28,142	$102,377	$7,669	$5,388	$749	-59.6%
Net income before UGACC transfers	($4,365)	($92,446)	($61,642)	($29,887)	($216,955)	165.5%

NOTE: Rounding has occurred
SOURCE: Unified Government of Athens Clarke County

The following sets forth the hangar rental fee schedule for fiscal year 2002.

Type of Hangar	Number of Units	Fee Per Unit Per Month	Monthly Rental	Annual Rental
Large T-Hangar	20	$203	$4,060	$48,720
Medium T-Hangar	12	$161	$1,932	$23,184
Small T-Hangar	16	$157	$2,512	$30,144
Medium Hangar	4	$254	$1,016	$12,192
Executive Hangar	2	$422	$844	$10,128
Total Hangar	54		$10,364	$124,368
NOTE: The 54 hangar units owned by the UGACC available and leased to tenants may accommodate 63 covered aircraft parking positions.				

There are five other FBOs conducting aeronautical business at the Airport, which include Colvin Aviation, Inc. (doing business as US Jets), Georgia Aviation, Inc., Georgia Flight Academy, Inc., Sonny's Air Service, Inc., and Windship Aviation, LLC. All but the Georgia Flight Academy, Inc. occupy aeronautical facilities including hangar and office space at the Airport. Georgia Flight Academy occupies space in the Airport's commercial terminal building. FBO rentals include office space and hangar rentals, and improved and unimproved land rentals for the four FBOs located outside the commercial terminal building. FBO rent has increased from $43,061 in fiscal year 1997 to $54,554 in fiscal year 2001, representing an average annual growth rate of 6.1 percent.

The Airport is currently served by one commercial service passenger airline, CCAir, Inc. (doing business as US Airways Express). US Airways Express provides the Airport with non-stop service (three daily departures and three daily arrivals) to/from its hub in Charlotte, NC. Airline revenues comprise landing fees and airline terminal rentals. Pursuant to the annually renewable commercial terminal lease between the UGACC and CCAir, Inc., CCAir occupies 1,057 square feet of terminal space and pays an annual terminal space rental of \$15,787.32. CCAir also pays an annual rental of \$2,124 for 12,500 square feet of aircraft ramp space as well as its pro-rata share of certain terminal charges including security/CFR, public address system/background music, and janitorial/custodial. The current effective landing fee rate is \$0.81 per 1,000 units of landed aircraft weight. Airline landing fee revenue declined from \$15,204 in fiscal year 1997 to \$10,154 in fiscal year 2001, representing an average annual rate of -9.3 percent.

Total terminal rentals comprise rentals from CCAir as described above, the FAA, Georgia Flight Academy, and Hertz Rental Car. The rentals collectively have grown from \$40,830 in fiscal year 1997 to \$48,527 in fiscal year 2001, representing an average annual rate of 4.4 percent.

Collectively, general aviation, airline and other revenues at the Airport increased from \$209,453 in fiscal year 1997 to \$233,595 in fiscal year 2001, representing an average annual growth rate of 2.8 percent.

Operating Expenses

The Airport's operating expenses are set forth on Table 6-6. Operating expenses are those expenses incurred by the UGACC in the operation and maintenance of the Airport. Purchases for resale (aviation fuel, oil, and pilot supplies) represented the largest single category of operating expenses, representing between 41.2 percent (fiscal year 2001) and 45.2 percent (fiscal year 1997) of the total. Aviation fuel purchases for resale increased from \$547,320 in fiscal year 1997 to \$752,085 in fiscal year 2001, representing an average annual growth rate of 8.3 percent. The Airport's second largest operating expense category is total personal services, which increased from \$292,031 in fiscal year 1997 to \$496,511 in fiscal year 2001, representing an average annual growth rate of 14.2 percent. Airport indirect expenses, which are administrative overhead charges billed by the UGACC to the Airport, increased from \$109,183 in fiscal year 1997 to \$179,319 in fiscal year 2001, representing an average annual growth rate of 13.2 percent. Collectively, these three operating expense categories have averaged between 85.8 percent and 89 percent of total operating expenses and have grown at an average annual growth rate of 11.1 percent.

As presented, total operating expenses including depreciation increased from $1,399,828 in fiscal year 1997 to $1,665,151 in fiscal year 2001, representing an average annual growth rate of 4.4 percent.

Operating Income

Table 6-6 provides a summary of revenues and expenses for the Airport over the past five years. As depicted on Table 6-6, operating income declined from a deficit of $32,507 in fiscal year 1997 to a deficit of $217,704 in fiscal year 2001. This deficit is primarily the result of the increases in purchases for resale,[16] personal services, and indirect administrative overhead expenses, which collectively grew by $988,353 over the Study Period.

The financial results of the last five years reflected on the Airport's financial statements include allowances for depreciation. As a consequence of these non-cash charges, the resulting financial statements depict overstated losses, or understated surpluses, on a cash basis.

Non-Operating Revenues and Non-Operating Expenses

The Airport's non-operating revenues and expenses include: intergovernmental revenue; insurance recoveries; interest revenue; interest revenue and expenses; and net gain (loss) on disposition of fixed assets. Collectively, non-operating revenue (net of non-operating expense) declined from $28,142 in fiscal year 1997 to $749 in fiscal year 2001.

Net Income (Before UGACC Transfers)

As depicted on Table 6-6, net income before UGACC transfers ranged from a deficit of $4,365 in fiscal year 1997 to a deficit of $216,955 in fiscal year 2001.

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[16] Purchases for resale represent the purchase of inventory including aviation fuel, oil and pilot supplies. Purchases for resale increased at an average annual rate of 8.3 percent over the Study Period, where as the corresponding revenue (FBO Sales) increased by 5.7 percent.

6.2.7 Pro Forma Cash Flow

To determine how the Airport might accomplish the desired upgrades and improvements identified in Table 6-7, a pro forma cash flow analysis has been undertaken, the results of which are depicted on Table 6-7. The methodology used to develop this pro forma required a detailed analysis of the past five years of audited financial activity (summarized in Table 6-6), and a conservative projection of each revenue and aggregate operating expenses over Stage I of the Airport's CIP (2002 - 2006).

The resulting pro forma cash flow is based on historical records, known changes to occur in the future (e.g. debt retirement, etc.), and operating experience. Some of the assumptions utilized for this pro forma cash flow are as follows.

Operating Revenues

Sales generated by the Airport's FBO and fuel flowage fees are projected to increase at the rate of growth forecast for total aircraft operations described in Section 2 for the years 2002 through 2006 (2.3 percent per annum). General aviation, airline, and other operating revenues are forecast to grow at the rates experienced over the Study Period on a line-by-line item basis.

PFC income is based on the number of revenue enplaned passengers at the Airport and is expected to increase at an annual rate of 0.6 percent, which is the s .me average annual growth rate of enplaned passengers at the Airport as described in Section 2.

Table 6-7
PRO FORMA CASH FLOW
Athens-Ben Epps Airport

	2002	2003	2004	2005	2006	Average Annual Growth Rate
Operating Revenues						
FBO Sales & Fuel Flowage Fees:						
Avgas-trans A/C	$483,246	$494,360	$505,731	$517,362	$529,262	2.3%
Jet Fuel - trans A/C	584,476	597,919	611,671	625,740	640,132	2.3%
Oil/piston	2,107	2,155	2,205	2,256	2,308	2.3%
Pilot supplies	6,671	6,825	6,981	7,142	7,306	2.3%
Sub-total FBO sales	$1,076,500	$1,101,259	$1,126,588	$1,152,500	$1,179,007	2.3%
Fuel flowage fees	28,196	28,845	29,508	30,187	30,881	2.3%
Sub-total FBO sales and fuel flowage	$1,104,696	$1,130,104	$1,156,097	$1,182,687	$1,209,889	2.3%
General Aviation, Airline, and Other Operating Revenues:						
Airport rentals:						
Terminal	$50,668	$52,904	$55,238	$57,675	$60,220	4.4%
FBO	57,878	61,405	65,146	69,115	73,326	6.1%
Storage	851	887	924	964	1,005	4.2%
Executive hangars	10,334	10,854	11,399	11,972	12,573	5.0%
Medium hangars	9,086	9,285	9,488	9,696	9,908	2.2%
T-hangars	104,548	109,175	114,006	119,051	124,319	4.4%
New T-hangars	0	73,080	75,600	78,120	80,640	n/a
Tiedowns	2,241	2,017	1,816	1,635	1,471	-10.0%
Concession - Southern Bell	4	1	0	0	0	-67.3%
Airline landing fees	9,207	8,348	7,569	6,862	6,222	-9.3%
Ramp Overnight (RON)	250	155	96	59	36	-38.2%
Towing	260	260	260	260	260	n/a
Auxiliary power unit	1,378	1,621	1,908	2,246	2,644	17.7%
Baggage handling	3,629	3,698	3,769	3,842	3,915	1.9%
Facility	1,303	1,303	1,303	1,303	1,303	n/a
Other	2,875	2,875	2,875	2,875	2,875	n/a
Credit card service charges	(14,691)	(17,014)	(19,705)	(22,821)	(26,430)	15.8%
Interest Charges	936	672	483	347	249	-28.2%
Adjustments to reconcile with audited financials	361	361	361	361	361	0.0%
Sub-total general aviation, airline, and other operating revenues	$241,118	$321,886	$332,536	$343,560	$354,897	10.1%
Total Operating Revenues	$1,345,814	$1,451,990	$1,488,633	$1,526,247	$1,564,786	3.8%
Restricted operating revenues						
Passenger facility charge revenue	$0	$49,327	$49,626	$41,046	$0	n/a
FAA - contract tower grant	133,632	133,632	133,632	133,366	133,632	0.0%
Total restricted operating revenues	$133,632	$182,959	$183,258	$174,412	$133,632	0.0%
Operating Revenue (+ Restricted Operating Revenue)	$1,479,446	$1,585,622	$1,622,265	$1,659,613	$1,698,418	3.5%
Operating Expenses						
Total operating expenses	$1,738,995	$1,816,114	$1,896,653	$1,980,763	$2,068,604	4.4%
Operating income	($259,549)	($230,492)	($274,388)	($321,150)	($370,186)	9.3%
Non-operating revenues (Expenses)						
Principal and interest on 2002 financing	$0	$228,192	$228,192	$228,192	$228,192	n/a
Intergovernmental revenue	0	0	0	0	0	n/a
Insurance recoveries	0	0	0	0	0	n/a
Interest revenue	61	61	61	61	61	0.0%
Other revenue	688	688	688	688	688	0.0%
Interest expense	0	0	0	0	0	n/a
Net gain (loss) on disposition						n/a
of Fixed Assets	0	0	0	0	0	n/a
Total non-operating revenues (expenses)	$749	$227,443	$227,443	$227,443	$227,443	n/a
Net income before UGACC transfers	($258,800)	$0	$0	$0	$0	0.0%
		$0	$0	$0	$0	
UGACC general fund transfer requirement	$258,800	$0	$0	$0	$0	n/a

NOTE: Rounding has occurred
SOURCE: Prepared by Newton & Associates, Inc.

New Revenues - T-Hangars

There is one project element of the Stage I improvements which is expected to be self liquidating, thus generating revenues sufficient to cover associated debt outstanding as well as operating and maintenance expenses: 36-unit T-hangars. The following summarizes the assumptions used to estimate the revenues expected to be recognized as a result of undertaking this self-liquidating project.

As previously discussed, the UGACC owns and leases two executive hangars; four medium hangars; and 48 T-hangars at the Airport. Section 3 - Demand Capacity Analysis and Facility Requirements describes the supply and demand for general aviation aircraft parking facilities at the Airport. The demand for hangar space is expected to be 74 units in 2002. Evidence for support of these estimates is the fact that the Airport currently enjoys 100 percent occupancy of its existing hangars and maintains a waiting list, which currently consists of 55 people desiring hangar space. Existing hangar demand (2002) as depicted on Table 3-6 exceeds the Airport's existing number of covered aircraft parking spaces (63) by 11. Demand for hangar spaces is expected to exceed the existing supply by 32 spaces by 2007. As a result this master plan recommends the construction of 36 T-hangar units at a cost of $600,000.

The calculation of a rental and resulting revenues sufficient to recover the cost of constructing, operating and maintaining the T-hangar facilities is necessary so that this project may be considered self-liquidating. This calculation requires the allocation of estimated average annual debt service related to the T-hangar projects and an estimation of the cost to operate and maintain the new T-hangar facilities. As depicted on Table 6-6, the annual debt service allocation to the T-hangar element of the Stage I program is $68,236 and the annual debt service allocation of the 20-Unit T-hangar taxilanes (Funding Scenario 2 only) is $1,251. Collectively, the annual debt service associated with the T-hangar projects is $69,487. T-hangar and T-hangar taxilane operating and maintenance (O&M) expenses have been estimated at $10,000[17] per year, resulting in a total rental requirement of 79,487 per T-hangar unit.

For the purpose of conservatively estimating the revenue stream resulting from the implementation of this project element, it has been assumed that only 29 of the 36 T-hangars will be leased (occupancy rate of approximately 80 percent) in the first full year after construction of the T-hangars (assumed to be fiscal year 2004). Given the assumptions relied upon herein, the UGACC will need to charge its hangar tenants a rental no less than $184 per month or $2,208 per year. Collectively, these 29 T-hangar rentals will generate approximately $64,032 at a rate of $184 per month each, which is nearly sufficient to recover the allocable portion of the annual debt service allocation ($68,236).

It is reasonable to expect the UGACC will lease the new T-hangars at rates that include a premium to the existing rental rates, which will consider the age of the existing T-hangars.

For the purpose of this report, it is assumed that the UGACC will lease its 36 new T-hangars at a rate of $210 per month or $2,520 per year. Given the assumptions utilized above, 29 T-hangars will generate approximately $73,080 in revenue during the first year following construction.

Operating Expenses

For the purpose of this pro forma cash flow, the Airport's total operating expenses including depreciation are assumed to increase at the rate experienced over the Study Period (4.42 percent) through Stage I of the Airport's CIP (2002 - 2006).

Non-Operating Revenues and Non-Operating Expenses

The first debt service payment estimated in connection with the financing required to fund a portion of the local share of the funding plan is assumed to occur in fiscal year 2003. The

[17] The UGACC will incur additional O&M expenses resulting from the construction of the new T-hangars. A detailed analysis of required O&M expenses for this project has not been prepared. For the purpose of this Financial Overview, O&M expenses for the new T-hangars were estimated to be $10,000 per year. Actual O&M associated with this project may be materially higher or lower than this estimate.

average annual debt service as estimated in Section 6.2.5 ($228,192) and its impact on net income before UGACC transfers is presented on Table 6-7. For the purpose of this pro forma, all other non-operating revenues and expenses are assumed to be constant with those recognized in fiscal year 2001.

Net Income (Before UGACC Transfers)

As a result of the assumptions described in this Section 6.2 and the financing requirement described in Section 6.2.5, the net income before UGACC transfers is estimated to range from $258,800 (fiscal year 2002, the first year before full debt service) to $597,629 in 2006. The deficits recognized in this pro forma cash flow will be required to be covered through transfers from the UGACC General Fund or some alternative funding source.

6.2.8 Summary and Findings

The historical financial data utilized in this Financial Overview was provided by the Airport staff and the UGACC Accounting Department.

In order to accomplish the short-term CIP, it will be necessary for the Airport to maintain its status as a primary commercial service airport in order to remain eligible for Federal entitlement grant participation, the minimum of which is currently $1,000,000 per year. Additionally, it will be necessary for the Airport to maximize every opportunity to obtain Federal discretionary grants (and to the extent available State grants) and apply for and obtain the authority to impose and use a Passenger Facility Charge at the level of $4.50 per revenue passenger who boards an aircraft at the Airport.

To accomplish the desired improvements in a timely manner, it would be ideal for the UGACC to identify which Stage I capital improvement projects would be most likely to be approved for inclusion in the next SPLOST referendum. Irrespective of the SPLOST, the UGACC will undertake financing to pay for the 36 unit T-hangar project element of the Stage I improvements. To complete the remaining improvements, the UGACC will need to undertake financing, the amount of which is dependent upon contributions from the UGACC

General Fund and Capital Account; as well as any allocable proceeds derived from a successful SPLOST referendum, provided certain Stage I improvements are included in such referendum.

However, given the assumptions utilized in this Financial Overview, a total financing of approximately $2.4 million should be sufficient to fund the remaining local share (local share net of PFCs and UGACC contributions) in Stage I of the Airport's CIP. As discussed in Section 6.2.7, Pro Forma Cash Flow, the debt service associated with said financing will likely be required to be paid by contributions from the UGACC General Fund.

Section 5
Environmental Overview

An environmental inventory, general in nature and focused on environmental issues that were deemed pertinent to the Athens/Ben Epps Airport Master Plan Update, was performed. The issues evaluated include:

- Noise;
- Historic and Archaeological Resources;
- Threatened and Endangered Species;
- Wetlands;
- Floodplains; and,
- Hazardous Materials.

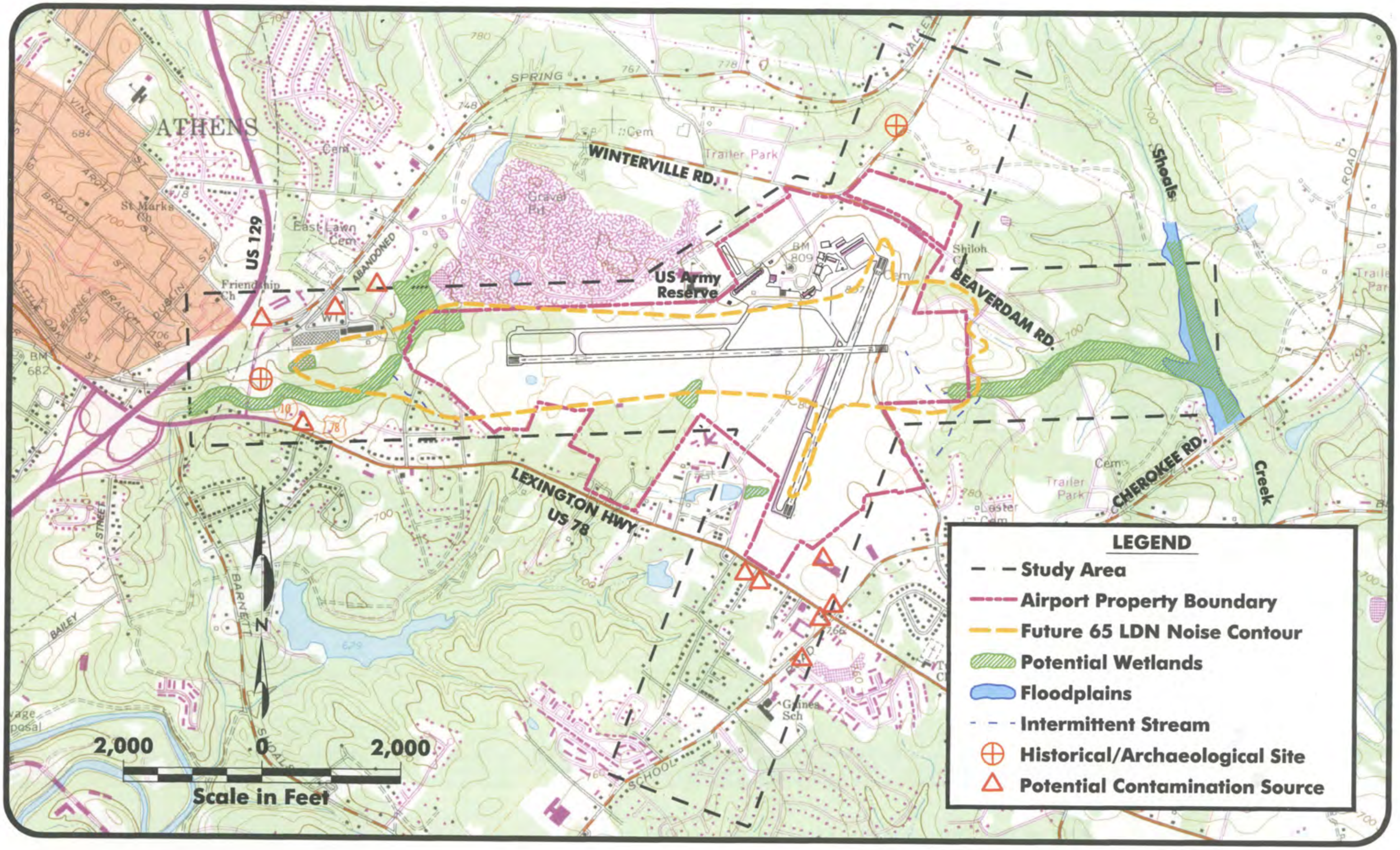
This overview was based on a review of available resource materials, including, but not limited to the United States Geological Survey (USGS) Athens East, GA, 7.5 minute series topographic map (dated 1964, photorevised 1986); a color aerial photograph (dated August 1, 1997); Georgia Department of Natural Resources (GADNR), Historic Protection Division, National Historic Register listings in Clarke County (database updated May 1, 2002); the University of Georgia, Georgia Site File Database of known historic and archaeological sites (review performed August 7, 1998); GADNR Natural Heritage Programs list of known rare species occurrences in Clarke County (dated October 16, 2001); United States Fish and Wildlife Service (USFWS) list of known protected species for Clarke County (updated June 2002); USFWS Athens East, GA, National Wetland Inventory (NWI) map; the Natural Resource Conservation Service (NRCS) Soil Survey for Clarke and Oconee Counties (issued November 1968); the GADNR Environmental Protection Division (EPD) Hazardous Site Inventory (HSI, dated July 1, 2001); and the Federal Emergency Management Agency's (FEMA), Flood Insurance Rate Maps (FIRM, Panel number 130040-0030-C, dated May 4, 1992). It should be noted that limited field reconnaissance of the study area was performed in 1998.

Environmental concerns identified in the study area were digitized onto a base map and are depicted on Figure 5-1.

5.1 NOISE

Aviation noise has been a constant concern of communities and airports since the introduction of the jet engine to commercial aviation in the early 1970's. The Airport Noise and Capacity Act (Noise Act) passed by Congress in 1990, created noise standards for aviation. Associated with the standards was the gradual phase out of older and noisier, Stage 2 aircraft and transition to quieter, Stage 3 aircraft (to be completed by January 2000). This phase out and Stage 2/3 descriptors applies only to civil aircraft weighing in excess of 75,000 pounds (i.e., 737-400, 757-200). Although this mandate does not include the majority of corporate business jet operations taking place at AHN, business jet manufacturers have made noted strides in reducing aircraft noise over the last decade, to the point of falling well below the Stage 3 required noise levels. As older business jet technology is replaced by more efficient newer models, noise levels will significantly decrease.

FAA's Integrated Noise Model (INM), version 5.1, was utilized to assist in the review of potential noise impacts for the various development scenarios. The analysis used the Day-Night Average Sound Level (L_{dn} or DNL) noise metric as a descriptor of cumulative aircraft noise exposure. L_{dn} is a 24-hour logarithmic average of noise levels in A-weighted decibels (dB), as recommended by the FAA for evaluating aircraft noise impacts. The L_{dn} noise metric was developed by the Environmental Protection Agency and is used by the FAA, the Department of Housing and Urban Development, and other federal agencies concerned with community noise levels.



ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

Environmental Concerns

Figure 5-1

Noise contours generated by the FAA INM do not depict a strict demarcation of where the noise levels end or begin. Their purpose is to describe the generally expected noise exposure. The noise contours represent average annual conditions rather than single event occurrences. Noise exposure on any one day may be greater or less than the average day. The noise model is useful for comparison of noise impacts and can provide a reasonable basis for performing airport noise compatibility planning.

Based on flight track and runway end utilization data gathered as a part of earlier phases of the Master Plan Update, future 2017 noise contours were generated for four runway extension alternatives, including the no-build option. These original noise contours are depicted on Exhibits 9 and 10 in Appendix III, "Runway 9/27 Extension Feasibility." Figure 5-1 depicts the 65 L_{dn} contour for the selected runway extension to both the west and east.

Although 500-foot extensions are proposed for both runway ends, the 65 L_{dn} contour extends further to the west since a majority of operations are conducted using a westerly flow and most noise is generated on departure. In that some portions of this 65 L_{dn} contour fall beyond the existing Airport property line, the identification of land uses and population within these areas may become more critical. For ease of reference, Table 5-1 presents FAA Guidelines and Land Use Compatibility with L_{dn} Sound Levels (65, 70, 75, etc.). Most land uses, with the exception of residences, schools, and outdoor amphitheaters, are compatible with an airport noise range of 65 L_{dn} to 70 L_{dn} or less. This determination is based on the assumption that in most instances a degree of noise attenuation has been incorporated into the design of structures. The 65 L_{dn} contour is generally accepted as the threshold level at which residential land use is considered compatible. Approximately 6 single-family and 2 multi-family residences and 14 mobile homes are located within the 65 L_{dn} contour depicted on Figure 5-1. It is important to note that the noise exposure contour depicted on Figure 5-1 does not consider operational noise abatement measures that could reduce potential noise impacts.

Table 5-1
LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS
Athens/Ben Epps Airport

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

Table 5-1 (Cont.)
LAND USE COMPATIBILITY WITH
YEARLY DAY-NIGHT AVERAGE SOUND LEVELS
Athens/Ben Epps Airport

NOTES FOR TABLE 5.1

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

1. Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal construction can be expected to provide an NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
2. Measures to achieve an NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
3. Measures to achieve an NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
4. Measures to achieve an NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
5. Land uses compatible, provided special sound reinforcement systems are installed.
6. Residential buildings require an NLR of 25.
7. Residential buildings require an NLR of 30.
8. Residential buildings not permitted.

SOURCE: Federal Aviation Administration.

5.2 HISTORIC AND ARCHAEOLOGICAL RESOURCES

Section 106 of the National Historic Preservation Act, *Protection of Historic and Cultural Resources*, requires agencies to consider the effects of their actions on sites listed on the NRHP and sites that are eligible for listing. Historic and archaeological sites, including structures such as houses, churches, monuments, and cemeteries, as well as prehistoric sites, should be avoided wherever possible when constructing or performing improvements at airports. In addition, sites not formally eligible for listing and sites discovered during planning or construction of a project should also be considered.

Records of known historic structures and sites listed on the NRHP that are located in Clarke County are maintained by the Historic Preservation Division of GADNR. This list was reviewed to determine if any known listed sites are located in the study area. Based on a review of GADNR records, there are no known NRHP sites listed, or eligible for listing, within the study area.

The University of Georgia maintains the Georgia Site File Database Records of known historic and archaeological sites. Based on a review of this database, there are two known sites located within the study area (see Figure 5-1). One site, which is located in the western portion of the study area, is comprised of both historic and archaeological materials, and is recommended for listing on the NRHP. The status of the other, an archaeological site located in the northern portion of the study area, has not been assessed. Additionally, a cemetery is indicated adjacent and southeast of the northern end of Runway 2/20.

Although no historical or archaeological sites listed on the NRHP are known within the study area, a field survey for sites potentially eligible for listing on the NRHP in the study area may need to be performed by qualified personnel prior to implementation of the proposed improvement projects. Furthermore, the status of the two known historic/archaeological sites and cemetery would need to be assessed.

5.3 THREATENED AND ENDANGERED SPECIES

The *Endangered Species Act of 1973*, as amended, gives the Secretary of the Interior, acting through the USFWS, and the Secretary of Commerce, acting through the National Marine

Fisheries Service, the power to protect and conserve all forms of wildlife and plants deemed to be in serious jeopardy.[10]

By federal definition, an endangered species is any species of fish, wildlife, or plant that is in danger of extinction throughout all or a significant portion of its range.[11] A threatened species is any species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.[12] These endangered or threatened determinations are based on: loss or modification of habitat; over utilization; disease or predation; lack of regulations or enforcement; or other natural or manmade factors affecting the continued existence of a species. Species identified as in need of protection are placed on the federal list. Any species that is officially proposed for inclusion on the list as threatened or endangered is given the same protection as listed species.

Federally protected species known to occur in Clarke County, their status, and notes on their habitat can be found in Table 5-2. Based on a review of GADNR Heritage Program records, there are no known occurrences of these species within the study area. However, a field survey of potentially suitable habitat may need to be performed during subsequent phases of the proposed improvements.

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[10] United States Fish and Wildlife Service, Southeast Region (1992). *Endangered and Threatened Species of the Southeastern United States (The Red Book)*, 2 Volumes. Atlanta, GA. Volume 1, Preface.

[11] *Ibid*, p. 3.

[12] *Ibid*, p. 4.

Table 5-2
THREATENED AND ENDANGERED SPECIES KNOWN TO OCCUR IN CLARKE COUNTY, GEORGIA [1]
Athens/Ben Epps Airport

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	NOTES ON HABITAT AND OCCURRENCES
Haliaeetus leucocephalus	Bald eagle	T	Prefers nesting along major river drainages of the Lower Coastal Plain, usually adjacent to large areas of impounded marshes.
Myotis grisescens	Gray bat	E	Roosts in caves or cave-like habitat.
Picoides borealis	Red-cockaded woodpecker	E	Nests only in mature (trees with a minimum age of 60 years) pine forests and forages in pine stems at least 30 years old (9.8 inches or larger in diameter), usually long-leaf or loblolly, which are fairly open and free of hardwood understory.

[1] USFWS listing last updated on April 1, 2002.
NOTES: E = Endangered
T = Threatened

5.4 WETLANDS

Executive Order 11990, *Protection of Wetlands*, requires federally supported projects to preserve wetlands and to avoid and minimize wetland impacts to the maximum extent practicable. NWI mapping, the county soil survey, and a color aerial photograph were used to identify potential wetlands and jurisdictional waters of the United States within the study area.

Approximately 45 to 50 acres of potential bottomland hardwood wetlands were mapped in the study area along stream channels, as well as 1 to 2 acres of emergent wetlands, and 3 to 4 acres of open water (see Figure 5-1). Although this level of detail is suitable for this Master Plan Update and for avoidance and minimization of impacts and during initial improvement project phases, wetlands within the construction limits of a proposed improvement would need to be delineated and requisite federal and state permits and certifications obtained prior to beginning construction. Unavoidable impacts would need to be mitigated either by restoration, preservation, enhancement, or creation of wetlands.

5.5 FLOODPLAINS

According to Executive Order 11988, *Federal Floodplain Management*, agencies must reduce the risk of flood loss, minimize the impacts of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains and floodways. The 100-year floodplain delineates the area that would be inundated by a flood of such intensity that its probability of occurrence is once every 100 years. A floodway is a channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

Based on review of FEMA maps and as depicted on Figure 5-1, relatively narrow floodplains (Zone A) and a floodway (Zone AE) associated with Shoal Creek are located approximately 4,500 feet east of the eastern end of Runway 9/27. This designation indicates that this portion of the study area is within the boundaries of the 100-year flood and that base flood elevations and flood hazard factors have been determined. Federal regulations allow development encroachment into the floodplain, but not the floodway (which must be unobstructed to convey the 100-year flood), unless it has been demonstrated through hydrologic and hydraulic analysis that the encroachment will not result in an increase in flood levels. This encroachment must not increase the base flood elevation by more than one foot.

During construction of the proposed improvement projects, local regulations must be complied with and precautions taken to minimize potential impact to the existing floodplain and floodway areas.

5.6 HAZARDOUS MATERIALS

The EPD maintains a Hazardous Site Inventory (HSI) of sites in Georgia that are known or suspected of having had a release of a regulated substance. The HSI was reviewed to determine if any known hazardous material sites are located in the study area. Additionally, the locations of potential sources of contamination that were observed during the site reconnaissance were mapped on the base map (see Figure 5-1). Review of the HSI did not reveal any known hazardous material sites within the study area. However, during a 1998 site reconnaissance, several potential sources for contamination were observed. These included gas stations with underground storage tanks (USTs), automotive repair shops, a dry cleaning facility, a fertilizer production plant, and six excavated USTs and four tanker trucks observed stored on property adjacent to the study area. These sites were located in the southern and western portions of the study area. Because these are potential sources for contamination, a Phase I Environmental Site Assessment should be performed for the study area prior to planning construction in the vicinity of these sites.

Additionally, during the preparation for construction of an extension to Runway 27 in 1994, a former landfill was discovered. The runway extension was constructed over the landfill. According to County officials, municipal garbage had been placed in this landfill, which was closed in 1974. Geotechnical borings in the proposed safety area indicate that the landfill is covered with soil and that the trash layer ranges from 3 to 20 feet thick.

Section 4
ALTERNATIVES ANALYSES

The alternatives analyses component of this Master Plan Update considers the facility requirements determined in the previous section, accepted airport standards, and the ultimate goals of the Airport, to produce long-range development alternatives. Once the long-range development program has been determined, short-range improvements can be readily implemented without jeopardizing the ultimate concept. The program will evaluate how to best expand and improve existing Airport facilities in terms of overall efficiency, while also accommodating the logical and efficient development of a future expanded Airport facility. The goal of this alternatives analysis is to optimize on-airport land use, maximize the capacity and economic viability of the existing facilities, and identify the facilities and practical stages of future development.

Based on the facility requirements presented in Section 3, the primary capital improvements that are analyzed in this Section include Runway 9/27 and the commercial terminal facility. As discussed in the Preface, detailed evaluations of these two airport components were completed in 1999 as part of supplemental studies to the Master Plan Update. These analyses have been reviewed and incorporated as appropriate in this Section. The original reports, "Runway 9/27 Extension Feasibility" and "Commercial Terminal Analysis", are included in their entirety as Appendices III and V, respectively.

The other airport components evaluated in Section 3, including general aviation, rotorcraft, air cargo, and ARFF, have not been analyzed in this Section because their specific technical, spatial, or functional requirements result in obvious locations of such.

4.1 RUNWAY 9/27

Relative to evaluation of various runway alternatives, it should be noted that because student pilots utilizing Runway 2/20 do not require a longer crosswind runway and based on community input, it is not considered economically or politically feasible to extend Runway 2/20. Therefore, no extensions of Runway 2/20 is evaluated as part of this Master Plan Update or supplemental analyses.

As discussed in Section 3, enhanced safety at the Airport is the fundamental basis for studying the feasibility of extending Runway 9/27. The initial priority is to enhance the operational capabilities of the airfield through systematic construction of improvements to active pavements and navigational aids. By doing so, payload and destination restrictions may be greatly reduced or eliminated, while also enhancing the level of safety at the Airport. The final purposes for considering the extension of Runway 9/27, focus on enhancing community development potential and meeting the travel needs associated with University and corporate travel.

As noted in a Appendix II, "Runway 9/27 Length Analysis", Fortune 500 companies place a great deal of importance on the aviation assets offered by a community. The function of an expanded airfield must work efficiently and free from restrictions. Ensuring financial feasibility will facilitate the identification of a positive benefit/cost ratio. Undoubtedly, design constraints, earthwork requirements, land acquisition, and construction phasing will need to be identified. It is also imperative that aircraft movements, line-of-sight issues, navigational aids, close-in structures, and off-airport obstructions be identified and evaluated. From an environmental perspective, noise, land use compatibility, water quality, and construction impacts must be assessed and mitigated, if necessary. These items have been evaluated and are addressed in detail in Appendix III.

As discussed in Section 3, it is recommended that a minimum takeoff runway length of approximately 6,500 feet for Runway 9/27 be developed at the Athens-Ben Epps Airport. Optimally, a takeoff runway length of 7,000 feet should be preserved as a part of this recommendation. Furthermore, Runway 9/27 should be widened to 150 feet to serve airplanes within Aircraft Design Group III (with maximum takeoff weights of 150,000 pounds) and IV.

An analysis of the existing airfield resulted in the identification of three potential alternatives that satisfy the runway length requirements evaluated in Appendix II and discussed in Section 3. Recognizing that safety receives the highest priority, these alternatives include:

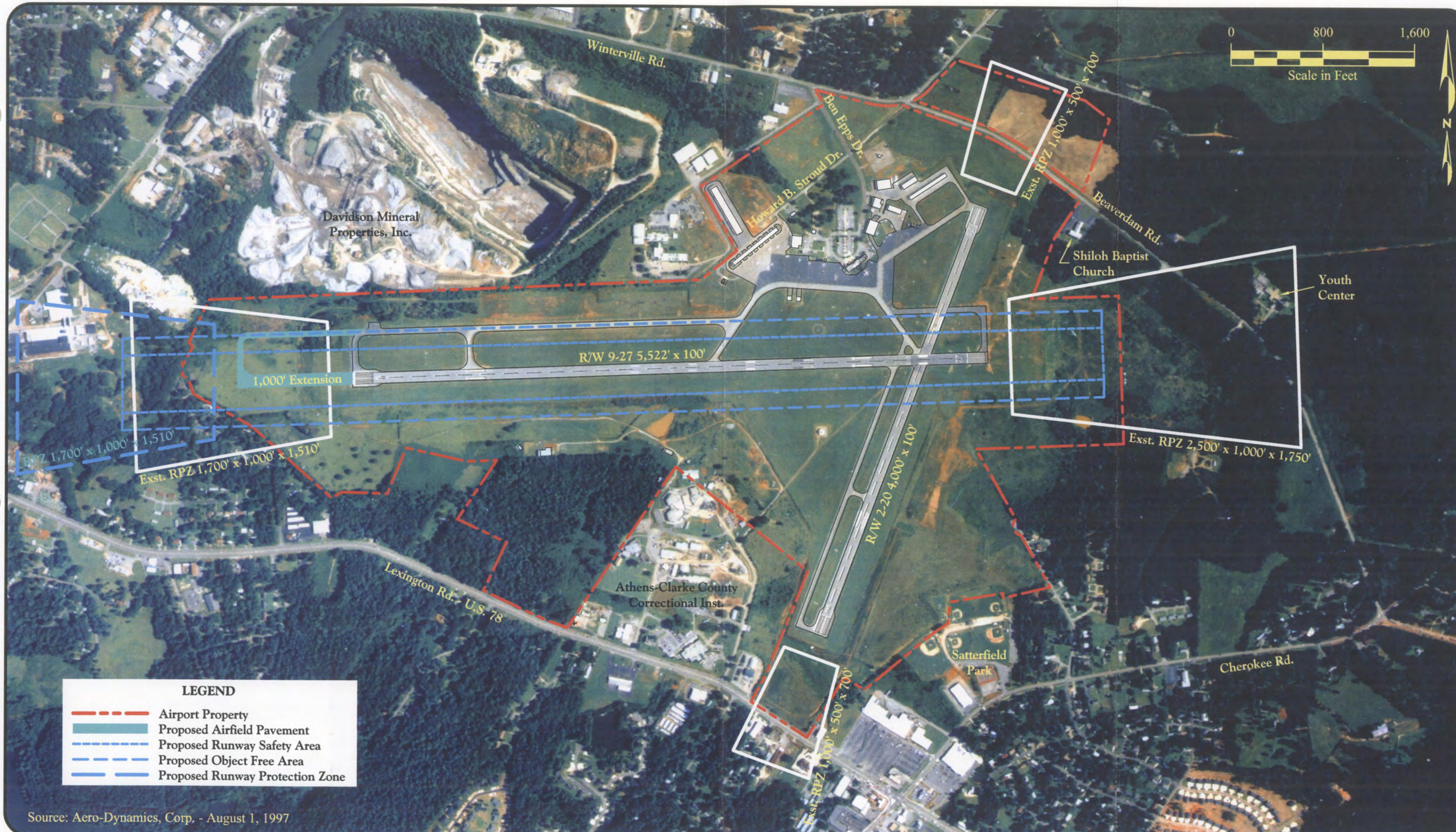
- **Alternative 1** - extend Runway 9/27 and Taxiway A to the west by approximately 1000 feet, providing full-length 1,000-foot RSAs at both ends of the runway (refer to Figure 4-1);

- **Alternative 2** - extend Runway 9/27 and Taxiway A to the west and east by approximately 500 feet in both directions, providing full-length 1,000-foot RSAs at both ends of the runway (refer to Figure 4-2); and

- **Alternative 3** - extend Runway 9/27 and Taxiway A to the east by approximately 1000 feet, providing full-length 1,000-foot RSAs at both ends of the runway (refer to Figure 4-3).

4.1.1 Preferred Runway Alternative

Table 4-1 presents a cursory overview of the advantages and disadvantages found to exist among the various alternatives considered for development. Based on an evaluation of the feasibility factors presented in Table 4-1, the need to expeditiously develop an airfield to sufficiently meet user needs, capital improvement costs, and potential public concerns, Alternative 2 is recommended as the Preferred Alternative. As summarized in Table 4-1,



Source: Aero-Dynamics, Corp. - August 1, 1997

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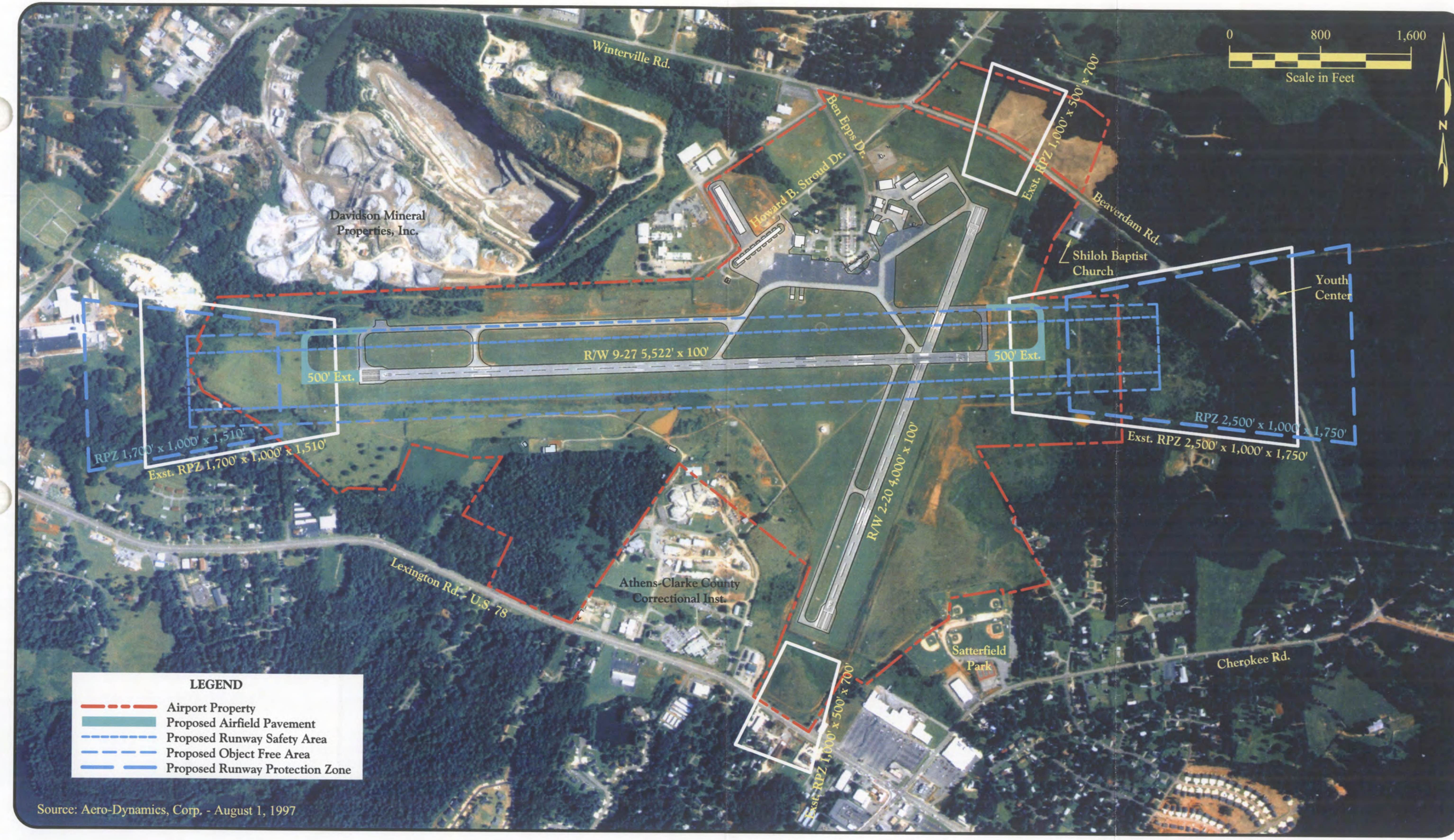
Alternative 1

Figure 4-1



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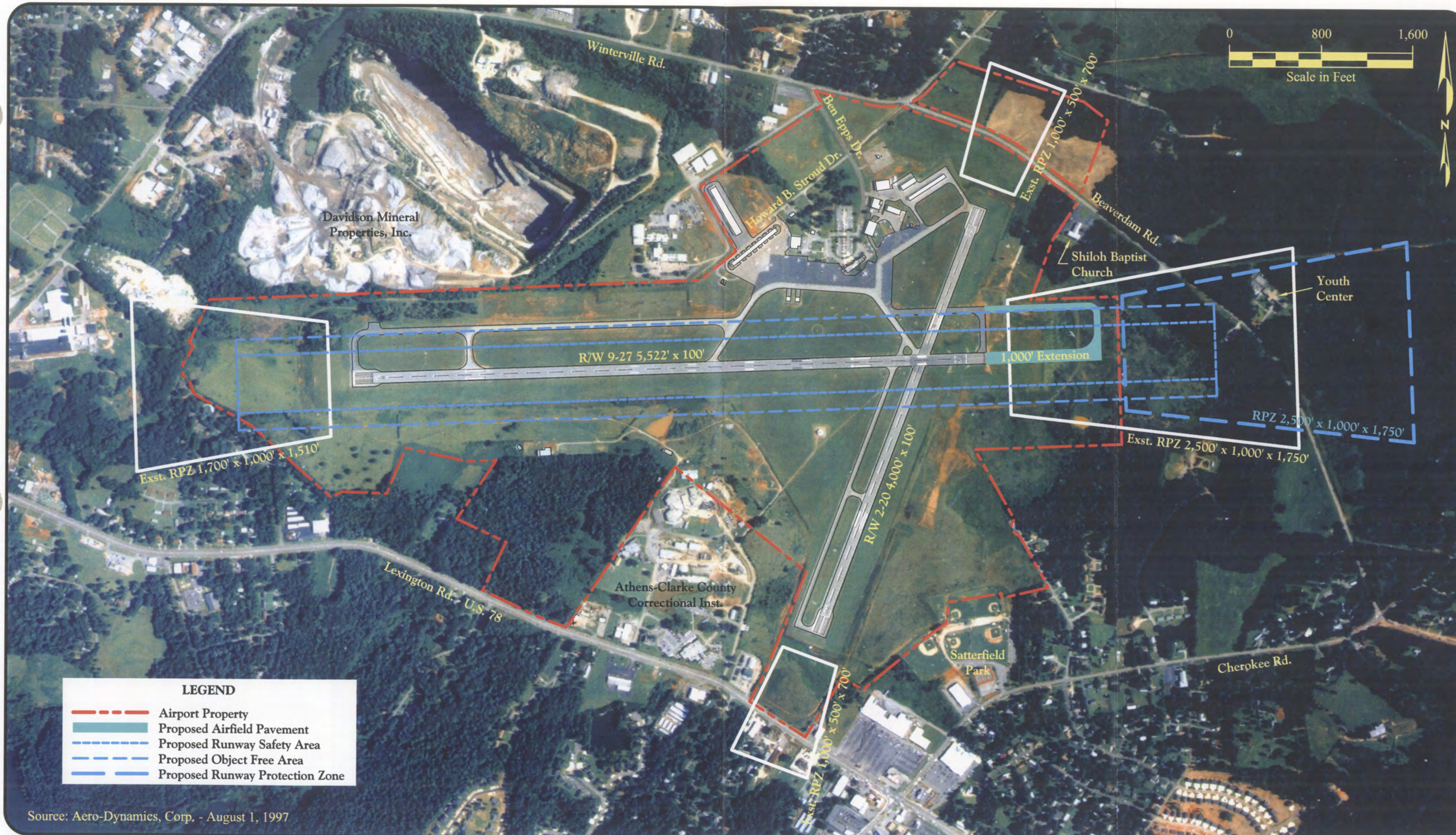
Alternative 2

Figure 4-2



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Alternative 3

Figure 4-3

	EVALUATION FACTOR	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
OPERATIONAL ISSUES	GROUND MOVEMENTS/ TAXI DISTANCES	No change to queue capability Better taxi distance for AC/ Less desireable for GA	Improved queue capability(27) Nominal Impact to taxi distances	Greatest queue capability(27) Improves taxi distances for GA
	LINE-OF-SIGHT	Nominal Impact	Nominal Impact	No Change
	NAVIGATIONAL AIDS	Relocate 9 end systems Glide Slope remains	Relocate all systems Glide Slope moves to south	Relocate 27 end systems Glide Slope moves to south
	RPZ PROTECTION	Purchase of IMC AgriBusiness	Balanced purchases of Farmland & Portions of IMC AgriBusiness	Purchase of Farmland
	OFF-AIRPORT OBSTRUCTIONS	No Impacts	No Impacts	No Impacts
ENVIRONMENTAL ISSUES	AIRCRAFT NOISE	No Impacts to Incompatible Land Uses	No Impacts to Incompatible Land Uses	No Impacts to Incompatible Land Uses
	LAND USE COMPATIBILITY	Increased over-flight concerns for UGA Campus & Downtown	Balanced distribution of overflights	Increased over-flight concerns for Residential Development east of Airport
	WATER QUALITY AND WETLANDS	Impact to western wetlands (4.6 acres) 1000' Culvert necessary (9)	Impact to western wetlands (1.9 acres) 300' Culvert necessary (9)	Least impact to western wetlands (3.4 acres) Impact to eastern wetlands
	CONSTRUCTION IMPACTS	Least impact from materials hauling	Nominal impact from materials hauling	Greatest impact from materials hauling
IMPLEMENTATION	DESIGN CONSTRAINTS	Max Time for MALSR (7000') No Landfill impact	Mean Time for MALSR (7000') 500' impact area of Landfill	Min Time for MALSR (7000') 1000' impact area of Landfill
	BORROW AREAS/ EARTHWORK	1.9 million CY	2.0 million CY (2.9 million CY)*	2.8 million CY (4.9 million CY)*
	LAND ACQUISITION	14.7 acres (res./comm.) 63.5 acres (agr./open)	14.7 acres (res./comm.) 87.7 acres (agr./open)	10.3 acres (res./comm.) 75.6 acres (agr./open)
	PRELIMINARY COST ESTIMATES	$20.2 million	$22.3 million ($27.9 million)*	$25.1 million ($38.3 million)*
	CONSTRUCTION PHASING	Marginal impact to A/C operations during construction MALSR delayed (7000')	Impacts to A/C operations during construction MALSR ready (7000')	Marginal impact to A/C operations during construction MALSR ready (7000')

* Totals reflect future impacts associated with a glide slope relocation to the south side of Runway 9-27

ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

Aifield Alternative Comparison Summary

Table 4-1

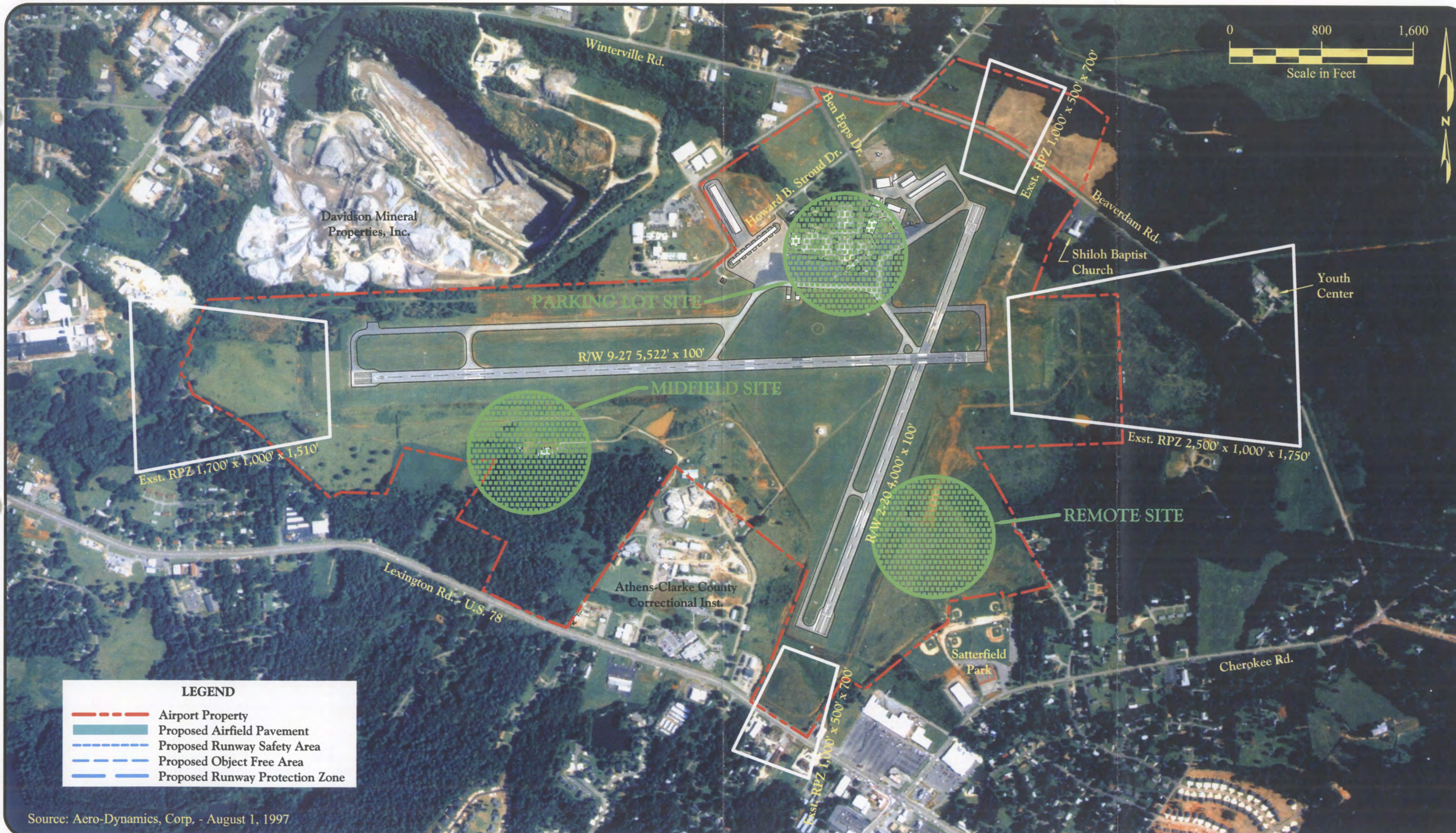
Alternative 2 would result in balanced purchases of farmland and portions of IMC AgriBusiness, no impacts to incompatible land uses, balanced distribution of overflights, the least wetland impacts, and mid-range construction costs relative to the other two alternatives. Thus, it is recommended that Runway 9/27 be extended 500 feet to the east and west to provide 6,500 feet. The final 500 feet, for a total of 7,000 feet, is recommended to occur at the Runway 9 end.

Alternative 2 was approved by the Airport Authority on November 21, 2000, and approved by the Mayor and Commission on April 3, 2001.

4.2 COMMERCIAL TERMINAL FACILITY

As discussed in the Preface, the relocation of the existing commercial passenger terminal to alternative sites adjacent to the Airport's runways was evaluated as a supplement to this Master Plan Update. This terminal alternative analysis examined two general sites previously identified in the 1995 Master Plan Update together with a favored alternative identified during the supplemental study. As depicted in Figure 4-4, these alternate sites include: 1) the "Remote Site", east of Runway 2/20; 2) the "Midfield Site", south and slightly west of the midpoint for Runway 9/27; and, 3) the "Parking Lot Site", positioned in the main parking lot northwest and adjacent to the existing commercial terminal.

During the initial phases of the supplemental study of the commercial passenger terminal, preferred concepts that maximized the utilization of each site, considering operational, design and development cost criteria and site conditions, were identified (refer to Appendices C and D of Appendix V*)*. The preferred concept for each site was then evaluated, as was additional qualitative criteria. Additional qualitative criteria address the long-term impacts of each site beyond the 20-year planning period. These preferred concepts for each of the three alternative sites are discussed in the following subsections.



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Airport Site Map

Figure 4-4

4.2.1 Remote Site

The preferred concept works within the Airport property limits; however, the site access is via County property at the recreational complex (Satterfield Park). The apron location is illustrated in Figure 4-5. Apron access is provided by an extension of Taxiway B2. Three alternate ground access routes (A, B, and C) were developed for this concept.

Significant strengths of the Remote Site include:

- Consolidation of parking requirements reduces the area of the site development (landside) by approximately one-third.
- Loop road perimeter is reduced from 2,350 linear feet to 1,850 linear feet. The change in access points increases the length of the entry/exit road from 650 feet to 1,650 feet. This may be more acceptable and cost effective than use of the Airport Road extension.

Significant weaknesses of the Remote Site include:

- Additional costs to replace parking at the recreational complex may be unacceptable.
- Significant landside development occurs in unfavorable topography.
- Impact on Satterfield Park and adjacent residential areas.

4.2.2 Midfield Site

The preferred concept consolidates all of the future passenger terminal development and simplifies property acquisition. The commercial frontage (except for a 150-foot right-of-way) could be left as an out-parcel, or the property could be retained for other Airport/County uses. The site access would be provided by an access road perpendicular

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ATHENS-BEN EPPS AIRPORT

Recommended "Remote" Site Concept

Figure 4-5

to the existing Shady Brook Drive entrance point. The apron location and access are depicted in Figure 4-6.

Significant strengths of the Midfield Site include:

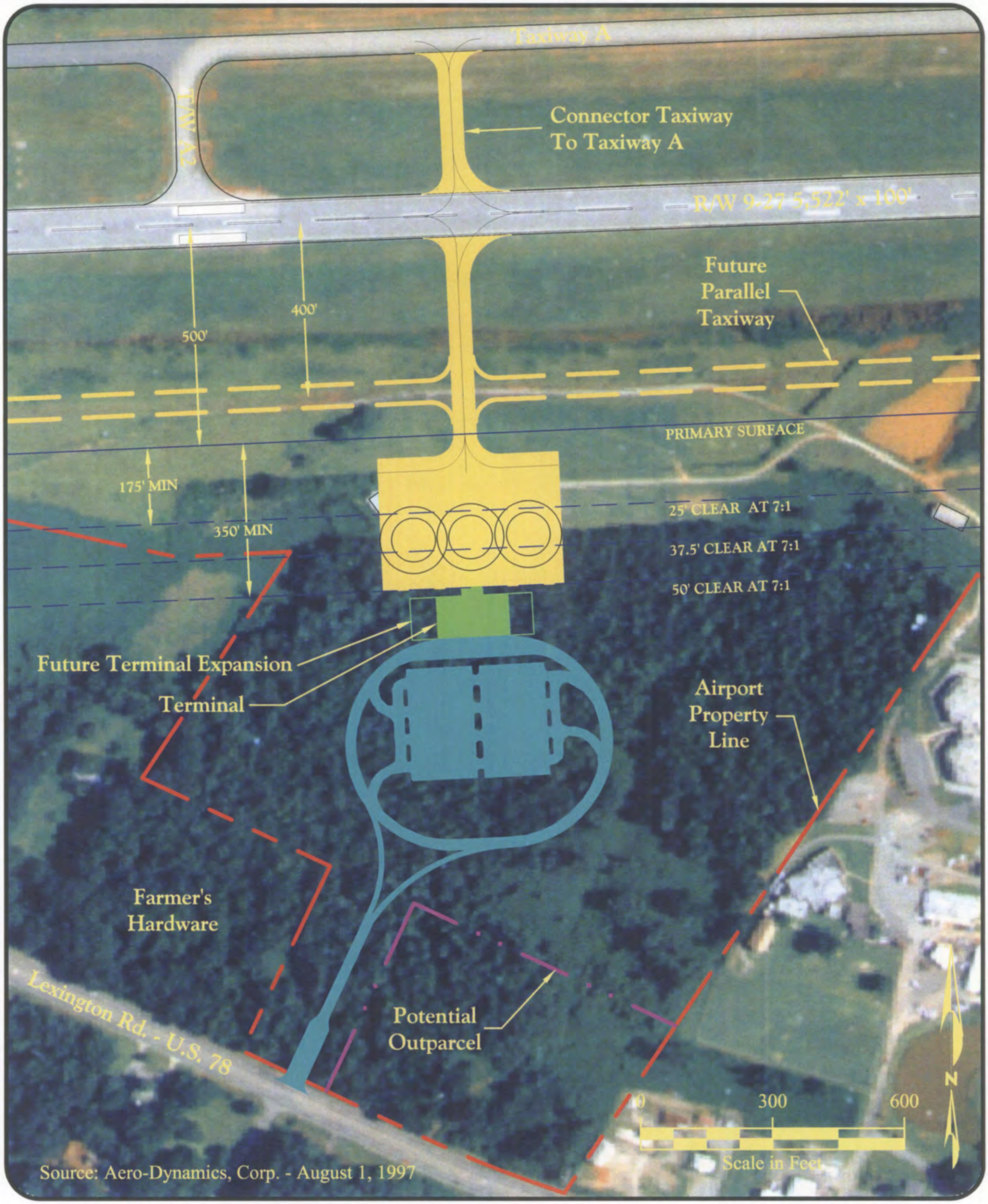
- Impact to adjacent residences is reduced.
- Negotiations for property acquisition will be simplified as only one property is affected. Adjacency to existing County developments/functions could have future mutual benefits.
- Consolidation of parking requirements reduces the area of landside site development by approximately one-third.
- Loop road perimeter is reduced from 2,350 linear feet to 1,750 linear feet. The change in access points increases the length of the entry/exit road from 500 feet to approximately 850 feet.
- Increases Airport's revenue producing property.
- Increases the expansion flexibility for general aviation north of Runway 9/27.

Significant weaknesses of the Midfield Site include:

- Significant landside development occurs in unfavorable topography.
- Additional taxiway development to access existing Taxiway A may be necessary.
- Logistics of aircraft servicing (i.e., fueling) may be complicated in the near-term.

4.2.3 Parking Lot Site

This development site was identified as a result of the commercial terminal building supplemental analyses. The preferred concept includes development of a new terminal building on the existing site in the current parking lot area, as depicted in Figure 4-7.



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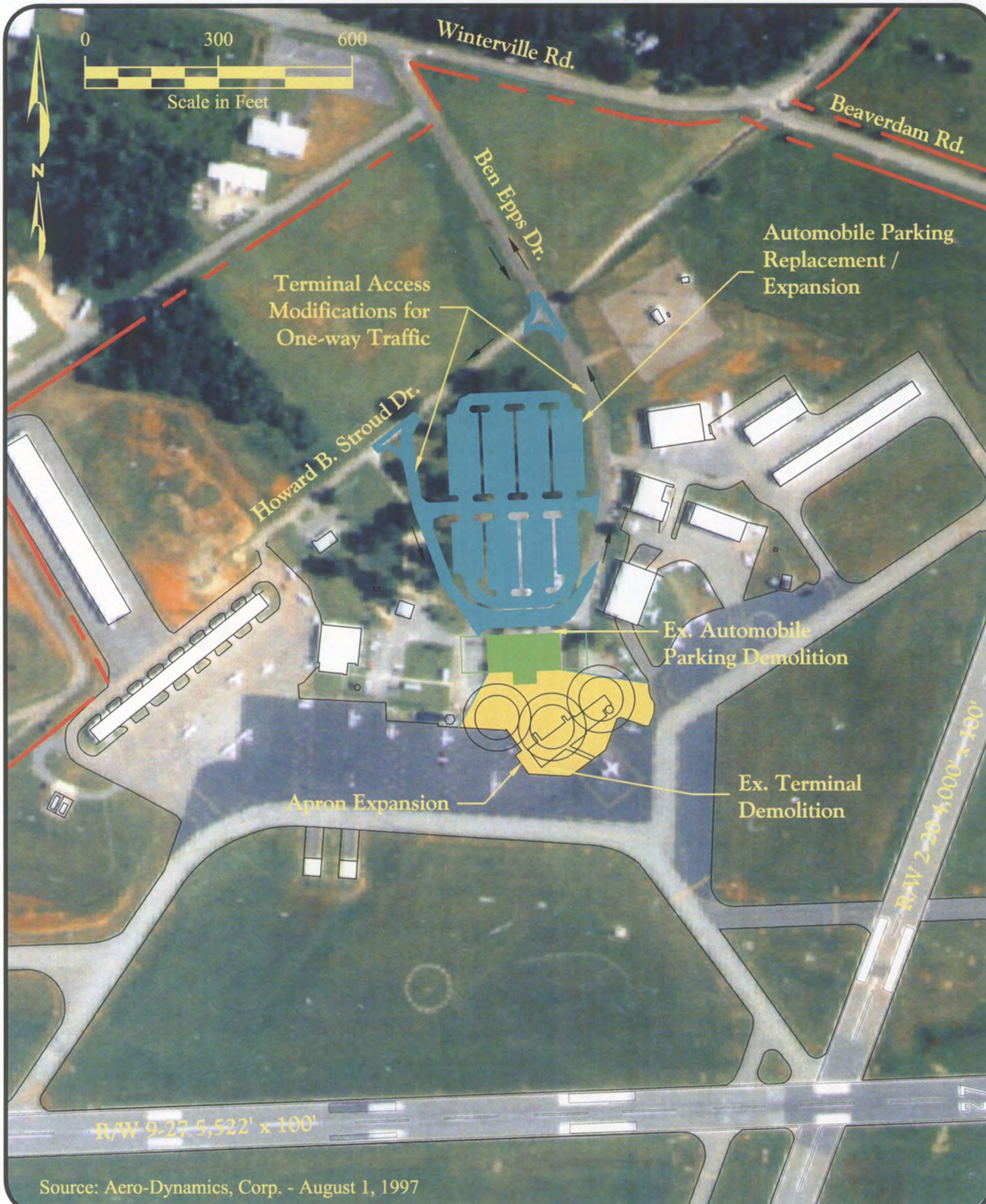
Recommended "Midfield" Site Concept

Figure 4-6



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ATHENS-BEN EPPS AIRPORT

Recommended "Parking Lot" Site Concept

Figure 4-7

Significant strengths of the Parking Lot Site include:

- Little or no impact on adjacent residential, recreational, and commercial land uses.
- Landside development costs related to earthwork are greatly reduced.
- No additional property acquisition is required.
- No additional taxiway development is necessary.
- Loop road length requires only an additional 850 feet.

Significant weaknesses of the Parking Lot Site include:

- Loss of leaseable space when the existing terminal is demolished.
- Constrains long-term expansion of general aviation corporate facilities and the commercial passenger terminal.
- Fails to provide the Airport with an easily identified and dedicated entrance to the commercial terminal.

4.2.4 Preferred Commercial Terminal Alternative

Based on long-term advantages, the "Midfield Site" is the recommended site for future development of a commercial terminal at Athens-Ben Epps Airport. Operationally, very few advantages exist between the "Midfield Site" and the "Parking Lot Site." A midfield site will afford the County the intangible merits of convenient landside access, a desirable new front door appeal for arriving passengers, as well as long-range expandability for commercial aviation and general aviation to the south and north of Runway 9/27, respectively.

Several construction initiatives (i.e., fuel farm, partial parallel taxiway, etc.) would further strengthen the operational aspects of the "Midfield Site," but with added cost. Two long-term advantages of the "Midfield Site," which are non-existent at the "Parking Lot Site," would be the availability of leaseable commercial properties along Lexington Road and the potential for revenue producing vehicle parking at the commercial terminal. Airport revenues realized from the automobile parking facilities may range from $75,000 to 200,000 annually, depending on lot utilization and fee structure. This aspect alone may outweigh the difference in construction cost between the two sites.

The "Midfield Site" was approved by the Airport Authority on December 15, 1999, and approved by the Mayor and Commission as a part of Special Purpose Local Option Sales Tax (SPLOST) 2000 on May 16, 2000.

Section 3
DEMAND CAPACITY ANALYSIS and FACILITY REQUIREMENTS

In previous sections of this Master Plan Update report, an inventory database was assembled to provide current information about Athens-Ben Epps Airport and the surrounding area. Next, aviation activity forecasts were established considering future 5-, 10-, and 20-year planning periods. This section of the Master Plan Update documents the capacity of various existing airport facilities, and compares capacity with anticipated future demand. Deficiencies between existing capacity and projected demand result in future facility requirements.

As discussed in the Preface, this Master Plan Update was initiated in October of 1997. However, work was delayed during the early stages of the project so that two supplemental analyses related to primary runway length options and relocation options for the commercial terminal, could be conducted. The reports summarizing these two supplemental analyses, "Runway 9/27 Length Analysis" and "Commercial Terminal Analysis" are provided as Appendices II and IV, respectively. A third supplemental study was commenced in September of 2000 to evaluate the future requirements of the general aviation facility in greater detail. The "General Aviation Terminal Building Conceptual Program" report, dated October, 2001, presents the results of this analysis and is included as Appendix VI.

The following demand/capacity analysis and evaluation of facility requirements was developed using FAA Advisory Circulars, accepted methodologies, and typical sizing factors for various facilities. Where appropriate, the findings of the above-discussed supplemental studies are incorporated or referenced. The results of this Section will identify future facilities to be evaluated in Section 4, Alternatives Analysis.

3.1 AIRFIELD

The airfield portion of the Airport includes the runways, taxiways, NAVAIDS, and airfield lighting facilities required for aircraft operations.

3.1.1 Critical Aircraft

The Athens-Ben Epps Airport has evolved into a diverse infrastructure component within Clarke County and serves a vital role in aviation for Northeast Georgia as well as the State. This evolution has resulted in an increase in the general size and overall sophistication level of the aircraft operating daily from the Airport. In an effort to better identify the Airport's various existing user needs, and more importantly, to identify those needs anticipated in the future, a set of user profiles (groupings) were selected and are described below:

- General Aviation or "Community Basic" (single-engine, multi-engine, piston, turbo-prop, and jet aircraft);
- Corporate / Regional Airline or "Community Preferred" (small 10-50 passenger turbine-powered aircraft); and,
- Major Airline / Special Charter or "Community Ultimate" (narrow-body 100-200 passenger turbine-powered aircraft).

Each of these user profiles is highly representative of typical groupings found at larger/busier airports with commercial service.

Various critical aircraft types that may operate into and out of AHN, given adequate airside facilities, are shown in Figure 3-1. These aircraft were identified from discussions with Airport staff and users, and portray those aircraft within each of the previously discussed user profiles that may influence the demand placed on runway length.

General Aviation


Beechcraft King Air 200


Cessna 420A

Corporate


Gulfstream IV


Gates Learjet 35

Regional Airline


Canadair RJ-200


Embraer EMB-145

Major Airline / Special Charter


Boeing 757-200


Boeing 737-400

Typical Critical Aircraft

Figure 3-1

As illustrated in Figure 3-1, The General Aviation category is represented by two commonly known multi-engine piston aircraft produced by Beechcraft and Cessna. These aircraft are routinely seen at Athens-Ben Epps Airport today.

The Corporate/Regional Airline category makes up a diverse group in terms of equipment utilization. The Corporate aircraft illustrated in Figure 3-1 are the Gates Learjet 35 and the Gulfstream IV, both of which currently operate at AHN. The Regional Airlines are represented by a Canadair RJ-200 and an Embraer EMB RJ-145. Recently, Mesa Airlines acquired US Airways Express, and operates from AHN. As of May 1999, Mesa's nationwide fleet of 26, Canadair RJ-200 aircraft was second only to Delta's ComAir fleet, in terms of overall number of aircraft. It is anticipated that these aircraft may enter the Athens-Ben Epps market in the coming years since most commuter airlines are moving to all Jet fleets. Due to the higher cruise speeds afforded by regional jet aircraft, a swept wing technology is employed and as a result, takeoff and landing speeds are considerably higher. To reduce payload and potential degradation of airspeed, the wing area is also reduced. The smaller wing area and higher operating speeds typically generate a requirement for significantly longer runways.

The final category, Major Airline/Special Charter, is represented in Figure 3-1 by the Boeing 737-400 and 757-200 jetliners. These aircraft are strongholds in the Delta and US Airways fleets and are typically utilized in markets as large, and larger than Athens. In discussions with Delta's charter group, the 737-400 was identified as the aircraft to serve UGA's charter requirements. Furthermore, the Airport frequently receives requests from Delta charter 757-200 aircraft operators desiring to utilize AHN, however, due to runway inadequacies (runway width, taxiway width, and pavement bearing capacity) these requests currently must be declined.

3.1.2 Airport Reference Code Selection

As defined in FAA AC 150/5300-13 (Change 5), *Airport Design*, the Airport Reference Code (ARC) is a coding system used to relate airport design criteria to the operational and physical characteristics of airplanes anticipated to operate at an airport. The ARC is made up of two components, Aircraft Approach Category and Airplane Design Group (ADG). The Aircraft Approach Category is classified as follows:

- Category A - Aircraft with an approach speed of less than 91 knots;
- Category B - Speeds of 91 knots or greater, but less than 121 knots;
- Category C - Speeds of 121 knots or greater, but less than 141 knots;
- Category D - Speeds of 141 knots or greater, but less than 166 knots; and,
- Category E - Speeds of 166 knots or more.

The ADG is based on the wingspans of the aircraft to be served and is classified as follows:

- Group I - Includes aircraft having a wingspan of up to but not including 49 feet;
- Group II - Includes wingspans of 49 feet up to but not including 79 feet;
- Group III - Includes wingspans of 79 feet up to but not including 118 feet;
- Group IV - Includes wingspans of 118 feet up to but not including 171 feet;
- Group V - Includes wingspans of 171 feet up to but not including 214 feet; and,
- Group VI - Includes wingspans of 214 feet up to but not including 262 feet.

The ARC at Athens-Ben Epps Airport is presently established as C-II for Runway 9/27. Given the existing operational activity by the Lear 35 and Gulfstream's II, III, and IV, which are Category D aircraft, and contingent on Delta charter 757 aircraft operations, which is included in ADG IV, an ARC of D-IV has been selected as appropriate for facilities associated with Runway 9/27.

The ARC is presently established as B-I for Runway 2/20. The current ARC of Runway 2/20 is anticipated to remain unchanged.

3.1.3 Runways

The Athens-Ben Epps Airport is a publicly owned and operated facility situated in Northeast Georgia approximately 50 miles east-northeast of the Atlanta metropolitan area. The facility currently serves as the area's only commercial service airport, while providing a home to general aviation operators and transient business and pleasure flyers. Additionally, AHN serves as a noted fuel stop for transient military operators. The presence of the University of Georgia, together with a rapidly expanding corporate base in Clarke County and the surrounding area, has increased demand for additional runway length beyond the current 5,522 feet. The safety of the aircraft currently using the Airport and citizens in and around the vicinity of the Airport was the basis for conducting the supplemental analysis of runway length presented in Appendix II. Another goal of this analysis was to maintain commuter air service in the future.

In recent years the County successfully completed the installation of a glide slope facility on Runway 27 (eastern end of the runway), providing precision instrument landing capability for the more demanding users (i.e., regional airlines, corporate users) and improved landing capabilities for airline service during inclement weather.

As discussed previously, a detailed runway length analysis has been completed and is included as Appendix II. The runway demand portion of this analysis, which is summarized below, focused on three areas: current Airport users, manufacturer's specifications, and FAA's computer model.

3.1.3.a Current Airport Users

A total of 48 operators were identified and contacted by survey, of which approximately 90 percent were using turbojet equipment (i.e., Lear 25 and 35; G-II, III and IV; Falcon 20, 50 and 200; etc.). Thirteen total responses (27 percent response rate) were received from the surveys including several Fortune 500 companies: Johnson & Johnson, DuPont, AFLAC, Nexxus, Rockwell, and Southeast Toyota Distributors.

Table 3-1 presents a summary of survey respondents together with their estimates of annual takeoffs and estimated runway length requirements for both takeoff and landing. These estimates were tabulated to determine the runway length necessary to satisfy current demand while meeting FAA's basis of justification by demonstrating a minimum of 250 annual departures.[5] The results from the surveys indicate a clear need for approximately 6,400 feet of runway length to satisfy existing users. Colvin Aviation, representing an estimated 1,200 departures annually, was subsequently contacted to obtain a more current representation of their fleet. Colvin Aviation has increased its fleet with the addition of two Lear 35s, which further increases their earlier estimate of annual operations by as much as 800 operations. It was also noted that the data on runway lengths required for departure did not take into account gradient factors. Adjusting for runway gradient given both existing runway end elevations and likely extended end elevations, the required 6,400 feet increases by 500 to 630 feet for a total length of approximately 6,900 to 7,030 feet. These adjustments are based on adding 10 feet to the departure length for every 1-foot of elevation change.[6]

TABLE 3-1
CORPORATE RUNWAY LENGTH ANALYSIS
Athens-Ben Epps Airport

COMPANY (aircraft type)	ANNUAL TAKEOFFS	TAKEOFF LENGTH (feet)	LANDING LENGTH (feet)
AFLAC (Falcon 50)	20	4,325	2,900
Image Air (Lear 25D)	2	4,770	3,720
Johnson & Johnson (HS-800, G-III)	2	5,200	4,350
Southeast Toyota (Lear 35)	6	5,341	5,192
Midwest Aviation (Falcon 20)	4	5,500	4,900
Southeast Toyota (Challenger 601-3A)	12	5,010	5,658
Southeast Toyota (Lear 55)	6	5,720	5,500
DuPont Aviation (G-IV)	6	6,250	4,770
Colvin Air Charter (Lear 35A)	1,200	6,400	6,100
Nexxus (G-III)	2	6,450	6,400
Reliance Electric (Sabreliner 65)	8	6,844	6,515
Land's End (Lear 35A)	6	6,850	4,210
Aviation Methods (HS-125/700)	4	7,825	4,500
Total Estimated Annual Takeoffs Runway Length Required	**1,278**	**6,400**	**6,100**

SOURCE: AHN User Survey Data, 1997.
THE LPA GROUP INCORPORATED analysis, 1998.

[5] FAA AC 150/5325-4A, *Runway Length Requirements for Airport Design*, p.1.
[6] Ibid, p.8.

Travel generated by the University of Georgia was also considered. Travel directly or indirectly generated by the University system includes: athletic department travel, large convention/conference contingencies, alumni-sponsored travel, recruiting, and dignitaries/government officials/celebrities. The University continues to use Delta Airlines as its charter carrier for the vast majority of away games. Preliminary coordination with Delta Airlines, Charter Flight Control, (reference Appendix B, within Appendix II) revealed that a minimum runway length of 6,500 feet and recommended runway width of 150 feet is needed to originate/terminate flights at Athens-Ben Epps Airport utilizing their 737 series aircraft. As noted previously, the Airport frequently receives requests from Delta charter 757-200 aircraft operators desiring to utilize the airfield. Further clarification of optimal runway length requirements by both the 737 and 757 series aircraft dictate the need for a 7,000-foot runway length (reference Appendix B, within Appendix II). It is anticipated that other traveling colleges would travel via charter carriers utilizing similar equipment and requiring the same operational minimums.

Based on FAA AC-150/5325-4A guidelines recommending a minimum of 250 annual takeoffs as runway length justification, the combination of corporate and University-generated annual travel adequately justify a minimum runway length of 6,500 feet. As noted previously in this subsection, the corporate response represented only 27 percent of the current list of airport users operating turbine-powered equipment. The obvious potential exists that the annual takeoff demand by similar aircraft at Athens-Ben Epps Airport is far in excess of these estimated 1,200-plus takeoff operations. This, coupled with the fact that the survey responses reflect existing demand rather than anticipated growth, dictates the necessity for a runway extension at Athens-Ben Epps Airport. Based on user input, the absolute minimum recommended takeoff length for AHN should be approximately 6,500 feet.

3.1.3.b Manufacturer Specifications

Following the coordination and tabulation of user survey data obtained from current corporate operators, an attempt was made to review the various aircraft manufacturer's performance specifications for the aircraft presented in Table 3-1. This review was intended to validate user requirements and identify potential shortfalls in optimum runway length.

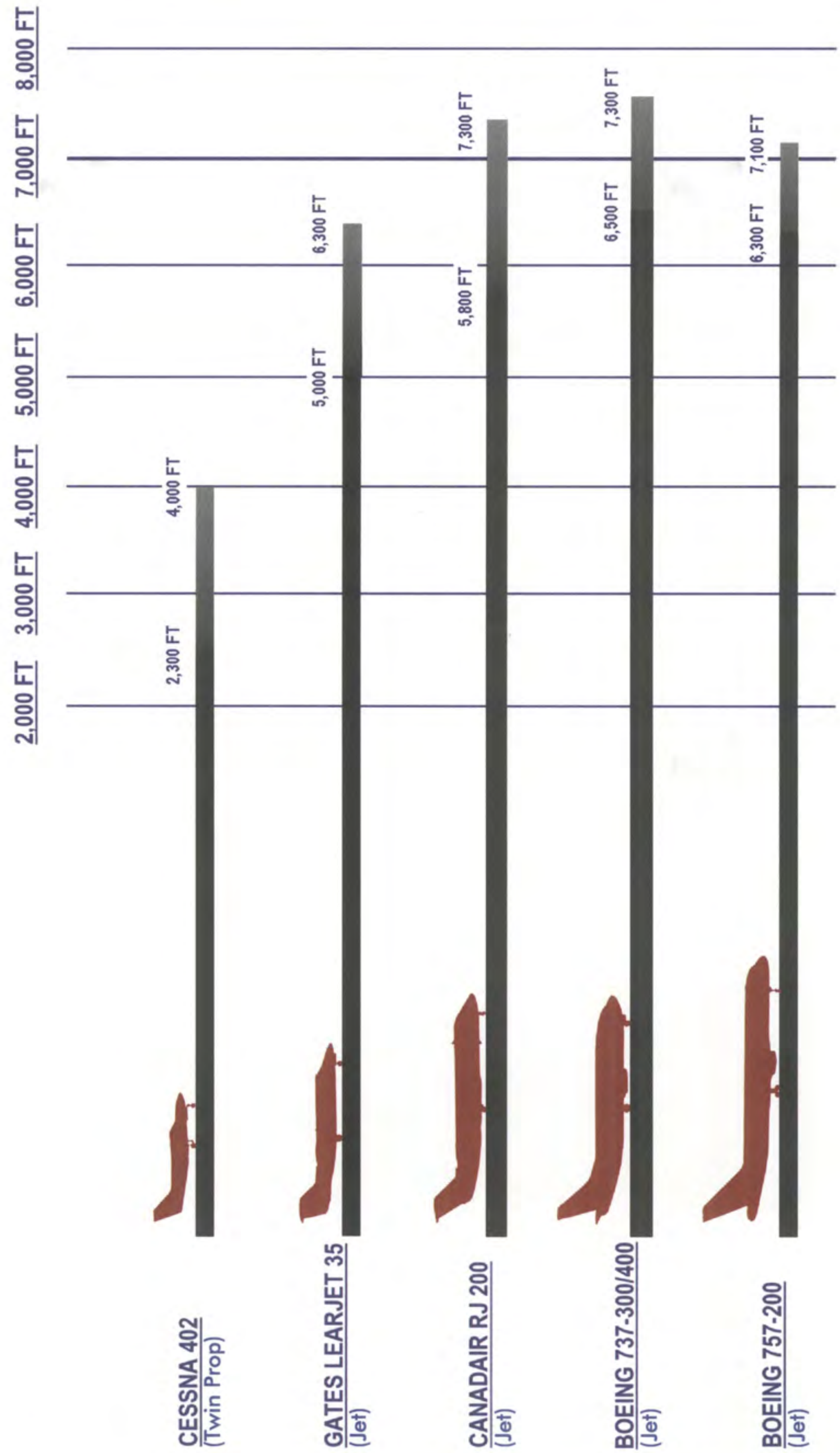
Additionally, manufacturer performance specifications were studied for the regional and major airline aircraft identified under Section 3.1.1, Critical Aircraft, again for purposes of validation. Figure 3-2 graphically depicts the relationship of takeoff length requirements for the various critical aircraft.

3.1.3.c FAA Computer Model

Utilizing FAA's Airport Design computer program (version 4.2D), a determination was made that the 5,522-foot primary runway at AHN narrowly accommodates approximately 75 percent of these type aircraft, assuming a 60 percent useful load. Conducting the same analysis, but assuming a 90 percent useful load, requires a runway length of approximately 7,400 feet. The airplanes in the national fleet, which account for the remaining 25 percent, were not identified in the airport operating mix for AHN. Nevertheless, should these airplanes be included, takeoff lengths of approximately 6,200 and 9,300 feet are recommended by FAA assuming 60 and 90 percent useful loads, respectively.

3.1.3.d Recommended Runway Dimensions

Reviewing the user response data gathered during the survey process indicates that the desired normal operating weights typically exceed 80 percent of MGTOW, but infrequently reach 100 percent of MGTOW. This departure weight and resulting lengths provided by the users appears to fall well within the FAA general length requirements offered above. Additionally, manufacturers performance specifications seem to offer a significant level of validation and support for the data furnished by the users. Therefore, it is recommended that a minimum takeoff runway length of approximately 6,500 feet on Runway 9/27 be developed at the Athens-Ben Epps Airport. Optimally, a takeoff runway length of 7,000 feet on Runway 9/27 should be preserved as a part of this recommendation and this may be achieved through the use of declared distances.



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Takeoff Lengths for Critical Aircraft (By Class)

Figure 3-2

FAA design standards require a runway width of 100 feet for airplanes within ARC C-II and III. However, as noted by Delta Airlines, the initiation of 737 series and/or 757 series operations at Athens-Ben Epps Airport would require a recommended runway width of 150 feet. Therefore, Runway 9/27 should be widened to 150 feet to serve airplanes within Aircraft Design Group III with a maximum certificated takeoff weight greater than 150,000 pounds, such as the 737-400 as well as those airplanes within Aircraft Design Group IV, such as the 757.

In addition to serving as a back-up for Runway 9/27, Runway 2/20 is utilized by student pilots performing crosswind training. The FAA recommends for planning purposes that the crosswind, or secondary, runway should be at least 80 percent of the primary runway length.[7] However, in that the student pilots do not require a longer crosswind runway and based on community input, it is not considered economically or politically feasible to extend Runway 2/20. Therefore, no extensions to Runway 2/20 have been evaluated as part of this Master Plan Update or supplemental analyses.

3.1.4 Taxiways

Runway 9/27 is equipped with a full-length parallel taxiway, Taxiway A, located approximately 400 feet north of the runway centerline and is 50 feet wide. Throughout the terminal area located on the north side of the field, Taxiway A shifts to a 600/650-foot separation from the runway centerline and follows the apron edge. In the event that Runway 9/27 is extended, an extension of Taxiway A should be programmed to coincide with the runway extension so as to continue to serve as a parallel taxiway to Runway 9/27. It is further recommended that an extension of Taxiway A (75 feet in width), connecting Taxiway A3 and B3, be considered. In addition, a full-length parallel taxiway south of Runway 9/27 is recommended to provide access for the midfield site, discussed in Section 3.2, Commercial Facilities. Taxiway A will accommodate aircraft types within ADG III, however the ADG may increase to IV, contingent on Delta charter 757 aircraft operations. The taxiway width of all taxiways supporting Runway 9/27 should be 75 feet to serve airplanes within ADG IV.

[7] Federal Aviation Advisory Circular 150, 5325-4A, *Runway Length Requirements for Airport Design*, page 1.

Therefore, it is recommended that Taxiways A, A1, A3, and A4 be widened from 50 feet to 75 feet and strengthened.

Runway 2/20 is equipped with a full-length parallel taxiway, Taxiway B, located approximately 200 feet west of the runway centerline and is 35 feet wide. Along the east side of the terminal area, Taxiway B shifts to a 500/550-foot separation from the runway centerline and follows the apron edge. With its current dimensions, Taxiway B will continue to accommodate aircraft types within ADG I.

In order to enhance the safety and efficiency of the airfield, it is recommended that Taxiway B be extended approximately 1,100 feet. It is further recommended that Taxiway A be relocated between Taxiway A3 and Runway 2/20 and that Taxiway B3 be removed.

The Georgia State Patrol (GSP) hangar has been constructed and in order to improve airfield access for this facility, a taxiway is recommended.

3.1.5 Runway Protection Zones and Part 77 Imaginary Surfaces

3.1.5.a Runway Protection Zones

The function of the Runway Protection Zone (RPZ), as defined by FAA AC 150/5300-13, is to "enhance the protection of people and property on the ground". It is recommended that the airport owner/sponsor control the RPZ through fee simple ownership if possible. Such control includes clearing RPZ areas and maintaining them clear of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ. While it is desirable to clear all objects from the RPZ, some uses are permitted including, golf courses (but not club houses), agricultural operations (other than forestry or livestock farms), and automobile parking facilities (provided the facilities are located outside of the object free area extension). Land uses specifically prohibited in the RPZ are residences, places of public assembly, some examples include churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons. Fuel storage facilities should not be located in the RPZ.

Based on the selected design standards and facility requirements previously discussed in this section, appropriate RPZ dimensions have been identified for each runway end at the Airport. These dimensions are shown in Table 3-2.

Table 3-2
RUNWAY PROTECTION ZONE (RPZ) DIMENSIONS
Athens-Ben Epps Airport

RUNWAY APPROACH END	APPROACH VISIBILITY MINIMUMS	FACILITIES EXPECTED TO SERVE	DIMENSIONS LENGTH (feet)	DIMENSIONS INNER WIDTH (feet)	DIMENSIONS OUTER WIDTH (feet)
RWY 9	Not lower than ¾ mile	All Aircraft	1,700	1,000	1,510
RWY 27	Lower than ¾ mile	All Aircraft	2,500	1,000	1,750
RWY 2	Visual and not lower than 1 mile	Aircraft Approach Categories A and B	1,000	500	700
RWY 20	Visual and not lower than 1 mile	Aircraft Approach Categories A and B	1,000	500	700
SOURCE: THE LPA GROUP INCORPORATED					

3.1.5.b Part 77 Imaginary Surfaces

Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*, defines airport imaginary surfaces, which must be controlled and kept clear of obstructions to protect aircraft departure and landing airspace. Table 3-3 presents the FAR Part 77 surface requirements that pertain to the Airport relative to the selected design standards. A graphical description of these surfaces is provided by the Airport Airspace Plan, a small version of such is included in Section 6.

Table 3-3
FAR PART 77 SURFACE REQUIREMENTS
Athens-Ben Epps Airport

ITEM	**RUNWAY APPROACH END**			
	Runway 9 (feet)	**Runway 27 (feet)**	**Runway 2 (feet)**	**Runway 20 (feet)**
Primary Surface Width	500	1,000	500	500
Horizontal Surface Radius	10,000	10,000	5,000	5,000
Approach Surface Width at End	3,500	16,000	2,000	2,000
Approach Surface Length	10,000	50,000	5,000	5,000
Approach Slope [1]	34:1	50:1/40:1	20:1	20:1

[1] The approach slope is 50:1 for the inner 10,000-foot portion of the approach surface, and 40:1 for the outer 40,000-foot portion.
SOURCE: THE LPA GROUP INCORPORATED

3.1.6 Lateral Clearances

Lateral clearance airport requirements are based on data found in FAA's *Airport Design* AC. Clearance dimensions relevant to the selected design standards and facility requirements previously discussed in this section are shown in Table 3-4.

Table 3-4 LATERAL CLEARANCES Athens-Ben Epps Airport		
ITEM	RUNWAY 9/27 (feet) [2]	RUNWAY 2/20 (feet) [3]
Runway Safety Area Width	500	120
Runway Safety Area Length Beyond Runway Ends[1]	1,000	240
Runway Centerline to Parallel Taxiway Centerline	400	225
Runway Centerline to Aircraft Parking Area	500	200
Runway Object Free Area Width	800	400
Runway Object Free Area Length Beyond Runway Ends[1]	1,000	240
Runway Obstacle Free Zone Width	400	400
Runway Obstacle Free Zone Length Beyond Runway Ends[1]	200	200
Taxiway Safety Area Width	171	49
Taxiway Object Free Area Width	259	89

[1] The area/zone also parallels each runway for its full length.
[2] Assumes airplane design group D-IV.
[3] Assumes airplane design group B-I.
SOURCE: FAA Advisory Circular 150/5300-13, *Airport Design*

3.1.7 Airfield Lighting and NAVAIDS

Airfield lighting and navigational aid requirements are discussed below. These facilities are important given they are necessary to support nighttime and "all weather" aircraft operations at the Airport and to enhance operational safety.

Existing navigational aids on Runway 9/27 consist of a localizer and PAPIs on the western end, and a glide slope, ODALS, and VASIs on the eastern end. Therefore, any extension to the western end will necessitate the relocation of both the localizer and the PAPI systems. Likewise any extension to the eastern end will require the relocation of the glide slope, ODALS, and the VASI systems. According to Airport representatives the existing glide slope antenna site is not desirable due to associated hold position restrictions. Preliminary analysis of the glide slope antenna site, reveals that with a 500 foot extension to the east, the glide slope site may be relocated south of Runway 27 and 1,000 feet west of the Runway 27 threshold. This relocation should occur either during or after Runway 27 is extended. Additionally, in the unfortunate event that the contract ATCT is closed, relocating the glide slope to the south side of Runway 9/27 will prevent the loss of the glide slope/Category I precision instrument approach, which would otherwise fall victim to the absence of positive ATC ground control.

As previously mentioned, Runway 9/27 should be should be widened to 150 feet to serve airplanes within Aircraft Design Group III. Installation of High Intensity Runway Lights (HIRL) should occur either during or after Runway 9/27 is widened.

In addition, the future installation of a medium intensity approach light system with runway alignment indicators (MALSR) should be considered to replace the existing ODALS on the eastern end of Runway 9/27, as well the installation of (HIRL). This system will ultimately reduce landing minima under Category I conditions, improving the Airport's poor weather capability and enhancing operational safety. The installation of this system must be considered from the standpoint of construction phasing, when analyzing the ultimate airfield configuration.

Runway end identifier lighting (REIL) provides the pilot with a positive indication of the location of each runway end. REIL installations are especially important to pilots conducting landings at night and during reduced visibility weather conditions. Currently, only runway approach end 27 is equipped with REIL. Accordingly, installation of REIL on runway approach end 2, 9, and 20 is recommended at Athens-Ben Epps Airport.

3.1.8 Pavement Strength

Present airport pavements were evaluated based on information available in the Airport/Facilities Directory, dated November 1, 2001. Runway 9/27 and Runway 2/20 have a load-bearing capacity of 40,000 pounds for aircraft with a single-wheel landing configuration and 45,000 pounds for aircraft with a dual-wheel landing configuration. According to FAA AC 150/5320-6D, *Airport Pavement Design and Evaluation,* airport pavements are constructed to provide adequate support for the loads imposed by aircraft using an airport and to produce a firm, stable, all-weather surface. In order to satisfactorily fulfill these requirements, the pavement must be of such quality and thickness that it will not fail under the load imposed. As previously discussed, the 737-400 was identified as the aircraft to serve UGA's charter requirements. In addition, the Airport frequently receives requests from Delta charter 757-200 aircraft operators desiring to utilize the Airport, however based on the existing load-bearing capacity for Runway 9/27 and the width of Taxiway A, this is not allowable. It is therefore recommended that during engineering design for the previously proposed 6,500-foot runway, a pavement section capable of accommodating aircraft with a maximum gross weight of 255,000 pounds dual tandem-wheel be considered.

The existing pavement strength of Runway 2/20 is considered adequate for aircraft having a max gross weight of 40,000 pounds with a single wheel landing configuration and 45,000 pounds with a dual-wheel landing configuration. However, should the runway be extended in the future, a stronger pavement section will be required to accommodate heavier aircraft served by the longer runway.

3.2 COMMERCIAL FACILITIES

3.2.1 Apron/Gates

The required air carrier apron size is determined by the number of aircraft parking positions (gates) required during its peak usage period, the type and sizes of the anticipated aircraft, operating characteristics (e.g. power out or push-back), taxilanes, safety clearances, and ground service equipment and maneuvering lanes.

Currently Athens-Ben Epps Airport is served by US Airways Express, which operates the BAe Jetstream 32 aircraft at the Airport and utilizes one gate position on the existing 3,970-square yard air carrier apron. However, commencement of air carrier service by another airline during the 20-year planning period would necessitate use of a second gate at peak times. In addition, existing and future large charter aircraft operating at the Airport require a third parking position. Therefore, for the purposes of sizing the apron, all three of these aircraft must be accommodated simultaneously. Based on anticipated demand over the 20-

year study-period, approximately 17,000 square yards of pavement would accommodate aircraft parking and maneuvering lanes.

3.2.2 Terminal Building

The sizing of the terminal building was based upon a detailed preliminary architectural analysis that considered spatial requirements of 22 various components including lobby, airline facilities, baggage make-up, baggage claim, concessions, circulation, etc. This previous analysis is included as Appendix IV.

A terminal building generally is comprised of five basic components:

- Public;
- Airline;
- Concessions;
- Rental Car; and,
- Administration.

However, based on input received from Airport representatives, Airport administration facilities will be accommodated elsewhere and, therefore, were not considered. Although not a primary consideration at this level of analysis, additional space is required for a miscellaneous component that would incorporate such concerns as mechanical/maintenance.

A subsequent analysis was performed and is included as Appendix V. The results of this study yielded a 2022 total terminal building spatial demand of approximately 16,400 square feet.

3.2.2.a Public

The Public component includes queuing areas associated with baggage make-up, baggage claim and rental car; hold rooms; restrooms; and other areas providing space for waiting and circulation. The ticket lobby includes the area required for a queue depth of six people, with approximately three feet per person. In addition, a minimum circulation depth of eight feet should be provided clear of the queuing.

The baggage claim area consists of a lobby and a baggage display device. The device can be either a baggage shelf or a baggage conveyor unit. Depending on the device used, the lineal footage is calculated by assuming 2 bags per design-hour passenger and allowing for this baggage to be retrieved in a 20-minute period. The spatial requirements of the baggage claim lobby are calculated by multiplying 30 feet by the length of the baggage claim device plus 6 feet of depth for through traffic. These 30 feet provides appropriate space for waiting, retrieving baggage, queuing, and circulation beyond the claim device.

Public waiting areas should be provided at an airport for passengers and visitors arriving early before their flight, and for those individuals waiting for ground transportation after their flight arrives. These waiting areas need to accommodate 75 percent of design-hour passengers and one visitor. An area of 20 to 25 feet per person is appropriate for airports the size of Athens-Ben Epps.

The passenger holding areas provide secured areas where passengers can sit or stand while they wait to board a flight, or if allowed visitors can wait for incoming passengers. A peak 30-minute boarding factor of 75 percent of the design-hour passengers and 25 square feet per passenger is used to determine the required area for seating.

Some allowance (approximately 8 to 10 feet of depth) should be made for rental car queuing outside of circulation areas. Although two rental car companies, Hertz and Budget, currently service the Airport, it is necessary to plan for one to two more companies as activity levels increase.

In addition, approximately 300 to 400 square feet should meet the total spatial requirements of the security screening area and accommodate the screening devices and maneuvering space around them and a search/detention area. It is assumed that 20 percent of design-hour passengers may require restroom facilities. Furthermore, the preliminary planning numbers should be checked against the local building codes during schematic design to verify that minimum requirements are met. In general, circulation occupies approximately 25 percent of the total building area for terminals at Airports similar to AHN.

3.2.2.b Airline

Airline facilities include ticket counter area, ticketing support offices, and outbound and inbound baggage area. Currently one airline serves the Airport, however, in anticipation of the successful recruitment of a new carrier, two should be considered for terminal spatial requirements. Consultant experience suggests that airlines require a minimum of two agent positions to effectively serve their passengers. Therefore, if a second airline tenant does initiate operations at Athens-Ben Epps Airport, four ticket positions would be required.

Each agent requires approximately six linear feet of counter space and bag well. An additional 3 feet of frontage should be allowed for airline personnel to pass through the counter area. A minimum space, 20 feet deep behind the ticket counter area is an appropriate amount of space for ticketing support offices. Thus the total space for the airline ticket offices is the ticket counter length multiplied by 20 feet.

The outbound baggage area is used for processing bags that are checked in at the ticket counter. One baggage cart and the space to maneuver around it require approximately 250 square feet. The size of the outbound baggage area is determined by providing one cart per commercial airline tenant. The inbound baggage area relates directly to the baggage claim device because a certain amount of space is needed to access the claim device and handle incoming baggage. It is anticipated that a baggage shelf, which requires approximately 18 feet of covered service space, would be sufficient to accommodate demand over the 20-year study period.

3.2.2.c Concessions

Concessions generally include a gift shop, vending area, restaurant, and possibly a travel agent office. Generally, a full service restaurant requires a minimum number of patrons to be financially feasible. These patrons could include passengers, pilots, airport employees, and local citizens, however, this varies from community to community. For the purposes of planning the Athens-Ben Epps Airport, some space has been programmed to be a flexible eating area for food service, with the capability of developing space for another use such as tenant offices. An area of 25 square feet per design-hour passenger is used to determine the size of the restaurant/eating area. Over the 20-year study period, a total of 1,075 square feet is allocated to meet the spatial requirements of miscellaneous concession, vending, and restaurant/eating areas.

3.2.2.d Rental Car

Rental car agencies require both counter and office space. As mentioned previously, although two rental car companies currently service the Airport, it is necessary to plan for one to two more companies as activity levels increase. A minimum of 80 square feet per rental car vendor should be provided (10-foot counter by 8-foot depth) with an additional 80 square feet for office area per agency.

3.2.2.e Recommended Terminal Area Dimensions

A comparison of the existing space provided for the various terminal area components previously evaluated with the anticipated spatial demands allows for air carrier terminal space deficiencies to be recognized and leads to the identification of areas in the terminal requiring expansion or reallocation of existing space to accommodate increased passenger activity and changing airline/public needs. The existing 7,866 square-foot terminal building is anticipated to be undersized by approximately 8,500 square feet by the year 2022. Decisions on when various terminal improvements will be implemented and in what sequence, will be dictated by the severity of the deficiencies, as measured by economics, safety, and passenger convenience.

The existing terminal building is a single level structure, which requires apron level passenger boarding. According to Airport representatives, this method of boarding is anticipated to remain unchanged over the 20-year study period.

The overall gross square footage of the proposed terminal building is approximately 16,400. Although not provided in the existing terminal building, it is recommended that space be allocated for ticket lobby, inbound baggage, vending area, restaurant/eating area, and rental car queuing. In addition, it is recommended that existing circulation areas be increased by approximately 126 percent. The largest spatial deficiency is in the baggage claim lobby, which is anticipated to require a space over eight times larger than its existing size.

3.2.3 Airport Access

There are two U.S. highways, U.S. 29 and U.S. 78, in close proximity to the Airport. U.S. 29, which is a four-lane facility, interchanges with U.S. 78 approximately three miles northwest of the Airport. There are currently two methods of accessing the Athens-Ben Epps Airport from U.S. 78: 1) Winterville Road; and 2) Cherokee Road/Beaverdam Road. Both routes necessitate approximately two miles of travel to/from U.S. 78 and Ben Epps Drive, which provides access to the terminal area. A more direct route is desirable for patrons of the Airport and particularly those utilizing the commercial terminal.

Ben Epps Drive is a two-lane, bi-directional facility except in the immediate terminal parking area. As concluded in the 1995 Master Plan[8], turning movements entering the parking area and the requirement for most general aviation traffic and users of the curbside to pass through the lot is considered both unsafe and undesirable. A separation of general aviation traffic from passenger terminal traffic and the public parking lot is recommended.

In addition, it is recommended that improvements such as realignment of Ben Epps Drive, signage, etc. be implemented within the short-term planning period. This realignment encourages access via the Cherokee Road/Beaverdam Road route, which provides a more desirable image of the community and area. It also enhances the loop road concept, providing for a more efficient and safe entrance and exit of the Airport. Finally, this concept allows for development northeast of Ben Epps Drive, should the need arise.

3.2.4 Automobile Parking

Terminal area parking facilities accommodate public, rental car, employee, and curbside passenger pick-up and drop-off. Public parking is typically provided adjacent to the terminal

[8] Athens/Ben Epps Airport Master Plan Update, Final Technical Report, HNTB, 1995, page 71.

building and convenient to the ticketing and baggage claim areas. Due to varying requirements for parking durations, parking facilities are generally provided for long-term parking (more than one day) and short-term parking (one day or less). The spaces closest to the terminal building are generally more desirable due to their shorter associated walking distances. Currently, the several different operations/activity types occurring at the Airport are located within close proximity to one another, resulting in parking that is also intermingled. The existing parking areas associated with the commercial terminal provide 50 public parking spaces at an average distance of 150 feet from the terminal building and an additional 140 more distant spaces that are shared with terminal area employees. As discussed in Appendix C of Appendix V, included herein, a demand for 240 public parking spaces in the vicinity of the commercial terminal is anticipated over the 20-year study period.

Two rental car agencies, Hertz and Budget, currently operate at AHN. Both companies lease four parking spaces from the Airport, which comprise their ready/return spaces. In order to more accurately assess future rental car facility needs, company representatives were contacted. Based on the results of these interviews, it was recognized that during peak periods, which typically occur on holidays (i.e. Fourth of July, Memorial Day, Labor Day, Thanksgiving, and Christmas), three days per week (Monday, Tuesday, and Wednesday) during the summer months, and during home football game weekends at the University of Georgia, the existing rental car facilities at AHN are inadequate. These activity peaks generally equate to 80 days per year. Based on input from rental car agency personnel, parking facility requirements per rental car agency over the 20-year study period include 10 ready/return spaces and 75 remote storage spaces. In that, as previously discussed in Section 3.2.2.a, it is necessary to plan for one to two more companies as activity levels increase, the overall rental car parking facility requirements include 40 ready/return spaces and 300 remote storage spaces. In addition, a service area consisting of vacuum/car wash facilities is desired adjacent to the storage lot.

Employee parking facilities should accommodate the automobiles for the maximum number of employees who may be working at a given time. This time period usually reflects the time of shift changes where early and late shift employees are both utilizing the facilities simultaneously. Parking for the majority of people employed in the commercial terminal is accommodated in the most distant parking area. This area consists of 140 spaces and is shared with public parking. Based on site visits and discussions with Airport representatives, it is estimated that in the year 2022 approximately 25 employees would occupy the commercial terminal building during peak times. These 25 employee parking spaces are to be accommodated in addition to the above-described public and rental car parking requirements.

3.3 GENERAL AVIATION

3.3.1 Aircraft Parking

Future demand requirements for transient aircraft apron, aircraft hangar space, and aircraft tie-down space were evaluated. Transient apron demand was calculated using a factor of 360 square yards per typical design-hour transient aircraft as provided in FAA Advisory Circular 150/5300-13, *Airport Design*. By comparing the transient apron demand with the present transient apron area capacity, future transient apron needs were determined and are shown in Table 3-5.

Table 3-5
TRANSIENT AIRCRAFT APRON
Athens-Ben Epps Airport

YEAR	DESIGN-HOUR TRANSIENT AIRCRAFT [1]	DEMAND FACTOR (SY)	TRANSIENT APRON DEMAND	PRESENT AREA (SY) [2]	ADDITIONAL AREA REQUIRED (SY)
2002	16	360	5,760	7,654	0
2007	18	360	6,480	7,654	0
2012	20	360	7,200	7,654	0
2022	24	360	8,640	7,654	986

[1] Number of transient aircraft was calculated based on input from Airport representatives and relative to growth in total general aviation operations.
[2] Discounts pavement used as taxilane to provide access to hangar areas and space for maneuvering aircraft.
SOURCE: THE LPA GROUP INCORPORATED

Presently, approximately 60 percent of based aircraft utilize hangars and 40 percent utilize tie-downs. Upon discussions with Airport representatives, it was discovered that inquiries for hangar space are frequently received; in fact a waiting list consisting of 55 people desiring hangar space currently exists. Although a waiting list is a good indication of future demand, it was assumed that only a portion of them would materialize due to the lack of commitment associated with such. It has been determined that the percentage of based aircraft that are hangared are based on a constrained scenario in that all hangars are occupied. Therefore, it is assumed based on input from Airport representatives that approximately 70 percent of all based aircraft will occupy hangar space by 2007 and the remaining 30 percent will utilize tie-downs Accordingly, Tables 3-6 and 3-7 provide the anticipated aircraft parking requirements for the 20-year planning period.

Table 3-6
AIRCRAFT HANGAR SPACE REQUIREMENTS
Athens-Ben Epps Airport

YEAR	HANGAR SPACE DEMAND	PRESENT SPACES AVAILABLE	ADDITIONAL SPACES REQUIRED
2002	74	63	11
2007	95	63	32
2012	104	63	41
2022	120	63	57

SOURCE: THE LPA GROUP INCORPORATED.

Table 3-7
AIRCRAFT TIE-DOWN REQUIREMENTS
Athens-Ben Epps Airport

YEAR	TIE-DOWN DEMAND (Based Aircraft)	TIE-DOWN DEMAND (Transient Aircraft)[1]	TOTAL SPACE DEMAND	PRESENT SPACES AVAILABLE	ADDITIONAL SPACES REQUIRED
2002	50	16	51	77	0
2007	41	18	59	77	0
2012	44	20	64	77	0
2022	52	24	76	77	0

[1] Number of transient aircraft was calculated based on input from Airport representatives and relative to growth in total general aviation operations.
SOURCE: THE LPA GROUP INCORPORATED.

In accordance with Table 3-7, no additional tiedowns are needed to accommodate the 20-year demand. However, Airport representatives have provided input regarding a new layout of the general aviation area that will enhance efficiency and safety. It is envisioned that this reconfiguration will be implemented in the various stages of development over the 20-year planning period. It is proposed that in Stage I, the east general aviation apron, located adjacent to Sonny's Flight Service, be expanded by 6,200 square yards, an additional 13,000 square yards of east general aviation apron be constructed, and 13,500 square yards of south general aviation apron be constructed as well as, a strengthening of the apron parking area for large aircraft (Group II). In Stage III, it is recommended that an additional 18,100 square yards of general aviation apron be constructed. Since a portion of the west general aviation area is expected to be implemented during the initial stage and future expansion of such is anticipated in Stage II, a stormwater detention facility will be required. Other proposed development may require a similar facility and a need for such will be determined at a later date.

3.3.2 General Aviation Terminal Requirements

In September 2000, a detailed study of the general aviation facility was initiated. This study, entitled the "General Aviation Terminal Building Conceptual Program" and dated October 2001, was performed in addition to the Master Plan Update and is provided in Appendix VI. Based on the identification of a critical need to more adequately and conveniently provide for various general aviation services, a new general aviation terminal building is being planned for the Airport.

As described in Appendix VI, the proposed layout of the general aviation terminal building was developed to accommodate activity levels ten years into the future. Since the planning period for this Master Plan Update is 20 years, an additional ten years of projected activity was considered. The building is composed of various components, some of which possess spatial relationships with activity factors including design-hour passengers, design-hour pilots, and design-hour pilots and passengers. Spatial requirements of other components are based on functional and operational requirements that are not influenced by activity levels and upon examination; these components appear to be adequate for the 20-year planning period. Components that are influenced by activity levels include the holding area, lobby, vending, public restrooms, pilot's lounge, and pilot's restroom. Each of these were evaluated based on architectural standards (square-foot per design-hour factor), activity-level growth rates anticipated between the 10 and 20-year planning periods, and architectural-planning judgment, as appropriate. This evaluation determined that some of the components might be slightly over sized while others were slightly undersized. However, the net result was that the overall dimensions of the facility were more than adequate to accommodate activity levels for the 20-year planning period. Therefore, an expansion of the facility beyond that proposed in Appendix VI is not necessary. However, during design of this facility, the functional relationships between components should be considered so that the layout will incorporate flexibility to enhance alteration of the interior should redistribution of space be necessary.

The proposed general aviation facility at Athens-Ben Epps Airport will provide such services as air crew flight planning support, fueling, transient aircraft parking, air crew lounge, crew/traveler light supplies (of sundries class), passenger waiting, telephones, rental car, community information, executive traveler meeting facilities, and airport administration. As presented in Table 3-8, the critical components of the proposed, approximately 6,700-square foot general aviation facility have been separated into the following areas: general use, passenger, flight crew, line crew, airport administration, and support services. These general areas and their functions are discussed in greater detail in Appendix VI.

Table 3-8
GENERAL AVIATION TERMINAL
Athens-Ben Epps Airport

AREAS	SPACE REQUIRED (SF)
General Use	2,350
Passenger Services	1,150
Flight Crew	520
Line Crew	560
Airport Administration	720
Support Services	1,400
Total	6,700

SOURCE: Appendix VI, General Aviation Terminal Building Conceptual Program.

3.3.3 Automobile Parking

General aviation automobile parking needs for the short- and intermediate-term were evaluated as a part of the "General Aviation Terminal Building Conceptual Program" included in Appendix VI. The planning period for this Master Plan Update is 20 years therefore, an additional 10 years of projected activity was considered. Several meetings with the Airport Advisory Committee and compliance with Athens–Clarke County Zoning guidelines were incorporated into this study. Athens-Clarke County Zoning Ordinance, Section 9-1-141, "Parking and Loading", subsection 4, requires one space for every 200 square feet of floor space devoted to public use. In that approximately 4,900 square feet of the proposed new general aviation terminal area is planned for public use, this yields a requirement for 24 parking spaces. In addition, based on input from Airport representatives, a maximum of eight employees are expected to be working at one time. Therefore, a total of 32 general aviation automobile parking spaces would be required during the short- and intermediate-term. An analysis of required automobile parking for the long-term indicated a need for approximately 76 spaces. This demand for automobile spaces over the long-term study period was calculated relative to growth in total general aviation operations, as well as considering an average of three pilots and passengers per flight and eight employees.

However, during past site visits it was noted that automobile parking of existing tenants exceeded the capacity of designated parking areas as evident by parking in grassed areas. In addition, Airport representatives have provided input to a redevelopment of the entire general aviation area that will accommodate numerous and various types of tenants. In fact, it is anticipated that 4 to 5 additional tenants will be operating at the Airport. Therefore, should build-out of this concept occur it is anticipated that a significant increase in automobile parking demand will result and thus our estimated needs, presented above, may double or triple. Due to the uncertainty and speculative nature of the types of tenants and their relative parking demand, as well as considering the current automobile parking demand, parking requirements were estimated to be 280 spaces.

3.4 ROTORCRAFT

Currently there are two helicopter parking pads consisting of 489 square yards of paved area each, located in close proximity to the ATCT. In accordance with the projected number of rotorcraft based at AHN and the anticipated growth in military traffic, as projected in Appendix I, a total of two helicopter parking pads should continue to accommodate rotorcraft requirements over the 20-year planning period. In order to provide for rotor and tail clearance for a UH-60 Black-Hawk, each of these helicopter parking pads would necessitate 982 square yards of area on the ground (not just paved surfaces).

3.5 AIR CARGO

A more than doubling of worldwide cargo freight/express revenue ton miles (RTMs) is projected in the *FAA Aerospace Forecasts* due to the demand for the rapid movement of goods and products by air, both domestically and internationally. Domestic freight/express RTMs are forecast to increase at 5.2 percent annually through 2012.

Athens-Ben Epps Airport currently has no facilities or apron dedicated solely to air cargo activities. However, Airport representatives indicated that given Athens' close proximity to the expanding Metropolitan Area of Atlanta, as well as the anticipated growth projected for domestic cargo discussed above, a potential for growth in air cargo activity at Athens-Ben Epps Airport exists and a dedicated cargo apron should therefore be considered.

Airport personnel identified the Cessna Caravan Super Cargomaster and the Fairchild Metro III, as representative air cargo aircraft. Dimensional criteria for these aircraft are provided in Table 3-9. Total apron requirements are established by multiplying the number of aircraft by length, by wingspan, and then by a factor of 3.2 to allow for taxilanes, aircraft clearances, and cargo tug/transporter circulation corridors. Table 3-10 provides the anticipated air cargo apron requirements over the 20-year planning period.

Table 3-9 CARGO FLEET SIZE Athens-Ben Epps Airport		
TYPICAL AIRCRAFT	WINGSPAN (FEET)	LENGTH (FEET)
Cessna Cargomaster	52	38
Fairchild Metro III	57	60
SOURCE: Jane's All the World's Aircraft, 1989-1990		

Table 3-10 CARGO APRON DEMAND Athens-Ben Epps Airport		
TYPICAL AIRCRAFT	PEAK HOUR AIRCRAFT DEMAND	APRON AREA (SY)
2002		
Cessna Cargomaster	1	703
2007		
Cessna Cargomaster	1	703
Fairchild Metro III	1	1,216
2012		
Cessna Cargomaster	2	1,405
Fairchild Metro III	1	1,216
2022		
Cessna Cargomaster	2	1,405
Fairchild Metro III	2	2,432
SOURCE: THE LPA GROUP INCORPORATED		

The results of this evaluation indicate that approximately 4,000 square yards of apron will be required by the year 2022 to accommodate future air cargo demand.

3.6 AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF)

Aircraft Rescue and Fire fighting (ARFF) facilities are indexed according to the length of air carrier aircraft and the average daily departures of air carrier aircraft. Athens-Ben Epps Airport is currently categorized as an Index A airport.[9] However, should the 757–200 jetliner, anticipated to perform charter operations at the Airport, conduct less than five daily

[9] *Airport/Facility Directory*, September 2001.

departures, reasonable accommodations of its firefighting needs should be met. This aircraft is classified as Index B, if the number of scheduled daily departures is less than five. Index B requires either of the following: (1) One vehicle carrying at least 500 pounds of sodium-based dry chemical or halon 1211, and 1,500 gallons of water, and the commensurate quantity of Aqueous Film-Forming Foams (AFFF) for foam production. Or (2) Two vehicles (i) One vehicle carrying the extinguishing agents as specified in Index A; and (ii) One vehicle carrying an amount of water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons. ARFF equipment and fire fighting agent requirements for FAR Part 139 Certificated Airports are shown in Table 3-11.

Table 3-11
ARFF EQUIPMENT REQUIREMENTS
Athens-Ben Epps Airport

AIRPORT INDEX	REQUIRED NUMBER OF VEHICLES	AIRCRAFT LENGTH	SCHEDULED DEPARTURES	AGENT + WATER FOR FOAM
A	1	<90′	≥1	500 pounds of dry chemical or Halon 1211 or 450 pounds of dry chemical + 100 gallons of water
B	1 or 2	≥90′ , <126′ --------------- ≥126′ , <159′	≥5 ---------- <5	Index A + 1,500 gallons of water
C	2 or 3	≥126′ , <159′ ---------------- ≥159′ , <200′	≥5 --------- <5	Index A + 3,000 gallons of water
D	3	≥159′ , < 200′ , ---------------- >200′	≥5 --------- <5	Index A + 4,000 gallons of water
E	3	≥200′	≥5	Index A + 6,000 gallons of water

NOTE: ≥ "greater than or equal to"
< "less than"
SOURCE: Airport/Facility Directory – Northeast U.S., Nov 1, 2001

In addition, the existing ARFF facility is undersized and located landside of the Airport's secure area. Future ARFF facilities should be sized to approximately 4,000-5,000 square feet and planned to accommodate two vehicles, have adequate office, training room, and storage space. Since response time tests performed by ARFF personnel were successful and completed in less than the FAA-required three-minute response time, its location with respect to the airfield is acceptable. However, a location airside of the Airport's secure area would enhance safety and ARFF operating efficiency.

It should be noted that the ARFF functions are currently staffed as needed by employees located at various locations on the Airport. The Line Crew at the General Aviation Terminal is expected to respond immediately when ARFF support is needed. During design and layout of the ARFF facility, location on the Airport of ARFF employees should be considered.

3.7 FUEL STORAGE

The Airport presently has two above ground fuel storage tanks (15,000-gallon 100LL/Avgas and 20,000-gallon Jet A tank). Fuel is dispensed through the use of mobile fuel trucks. Based on input received from Airport representatives, current demands for fuel are 480,000 gallons of fuel (Avgas and Jet-A) per year. Using the current level of annual operations, an average demand of fuel per operation was calculated at approximately seven gallons. Utilizing this seven-gallon multiplier and projected weekly operations, fuel storage requirements were calculated and are presented in Table 3-12.

Table 3-12
FUEL STORAGE REQUIREMENTS
Athens-Ben Epps Airport

YEAR	ANNUAL OPERATIONS	WEEKLY OPERATIONS [1]	AVG. FUEL DEMAND PER OPERATION	WEEKLY STORAGE REQUIREMENTS (gallons)
2002	73,072	1,405	7	9,835
2007	81,789	1,573	7	11,011
2012	90,507	1,741	7	12,187
2022	107,942	2,076	7	14,532

[1] Calculated based on 52 weeks per year.
SOURCE: THE LPA GROUP INCORPORATED

Based on this calculation, the existing capacity is considered sufficient to accommodate fuel storage requirements through the planning period. In addition, according to Airport representatives the anticipated demand over the 20-year planning period could be accommodated by an increase in the delivery frequency.

3.8 PROPERTY REQUIREMENTS

Based upon the identification of future airport development and the Alternatives Analysis (refer to Section 4), property acquisition requirements will be determined and shown on the Airport Layout Plan.

Section 2
Aviation Activity Forecasts

As discussed in the Preface, an update of the Master Plan for Athens-Ben Epps Airport was initiated in October of 1997. However, seven months into the process, work was delayed at the direction of Airport representatives while other analyses related to but outside of the master planning process were conducted. In June of 2001, work was resumed on the Master Plan project at the request of the Airport Director.

A product of the seven-month effort initiated in 1997 was the "Master Plan Update Aviation Activity Forecasts Technical Paper". This document was intended to become a section of the overall Master Plan Update report and is organized into four significant subsections: forecast assumptions, socioeconomics, historic activity, and activity forecasts. As discussed in the opening of the Technical Paper, several sources of data were reviewed during the formulation of the Master Plan Update Aviation Activity Forecasts, including: FAA Terminal Area Forecasts (TAFs) for Athens-Ben Epps Airport and the Nation; FAA *National Aviation Forecasts Fiscal Years 1997-2008*; the *Georgia Statewide System Plan*; the 1995 *Athens-Ben Epps Airport Master Plan Update*. The Technical Paper also considers past growth trends of various aviation demand elements together with socioeconomic factors and utilizes a variety of statistical techniques to extend forecasts by others and identified trends into the future. In order to document this comprehensive 1997 work effort, yet minimize confusion between the previously approved forecasts and the updated forecasts to be discussed below, the Master Plan Update Aviation Activity Forecasts Technical Paper has been included as Appendix I.

Since the previous forecasts were prepared in December of 1997 and approved by the FAA, the initial step in recommencing the Master Plan Update was to compare these forecasts with both the actual activity levels experienced by the Airport over the past three years and with

FAA projections for 2000 through 2015. This comparison of the previous Master Plan Update forecasts with Airport statistics and projections as reported by the FAA TAF on June 21, 2001, is presented in Table 2-1. As indicated by this table, significant discrepancies were identified for enplanements and operations. Beginning in 1999 and continuing through 2015, the differential in enplanements grows increasingly more significant, as is presented in 2-1. Although the differentials in operations decrease over time, the Percent Difference column in this table reveals that these differentials are significant at times, notably so in the near-term.

Due to the trends revealed in Table 2-1, an investigation was conducted to examine the potential factors that could be contributing to the significant increase in operations (26 percent higher in 1999 than what was projected) and the coinciding decrease in enplanements. Through discussions with the Airport Director, it was determined that the regional economy, expansion of the Metropolitan Area of Atlanta and its proximity to Athens, and the presence of two charter companies on the field, have all contributed to the growth of general aviation operations. It is important to note, that the recent no growth/declining trend in air carrier, air taxi/commuter, and military operations is being offset by significant increases in general aviation activity. In addition, a drop in enplanements was experienced at the Airport since the approval of the 1997 forecasts. Although this drop was attributed to the loss of one air carrier flight, the number of overall air carrier flights has restabilized, resulting in a rebound in enplanement levels.

Following a discussion of the discrepancies presented above in which both Airport and FAA representatives were involved, it was concluded that at an update to the December 1997 forecasts would be required. However, in order to keep both the effort expended and the review/approval periods to a minimum, it was agreed that the adjusted forecasts would fall within 10 percent of the current TAF for the outer year, 2015. Table 2-2 presents these updated forecasts.

Table 2-1
FORECASTS COMPARISON
Athens-Ben Epps Airport

	ENPLANEMENTS				TOTAL OPERATIONS			
YEAR	1997 Master Plan Approved	FAA TAF [1]	Differential	% Difference	1997 Master Plan Approved	FAA TAF [1]	Differential	% Difference
1997	13,300	*13,287*	13	0%	52,718	*55,207*	2,489	5%
1998	13,678	*14,787*	1,109	8%	53,255	*60,661*	7,406	14%
1999	14,056	*11,258*	2,798	20%	53,793	*67,841*	14,048	26%
2000	14,434	11,258	3,176	22%	54,330	68,877	14,547	27%
2001	14,812	11,258	3,554	24%	54,868	70,062	15,194	28%
2002	15,190	11,258	3,932	26%	55,405	71,333	15,928	29%
2003	15,620	11,258	4,362	28%	57,349	72,629	15,280	27%
2004	16,050	11,258	4,792	30%	59,293	73,882	14,589	25%
2005	16,480	11,258	5,222	32%	61,238	75,157	13,919	23%
2006	16,910	11,258	5,652	33%	63,182	76,454	13,272	21%
2007	17,340	11,258	6,082	35%	65,126	77,776	12,650	19%
2008	17,868	11,258	6,610	37%	67,285	79,047	11,763	17%
2009	18,396	11,258	7,138	39%	69,443	80,264	10,821	16%
2010	18,924	11,258	7,666	41%	71,602	81,423	9,822	14%
2011	19,452	11,258	8,194	42%	73,760	82,522	8,762	12%
2012	19,980	11,258	8,722	44%	75,919	83,638	7,720	10%
2013	20,508	11,258	9,250	45%	78,077	84,768	6,691	9%
2014	21,036	11,258	9,778	46%	80,236	85,915	5,680	7%
2015	21,564	11,258	10,306	48%	82,394	87,077	4,683	6%
2016	22,092				84,553			
2017	22,620				86,711			

[1] FAA Terminal Area Forecast as of June 21, 2001.
NOTE: Italicized numbers indicate actual data.
SOURCE: THE LPA GROUP INCORPORATED

Table 2-2 UPDATED FORECASTS Athens-Ben Epps Airport				
CATEGORY	2002	2007	2012	2022
ENPLANEMENTS	11,469	11,821	12,173	12,876
ITINERANT OPERATIONS				
Air Carrier	45	46	47	50
Air Taxi/Commuter	2,173	2,240	2,306	2,440
General Aviation	35,119	39,548	43,976	52,832
Military	775	799	823	870
Total	38,112	42,633	47,152	56,192
LOCAL OPERATIONS				
General Aviation	34,515	38,713	42,910	51,306
Military	452	466	480	508
Total	34,967	39,179	43,390	51,814
TOTAL OPERATIONS	73,072	81,789	90,507	107,942
INSTRUMENT OPERATIONS	14,302	15,840	17,378	20,453
BASED AIRCRAFT	124	136	148	172
SOURCE: THE LPA GROUP INCORPORATED				

Section 1
INVENTORY

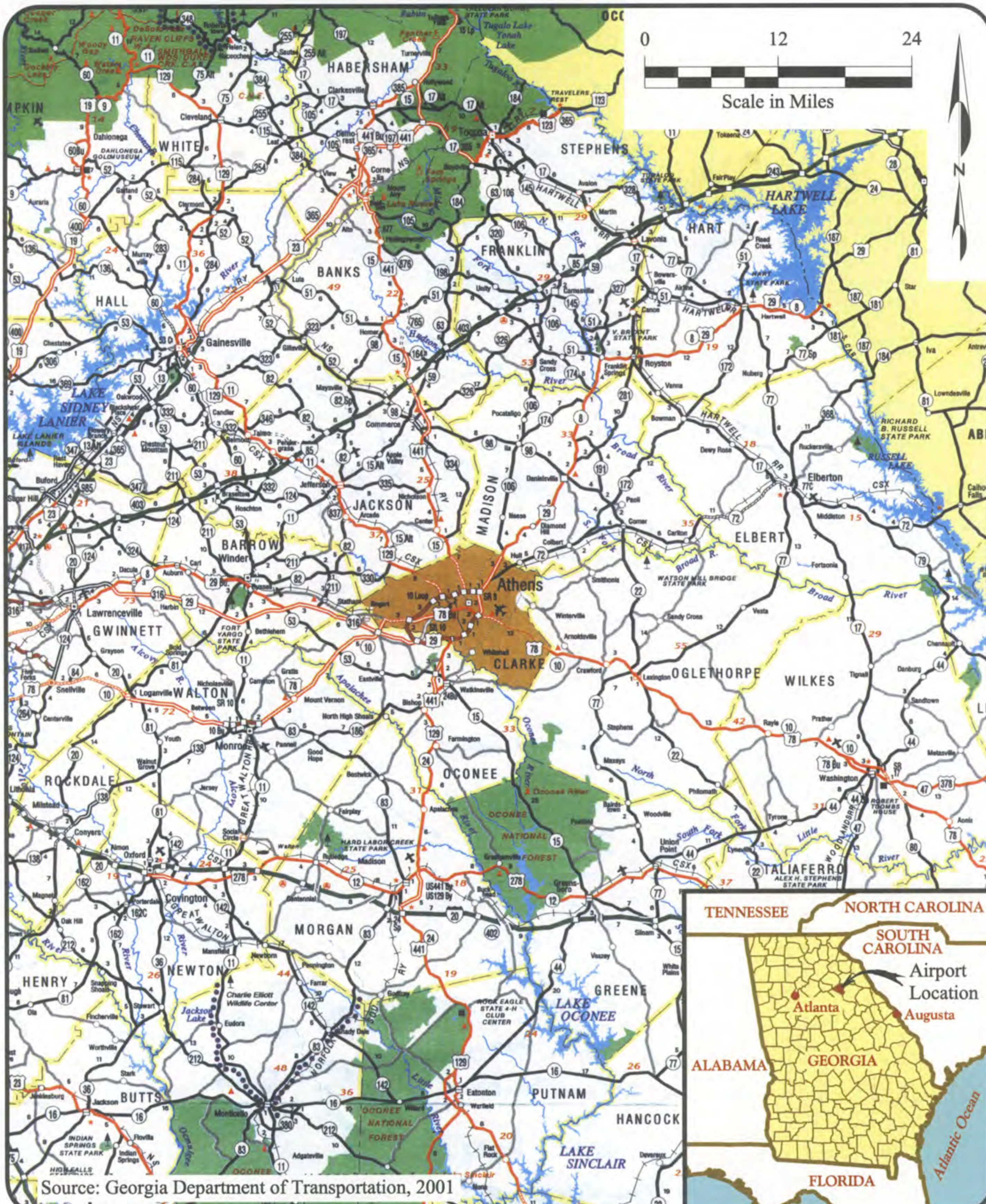
In order to produce a practicable and adequate plan for future growth, it is essential to understand the framework within which an airport exists. An initial task within this Master Plan Update study consists of gathering data to provide a clear definition of the Airport's aviation environment, including facilities, users, and activity levels. This background data serves as the foundation for ensuing analyses.

1.1 AIRPORT LOCATION, ROLE, AND MARKET AREA

1.1.1 Airport Location

As illustrated in Figure 1-1, the Athens-Ben Epps Airport is located in Clarke County Georgia, approximately three miles east of the City of Athens. Athens is located approximately 50 miles east-northeast of Atlanta, between Gainesville and Augusta, on the banks of the Oconee River near the Oconee National Forest.

Primary highway access to the Airport is provided via U.S. 78 (Lexington Road), along the south side of the Airport and continues into the Athens Central Business District. The Airport can also be accessed from the east via Beaverdam Road or from the west via Winterville Road. In addition to U.S. 78, GA 316, U.S. 29, GA 106, and U.S. 441 are also located in the vicinity of the Airport.



ATHENS
CLARKE
COUNTY

ATHENS-BEN EPPS AIRPORT

Location Map

Figure 1-1

1.1.2 Airport Role

The Athens-Ben Epps Airport is publicly owned and operated. The facility currently serves as the area's only commercial service airport, while providing a home to general aviation operators and transient business and pleasure flyers. Additionally, the Airport is a noted fuel stop for transient military operators.

Athens-Ben Epps Airport is included in the Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS) as a commercial service (airline service) airport. The Georgia Statewide Aviation System Plan (GSASP) classifies the Airport as a commercial service airport. This document further recognizes the Airport's importance in serving both state and regional aviation needs.

1.1.3 Airport Market Area

In 1997 a detailed analysis was performed in an effort to characterize the commercial service and general aviation market areas for the Airport. This analysis has been reviewed and incorporated as appropriate in this Section. A more detailed report is included as Appendix VII.

As illustrated in Figure 1-2 and for the purposes of this study, the Athens-Ben Epps Airport is considered to have both a commercial service and general aviation market area. The commercial service market area consists of Barrow, Clarke, Elbert, Gwinnett, Hart, Jackson, Madison, Morgan, Oconee, Oglethorpe, and Walton Counties. Although Gwinnett County is located approximately midway between the Airport and Atlanta Hartsfield International Airport (ATL), driving time from Gwinnett County to Athens-Ben Epps Airport is estimated to be half that between Gwinnett County and ATL. The commercial service market area consists of a diameter of approximately 80 statute miles. This analysis considers an assessment of actual originating enplanements (by county) using the Airport, as well as the influence of other competing airports offering scheduled airlines service.

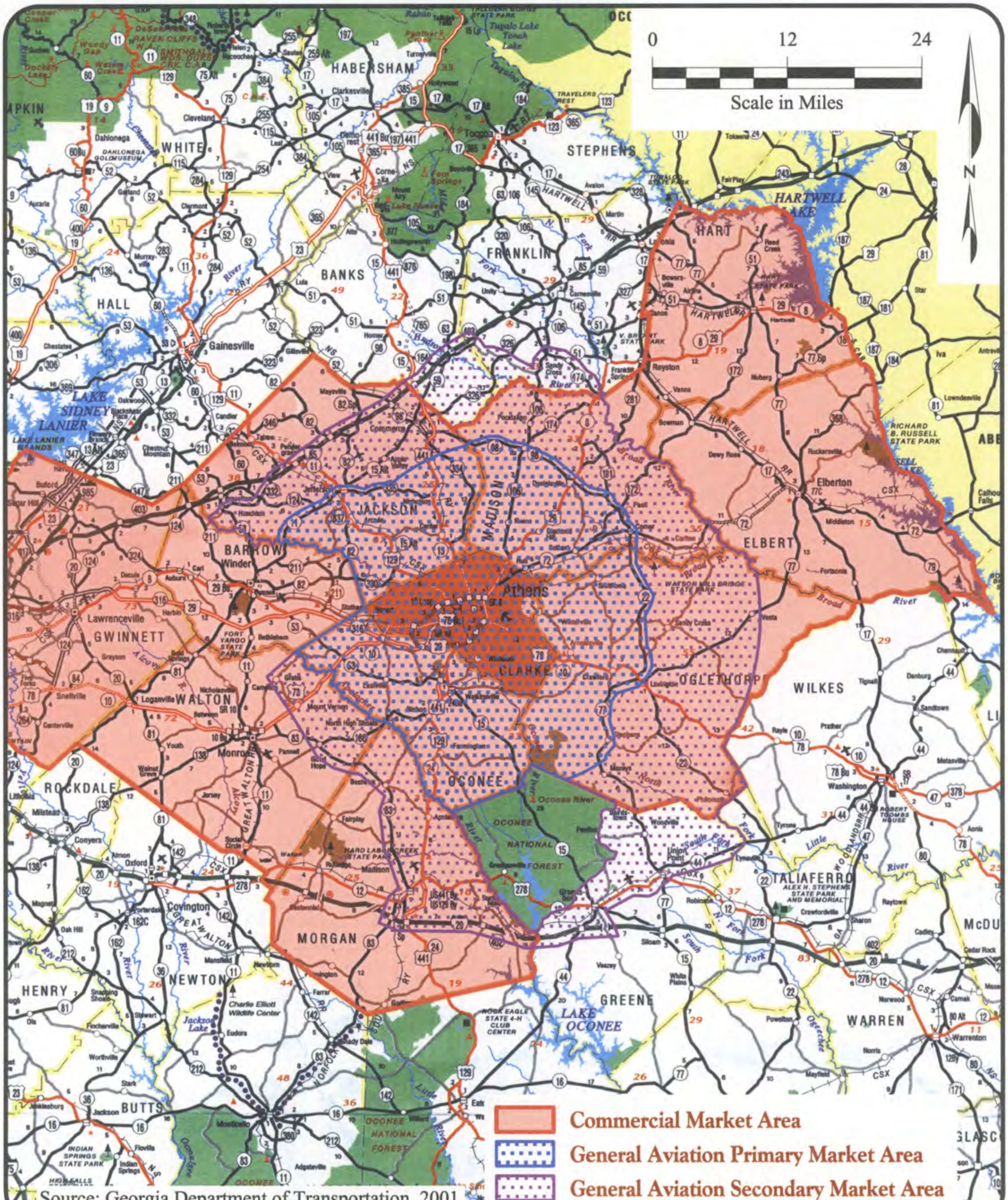
With regard to the general aviation market area, two market areas have been established. Market Area A, the primary market area, considers the 30-minute driving time isocronical, which has then been adjusted in consideration of the locations of other neighboring airports. Market Area A is considered the primary market area for the Airport because all types of general aviation activity can be marketed in this geographical area without undue competition from neighboring airports.

Market Area B, the secondary market area for the Airport, considers the superior facilities in place at the AHN. These facilities include a primary runway length of 5,522 feet, a crosswind runway length of 4,000 feet, a precision (ILS) instrument approach, and an automated weather reporting facility (ASOS). Since none of the neighboring airports, with the exception of Winder, can offer near equivalent facilities, Market Area B considers that some general aviation airport users will drive farther and bypass neighboring airports to gain access to the superior facilities available at Athens/Ben Epps Airport. This is especially true for business and corporate general aviation airport users that require at least a 5,000-foot runway length and precision instrument approach capabilities to conduct operations.

Primary Market Area A includes Clarke County, Oconee County, and the inner portions of Jackson, Madison, and Oglethorpe Counties. Secondary Market Area B includes major portions of Jackson, Madison, Oglethorpe, and Morgan Counties, as well as the inner portions of Elbert, Walton, and Greene Counties. The portion of Greene County that contains the Oconee National Forest is not included in the Market Area, as it will remain undeveloped.

1.2 ACTIVITY PROFILE

There are a variety of activity types at an airport, including air carrier, air taxi, local general aviation, itinerant general aviation, and military.



ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

Airport Market Areas

Figure 1-2

An air carrier operation is defined as a takeoff or landing of an air carrier aircraft and includes the period of time 15 minutes before and until 15 minutes after the takeoff or landing[1] and an air taxi operation is conducted by an aircraft operated by the holder of an Air Taxi Operating Certificate, which authorizes the carriage of passengers, mail, or cargo for revenue in accordance with FAR Parts 135 and 121. Local operations, as defined by the FAA, are arrivals and departures of aircraft which operate in the local traffic pattern and are known to be departing for or arriving from flights in local practice areas within a 20-mile radius of the airport; plus simulated instrument approaches or low passes at the airport executed by any aircraft."[2] Conversely, itinerant operations are defined as all aircraft arrivals and departures other than local operations. General aviation is defined as that portion of civil aviation that encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity from the Civil Aeronautics Board, and large aircraft commercial operators.

Based on discussions with Airport representatives, current activity consists of 73,964 annual operations. The breakdown of annual operations by activity type is as follows: 16 air carrier; 1,970 air taxi; 36,278 local general aviation; 34,065 itinerant general aviation; and 1,635 military. In addition, there are currently 109 aircraft based at the Airport including 84 single engine, 16 multi-engine, 8 jets, and 1 helicopter. The most current full year of Airport data indicates that 11,234 enplanements were experienced.

US Airways Express currently provides daily airline service between Athens and Charlotte, North Carolina.

1.3 EXISTING AIRPORT FACILITIES

A high altitude, aerial photograph was obtained on August 1, 1997, as part of this Master Plan Update. This photograph encompasses the Airport and adjacent areas and was utilized in conjunction with other sources to inventory land use and existing facilities. Existing

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[1] 14 CFR 139.3

[2] Federal Aviation Administration, Advisory Circular 150/5070-6A, *Airport Master Plans*, June 1985, p.22.

facilities located on Airport property are depicted on Figure 1-3 and described in the following subsections.

1.3.1 Runways and Taxiways

The Airport is served by two paved runways (grooved asphalt), as shown on Figure 1-3. Runway 9/27 is 5,522 feet long and 100 feet wide and is considered the primary runway. The crosswind or secondary runway, Runway 2/20, is 4,000 feet long and 100 feet wide.

Runway 9/27 is equipped with a partial parallel taxiway, Taxiway A, which is 50 feet wide and located 400 feet north of the runway centerline. In the vicinity of the terminal area (between Taxiway A3 and B3) Taxiway A shifts to a 600/650-foot separation from the runway centerline and follows the apron edge. Runway 9/27 has a network of entrance and exit taxiways.

Runway 2/20 is equipped with a partial parallel taxiway, Taxiway B, which is 35 feet wide and located approximately 200 feet west of the runway centerline. In addition to a network of entrance and exit taxiways, Runway 2/20 access is provided by Taxiways B3 and B4.

1.3.2 Pavement Strength

For scheduled operations Runway 9/27 and Runway 2/20 have a load-bearing capacity of 40,000 pounds for aircraft with a single-wheel landing configuration and 45,000 pounds for aircraft with a dual-wheel landing configuration.[3] However, the pavement can support operations by heavier aircraft on occasion, such as the C-130, DC-9, B-737, and the Gulfstream II, III, IV, and V.

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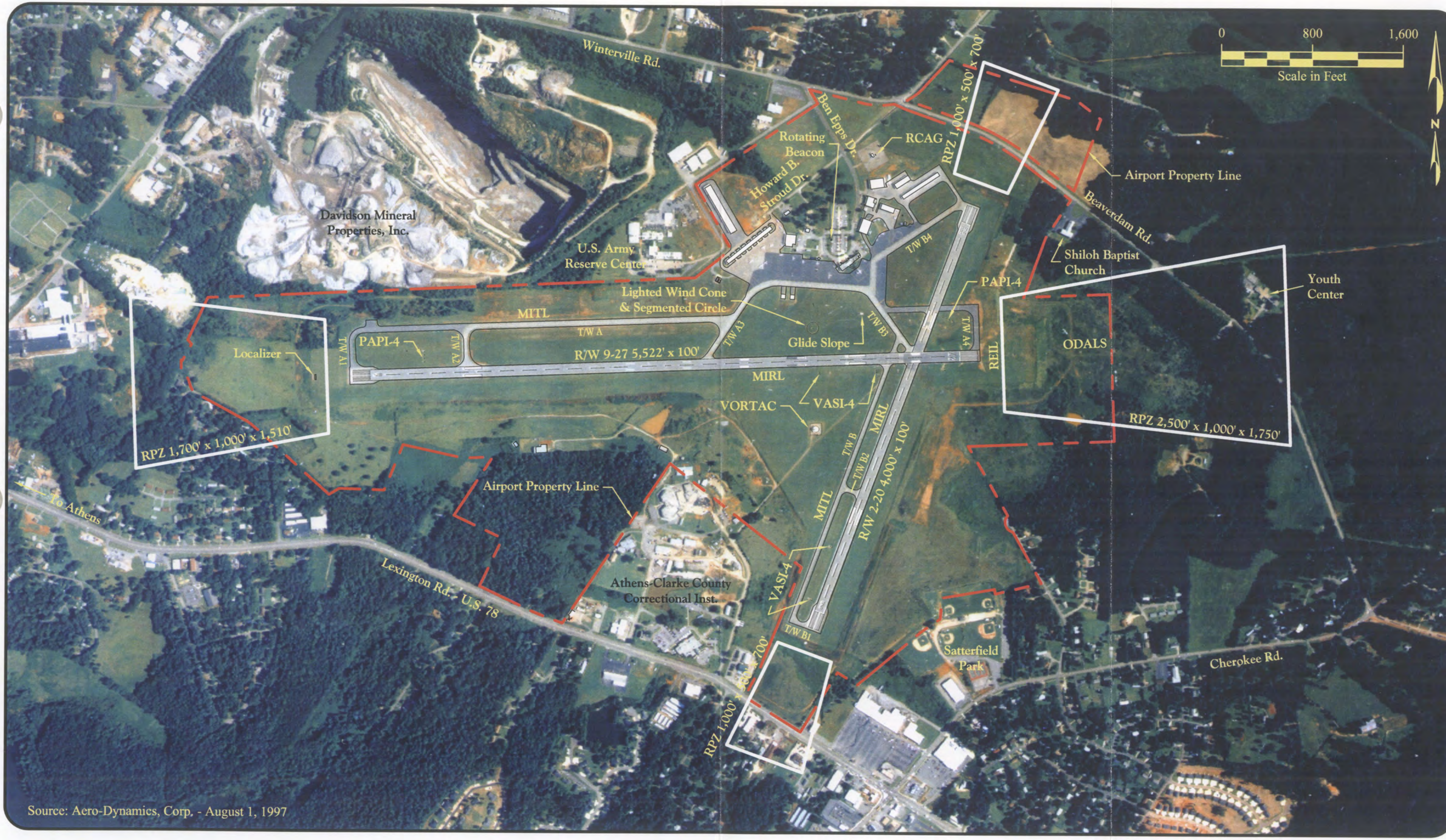
[3] *Airport/Facility Directory*, November 2001.



Athens Clarke County
ATHENS-BEN EPPS AIRPORT

Existing Facilities

Figure 1-3

1.3.3 Airfield Lighting, NAVAIDS, and Automated Surface Observation System

The Airport is currently equipped with various navigational aids (NAVAIDs) and lighting systems to allow both nighttime and instrument flight rules (IFR) aircraft operations. These existing facilities are generally depicted on Figure 1-3 and are described below.

Airfield Lighting

Runway 9/27 and Runway 2/20 are equipped with medium intensity runway lighting (MIRL). All taxiways are equipped with medium intensity taxiway lighting (MITL). Runways 9 and 20 are equipped with a precision approach path indicator (PAPI-4). PAPI is a system of lights, which provides visual descent guidance information during an approach to a runway. Runway 27 is equipped with runway end identifier lights (REIL) and an omnidirectional approach lighting system (ODALS). REIL provides pilots with a positive indication of the location of each runway end. ODALS provide omnidirectional orientation by visual vectoring with remote control of light intensity from the cockpit and the tower/flight service facility. Runways 2 and 27 are equipped with a visual approach slope indicator (VASI-4). VASI provides vertical visual approach slope guidance to aircraft during approach to landing.

NAVAIDS

The Airport is currently equipped with the following landing aids and NAVAIDS: instrument landing system (ILS) approach to Runway 27, very high frequency omnidirectional range (VOR)/distance measuring equipment (DME), area navigation (RNAV) or global positioning system (GPS) approach to Runways 9 and 20, VOR or GPS approach to Runway 2, VOR approach to Runway 27 and a non-directional beacon (NDB) and GPS approach to Runway 27. In addition, the Airport is currently equipped with a lighted wind indicator, segmented circle, and a rotating beacon.

Automated Surface Observation System

An automated surface observation system (ASOS) is located approximately 750 feet south of Runway 9/27, at its midpoint. The ASOS provides continuous minute-by-minute weather observations. It provides weather observations, which include: temperature, dew point, wind, altimeter setting, visibility, sky condition, and precipitation. ASOS information is broadcast to pilots over a discrete radio frequency. Weather observation information is also sent to the FAA and National Weather Service.

1.3.4 Building and Apron Inventory

In addition to the airfield lighting and NAVAIDS, the Airport complex is comprised of several building and paved parking apron facilities. The primary buildings at the Airport are described in Table 1-1. Additional details about major facilities are provided below. The building identifier numbers utilized in Table 1-1 are keyed to Figure 1-4.

Table 1-1
BUILDING SUMMARY
Athens-Ben Epps Airport

BUILDING IDENTIFIER NUMBER	DESCRIPTION	AREA
1	Sonny's Air Service	9,600 SF
2	Executive Hangars	6,500 SF
3	Georgia Aviation	5,400 SF
4	US Jets	10,200 SF
5	General Aviation Terminal	8,600 SF
6	T-Hangar	20 Units
7	T-Hangar	16 Units
8	T-Hangar	4 Units
9	T-Hangar	12 Units
10	Air Carrier Terminal	7,860 SF
11	Airport Administration	1,500 SF
12	Aircraft Rescue and Fire Fighting	1,200 SF

SOURCE: Verified by THE LPA GROUP INCORPORATED.

#	Description
1	Sonny's Air Service
2	Executive Hangars
3	Georgia Aviation
4	US Jets
5	General Aviation Terminal
6	T-Hangar - 20 Unit
7	T-Hangar - 16 Unit
8	T-Hangar - 4 Unit
9	T-Hangar - 12 Unit
10	Air Carrier Terminal
11	Airport Administration
12	Aircraft Rescue and Fire Fighting

ATHENS CLARKE COUNTY
ATHENS-BEN EPPS AIRPORT

Building Inventory

Figure 1-4

General Aviation Terminal

The general aviation terminal (Building Number 5) is a one-story 8,600 square foot building. This building not only serves as the main general aviation terminal but also includes space reserved for the services provided by Georgia Aviation Inc.

Air Carrier Terminal

The air carrier terminal (Building Number 10) is a one-story building consisting of approximately 7,860 square feet. The terminal building includes airline ticketing space (US Airways Express), baggage claim, a public waiting area, rental car vendor space (Budget and Hertz), public restrooms, secure passenger holding areas, the National Weather Service, concessions, as well as offices and mechanical/building maintenance areas. The terminal building allows for apron level boarding and contains one loading position.

Airport Administration

The airport administration building (Building Number 11) totals approximately 1,500 square feet. This facility consists of office space for the Airport manager and administrative assistant, a conference room, restroom, waiting area, and kitchen.

Apron

The existing apron area is available for air carrier parking, based and transient tie-downs, and hangar maneuvering. Approximately 4,000 square yards is reserved for air carrier parking and approximately 25,100 square yards is reserved for based and transient tie-downs and hangar maneuvering. There are a total of 77 tie-downs, 64 reserved for based aircraft parking (including 31 to be installed in 2002) and 13 reserved for transient aircraft parking.

1.3.5 Aircraft Rescue and Fire Fighting Facilities and Equipment

FAA Federal Aviation Regulations (FAR) Part 139 provides guidelines for Aircraft Rescue and Fire Fighting (ARFF) requirements as they pertain to air carrier aircraft. These guidelines require an index determination for each certificate holder. The index is based on a combination of both the length of air carrier aircraft and the number of average daily departures of air carrier aircraft. For the purposes of the index determination, air carrier aircraft are grouped as follows:

- 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; and,
- Index E - Aircraft 200 feet in length or greater.

The various index levels are predicated on the largest air carrier aircraft within the indicated grouping that makes five or more scheduled departures a day at the airport. Athens-Ben Epps Airport is currently categorized as an Index A airport.[4] As depicted on Figure 1-3, the ARFF facility is located northeast of the general aviation terminal building. The 2-bay facility consists of approximately 1,200 square feet. The Airport's current ARFF equipment includes one rapid response vehicle capable of holding 450 pounds dry chemical and 100 gallons Aqueous Film-Forming Foams (AFFF). The ARFF is staffed as needed by employees located at various locations on the Airport.

1.3.6 Fuel Storage

Athens-Clarke county owns and operates the two above ground storage tanks (15,000-gallon 100 LL AVGas and 20,000-gallon Jet A) which are located west of the passenger terminal area and north of Taxiway A, as depicted on Figure 1-4. Fuel is dispersed through the use of trucks. In addition, US Jets has one above ground tank (10,000-gallon Jet A) located east of the passenger terminal area and adjacent to US Jets (Building Number 4).

1.3.7 Vehicle Parking

Air Carrier

Air carrier terminal area parking is available north of the air carrier terminal building and access is provided by Ben Epps Drive. Parking facilities in this area accommodate the

[4] *Airport/Facility Directory*, November 2001.

public, rental car ready/return, FAA and the National Weather Service (reserved), curbside passenger pick-up and drop-off, and Airport employees. Existing parking areas associated with the air carrier terminal provide approximately 190 spaces.

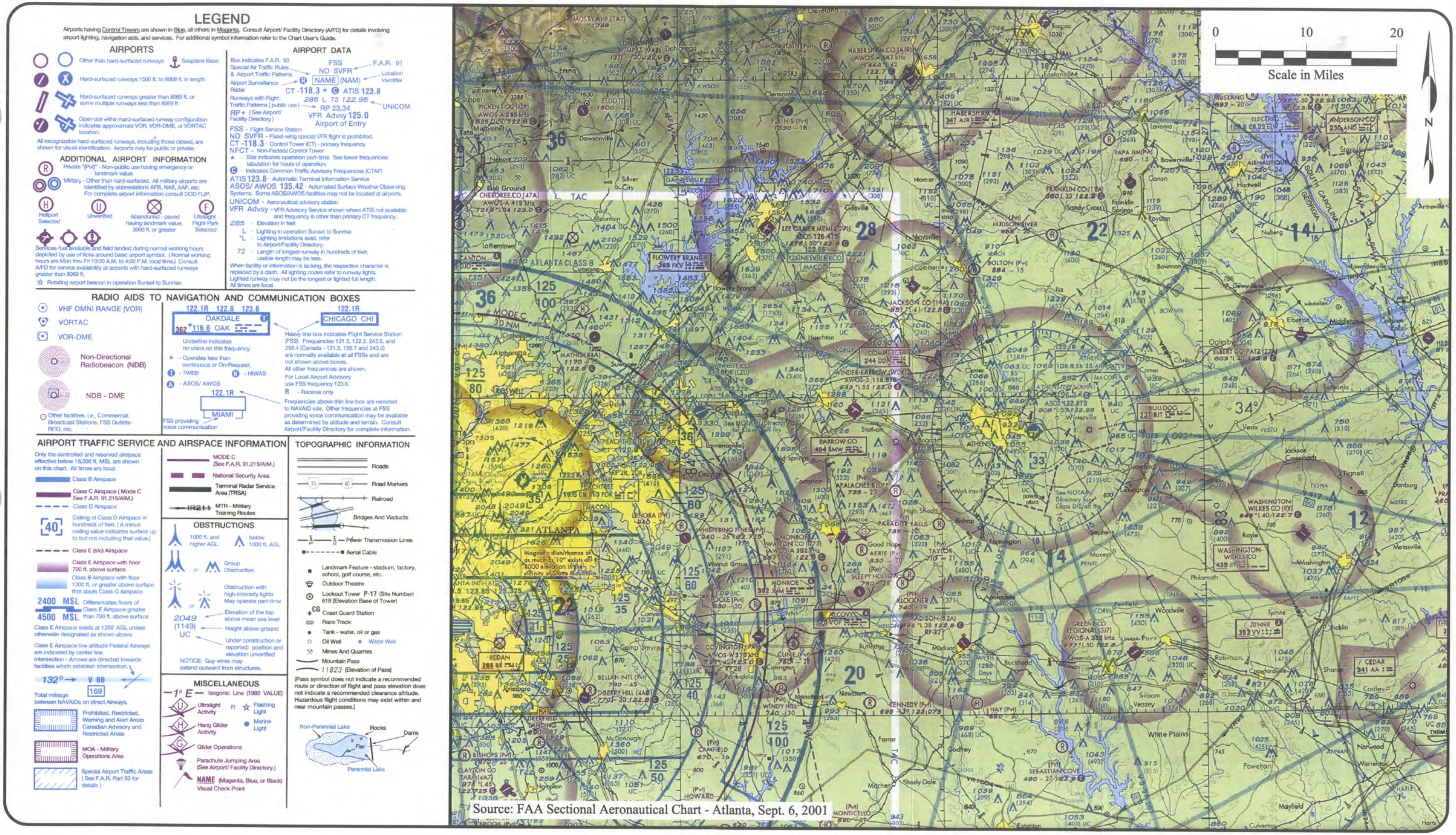
General Aviation

Vehicle parking for general aviation users is located in several areas on the Airport. Currently, 27 spaces are provided adjacent to the general aviation terminal (Building Number 5). Parking for Sonny's Air Services consists of approximately nine spaces and is located adjacent to the building (Building Number 1) along Ben Epps Drive. Parking for Georgia Aviation and US Jets consists of approximately 14 shared spaces located along Ben Epps Drive.

Parking facilities for airport administration consist of 11 spaces located adjacent to the airport administration building, along Howard B. Stroud Drive.

1.4 AIRSPACE STRUCTURE

The Athens Ben-Epps Airport and surrounding airspace structure is illustrated in Figure 1-5. Because the Airport has an Air Traffic Control Tower (ATCT), it is located in Class D Airspace during those hours when the ATCT is open (approximately 8:00AM to 8:00PM local time). Class D Airspace encompasses a radius of some four nautical miles from the center of the Airport, and extends upward from the surface to an elevation of 3,300 feet mean sea level (MSL), or 2,492 feet above Airport elevation. Class D Airspace is shown in Figure 1-5 by the circular dashed blue line surrounding the Airport. Two-way radio communications must be established with the ATCT prior to entry and thereafter maintained when operating in Class D Airspace. In addition, basic visual flight rule (VFR) weather minimums of three statute miles, and a ceiling of 1,000 feet above ground level (AGL) are applicable to this airspace.



ATHENS CLARKE COUNTY
ATHENS-BEN EPPS AIRPORT

Airspace Structure

Figure 1-5

When the ATCT is closed, Class E (surface based) Airspace operating rules apply, which require VFR aircraft to have three statute miles of flight visibility, and maintain clearance from clouds of 500 feet below, 1,000 feet above, and 2,000 feet horizontally. The Class E Airspace has been configured to contain instrument procedures approach areas as shown by the dashed magenta boxes near the Airport in Figure 1-5.

Lastly, Class E (non-surface based) Airspace surrounds the Airport, as shown by the circular magenta area in Figure 1-5. Class E (non-surface based) Airspace begins at 700 feet AGL, and has the same VFR visibility and cloud clearance requirements as Class E (surface based) Airspace.

1.5 WIND COVERAGE

Based on review of the wind persistency data applicable to the Athens Ben-Epps Airport, it has been determined that the present two-runway configuration at the Airport provides greater than the FAA recommended 95 percent wind coverage during all weather conditions. A 10.5-knot, 13-knot, 16-knot, and 20-knot crosswind component was considered. In addition, IFR wind rose data indicates that Runway 2/20 provides 99.26 percent wind coverage, while Runway 9/27 provides 99.64 percent coverage. Combined coverage for all runways total 99.96 percent during IFR weather conditions, well above the required coverage specified by the FAA.

1.6 SOCIOECONOMIC DATA

Statistical data was not updated after work on the Master Plan Update resumed in June 2001, however data previously gathered is presented in Appendix I, "Master Plan Update Aviation Activity Forecasts Technical Paper".

Appendix VIII

HEIGHT ZONING ORDINANCE

SUGGESTED HEIGHT ZONING ORDINANCE AND MAP

The following suggested height zoning ordinance defines and describes the airspace and land use protection requirements as related to the Athens-Ben Epps Airport and documented in this Airport Master Plan Update.

It is intended that the suggested ordinance be used as a guide to establish an official Airport Height Zoning Ordinance for the Athens-Ben Epps Airport.

This suggested ordinance is based on guidance published in Federal Aviation Regulation (FAR) Advisory Circular 150/5190-4A entitled; *A Model Zoning Ordinance To Limit Height Of Objects Around Airports* and a review of the existing height zoning ordinance. .

A SUGGESTED ZONING ORDINANCE TO LIMIT HEIGHT OF OBJECTS AROUND ATHENS-BEN EPPS AIRPORT

An Ordinance regulating and restricting the height of structures and objects of natural growth, and otherwise regulating the use of property, in the vicinity of the Athens-Ben Epps Airport by defining the appropriate airspace surfaces as contained in FAR Part 77, Subpart C; by converting these surfaces to appropriate zones and establishing the boundaries thereof; providing for changes in the restrictions and boundaries of such zones; defining certain terms used herein; and referring to the Athens-Ben Epps Airport Zoning Map, which is incorporated in and made a part of this suggested ordinance; <u>providing for enforcement; establishing a board of adjustment; and imposing penalties</u>.[1]

It is hereby found that an obstruction has the potential for endangering the lives of and property of users of the Athens-Ben Epps Airport, and property or occupants of land in its vicinity; that an obstruction may affect existing and future instrument approach minimums at the Airport; and that an obstruction may reduce the size of areas available for the landing, takeoff, and maneuvering of aircraft, thus tending to destroy or impair the utility of the Airport and the public investment therein. Accordingly, it is declared:

(1) that the creation or establishment of an obstruction has the potential of being a public nuisance and may injure the region served by the Airport;

(2) that it is necessary in the interest of the public health, public safety, and general welfare that the creation or establishment of obstructions that are a hazard to air navigation be prevented; and,

(3) that the prevention of these obstructions should be accomplished, to the extent legally possible, by the exercise of the police power without compensation.

It is further declared that the prevention of the creation or establishment of hazards to air navigation, the elimination, removal, alteration or mitigation of hazards to air navigation, or marking and lighting of obstructions are public purposes for which a political subdivision may raise and expend public funds and acquire land or interests in land.

It is hereby ordained by the Athens-Clarke County Unified Government as follows:

SECTION I: SHORT TITLE

This Ordinance shall be known and may be cited as the "Athens-Ben Epps Airport Overlay (A) District."

SECTION II: DEFINITIONS

1. AIRPORT - Means the airport facility known as the Athens-Ben Epps Airport.

1 The underlined text may not be applicable to the Athens Zoning Ordinance based on existing enforcement, review and penalty procedures; however, it is left in this sample ordinance for reference.

2. ESTABLISHED AIRPORT ELEVATION - 807.7 feet above mean sea level.

3. APPROACH, TRANSITIONAL, HORIZONTAL, AND CONICAL ZONES - These zones are set forth in Section III of this Ordinance.

4. PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway. When the runway has no specially prepared hard surface or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section III of this Ordinance. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

5. APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section IV of this Ordinance. In plan the perimeter of the approach surface coincides with the perimeter of the approach zone.

6. HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone.

7. CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

8. TRANSITIONAL SURFACES - These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces.

9. RUNWAY - A defined area on an airport prepared for landing and take-off of aircraft along its length.

10. VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedures.

11. NONPRECISION INSTRUMENT RUNWAY - A runway with an existing or plannedinstrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for a straight-in nonprecision instrument approach.

12. PRECISION INSTRUMENT RUNWAY - A runway having an existing precision instrument approach procedure. It also means a runway for which a precision approach procedure is planned and is so indicated on an approved airport layout plan or any other planning document.

13. UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

14. LARGER THAN UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of greater than 12,500 pounds maximum gross weight and jet powered aircraft.

15. STRUCTURE - An object, including a mobile object, constructed or installed by man, including but without limitation, buildings, towers, cranes, smokestacks, earth formation, and overhead transmission lines.

16. TREE - Any object of natural growth.

17. OBSTRUCTION - Any structure, tree, or other object, including a mobile object, which exceeds a limiting height set forth in Section IV of this Ordinance.

18. HAZARD TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.

19. HEIGHT - For the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the zoning map, the datum shall be mean sea level elevation unless otherwise specified.

20. PERSON - An individual, firm, partnership, corporation, company, association, joint stock association or government entity; includes a trustee, a receiver, an assignee, or a similar representative of any of them.

21. NONCONFORMING USE - Any pre-existing structure, tree, or use of land, which is inconsistent with the provisions of this Ordinance or an amendment thereto.

SECTION III: AIRPORT ZONES AND ZONING MAP

In order to carry out the provisions of this Ordinance, the appropriate airspace surfaces as contained in FAR Part 77, Subpart C, and defined in Section II of this Ordinance are hereby converted to zones. These established zones include the land lying beneath the associated airspace surface which include the approach surfaces, transitional surfaces, horizontal surfaces, and conical surfaces. Such zones are shown on the Athens-Ben Epps Airport Height Zoning Map consisting of one sheet, and dated July 2002, which is attached to this Ordinance and made a part hereof. Collectively these zones are titled the "Athens-Ben Epps Airport Overlay (A) District." An area located in more than one of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

(1) PRECISION APPROACH ZONE - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 16,000 feet at a horizontal distance of 50,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway. The Precision Approach Zone is applicable to the approach end of Runway 27 at the Athens-Ben Epps Airport.

(2) LARGER THAN UTILITY RUNWAY NONPRECISION APPROACH ZONE - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway. The Larger Than Utility Non Precision Approach Zone is applicable to the approach end of Runway 9 at the Athens-Ben Epps Airport.

(3) UTILITY RUNWAY NONPRECISION APPROACH ZONE - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 2,000 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway. The Utility Runway Nonprecision Approach Zone is applicable to both ends of Runway 2/20.

(4) TRANSITIONAL ZONES - The transitional zones are the areas beneath the transitional surfaces.

(5) HORIZONTAL ZONE - The horizontal zone is established by swinging arcs of 10,000 feet from the center of each end of the primary surface of each runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.

(6) CONICAL ZONE - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward there from a horizontal distance of 4,000 feet.

SECTION IV: AIRPORT ZONE HEIGHT LIMITATIONS

Except as otherwise provided in this Ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow, in any zone created by this Ordinance, to a height in excess of the applicable height herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question, as follows:

(1) PRECISION APPROACH ZONE - Slopes fifty (50) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline; thence slopes upward forty (40) feet horizontally for each foot vertically to an additional horizontal distance of 40,000 feet along the extended runway centerline.

(2) LARGER THAN UTILITY RUNWAY NONPRECISION APPROACH ZONE - Slopes thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

(3) UTILITY RUNWAY NONPRECISION APPROACH ZONE - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

(4) TRANSITIONAL ZONES - Slope seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation. In addition to the foregoing, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and the same elevation as the approach surface, and extending to where they intersect the conical surface.

(5) HORIZONTAL ZONE - Established at 150 feet above the airport elevation or at a height of 957.7 feet above mean sea level for the Athens-Ben Epps Airport.

(6) CONICAL ZONE - Slopes twenty (20) feet outward for each foot upward beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation and extending to a height of 350 feet above the airport elevation.

(7) EXCEPTED HEIGHT LIMITATIONS - Nothing in this Ordinance shall be construed as prohibiting the construction or maintenance of any structure, or growth of any tree, to a height up to 50 feet above the surface of the land. Such potential obstructions should be resolved through the purchase of property in easement, or in fee simple.

SECTION V: USE RESTRICTION

Notwithstanding any other provisions of this Ordinance, no use may be made of land or water within any zone established by this Ordinance in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of the pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

In addition, the following use restrictions shall apply within airport approach and transition zones in addition to those provisions stated for the zoning district affected by airport-related zones.[2] To protect the airport from incompatible uses and to minimize the effects of noise and safety hazards associated with airport operations, the following uses shall be prohibited unless otherwise approved as special uses by the Mayor and Commission of Athens-Clarke County:

(a) Churches, schools, stadiums, lodges and clubs, and other similar places of public assembly;
(b) Multiple-family dwellings;
(c) Hospitals, public and private institutions and other similar uses where concentrations of persons are customary;
(d) Industrial and/or heavy commercial uses which emit smoke, dust, flame, or glare of such magnitude as to constitute a hazard to aircraft; and,
(e) Restaurants.

SECTION VI: NONCONFORMING USES

(1) REGULATIONS NOT RETROACTIVE - The regulations prescribed in this Ordinance shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as of the effective date of this Ordinance, or otherwise interfere with the continuance of a nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this Ordinance, and is diligently prosecuted and completed within one year thereof.

(2) OBSTRUCTION MARKING AND LIGHTING - Notwithstanding the preceding provision of this section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the Zoning Administrator to indicate to the operators of aircraft

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2 The following land use provisions have been added from the existing Athens Zoning Ordinance.

in the vicinity of the airport the presence of such airport obstructions. See *FAA Advisory Circular 70-7460-1K* for further guidance. Such markers and lights shall be installed, operated, and maintained at the expense of the airport sponsor.

SECTION VII: PERMITS

(1) FUTURE USES - Except as specifically provided in a, b, and c hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created unless a permit therefore shall have been applied for and granted. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this ordinance shall be granted unless a variance has been approved in accordance with Section VII, (4).

(a) In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when, because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

(b) In areas lying within the limits of the approach zones but at a horizontal distance of not less than 4,200 feet from each end of the runway, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure would extend above the height limit prescribed for such approach zones.

(c) In the areas lying within the limits of the transition zones beyond the perimeter of the horizontal zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure, because of terrain, land contour, or topographic features, would extend above the height limit prescribed for such transition zones.

Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction, or alteration of any structure, or growth of any tree in excess of any of the height limits established by this Ordinance except as set forth in Section IV, (7).

(2) EXISTING USES - No permit shall be granted that would allow the establishment or creation of an obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation than it was on the effective date of this Ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.

(3) NONCONFORMING USES ABANDONED OR DESTROYED - Whenever the Zoning Administrator determines that a nonconforming tree or structure has been abandoned or more than 80 percent torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations.

(4) VARIANCES - Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this Ordinance, may apply to the Zoning Administrator for a variance from such regulations in accordance with Type II procedures. The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances may be allowed where it is duly found that a literal application or enforcement of the regulations will result in unnecessary hardship and, that the relief granted will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this Ordinance. Additionally, no application for variance to the requirements of this Ordinance may be considered by the Zoning Administrator unless a copy of the application has been furnished to the Airport Authority for advice as to the aeronautical effects of the variance. If the Airport Authority does not respond to the application within 60 days after receipt, the Mayor and Athens-Clarke County Commission may act on its own to grant or deny said application.

(5) OBSTRUCTION MARKING AND LIGHTING - Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this Ordinance and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate, and maintain, at the owner's expense, such markings and lights as may be necessary. If deemed proper, this condition may be modified to require the airport sponsor, at its own expense, to install, operate, and maintain the necessary markings and lights. *FAA Advisory Circular 70-7460-1K* provides further guidance to meet this requirement.

(6) AVIGATION EASEMENT - In addition to the provisions of Section VII, any permit or variance granted under the provisions of this Section may be granted with the condition that the owner of the structure or tree in question shall enter into an avigation easement agreement. The avigation easement shall be in a form established by the Athens-Clarke County Planning Commission, signed by the landowner, recorded in the Athens-Clarke County Clerk's Office and a note on all final plats and site improvement plans, indicating the book and page of the recorded easement, shall be required.

(NOTE: SECTIONS VIII - XV CONTAIN RECOMMENDED PROVISIONS FROM THE *FAA ADVISORY CIRCULAR 150/5190-41 A MODEL ZONING ORDINANCE TO LIMIT HEIGHT OF OBJECTS AROUND AIRPORTS*; HOWEVER, ATHENS CLARKE COUNTY GOVERNMENT MAY ALREADY HAVE THESE PROCESSES IN PLACE WITHIN THE EXISTING ZONING ORDINANCE.

SECTION VIII: ENFORCEMENT

It shall be the duty of the Zoning Administrator to administer and enforce the regulations prescribed herein. Applications for permits and variances shall be made to the Zoning Administrator upon a form published for that purpose. Applications required by this Ordinance to be submitted to the Zoning Administrator shall be promptly considered and granted or denied. Application for action by the Board of Adjustment shall be forthwith transmitted by the Zoning Administrator.

SECTION IX: BOARD OF ADJUSTMENT

(1) There is hereby created a Board of Adjustment to have and exercise the following powers: (a) to hear and decide appeals from any order, requirement, decision, or determination made by the Zoning Administrator in the enforcement of this Ordinance; (b) to hear and decide special exceptions to the terms of this Ordinance upon which such Board of Adjustment under such regulations may be required to pass; and, (c) to hear and decide specific variances.

(2) The Board of Adjustment shall consist of three members appointed by the Athens-Clarke County Council and each shall serve for a term of three years until a successor is duly appointed and qualified. Of the members first appointed, one shall be appointed for a term of one year, one for a term of two years, and one for a term of three years. Members shall be removable by the appointing authority for cause, upon written charges, after a public hearing.

(3) The Board of Adjustment shall adopt rules for its governance that will be in harmony with the provisions of this Ordinance. Meetings of the Board of Adjustment shall be held at the call of the Chairperson and at such other times as the Board of Adjustment may determine. The Chairperson or, in the absence of the Chairperson, the Acting Chairperson may administer oaths and compel the attendance of witnesses. All hearings of the Board of Adjustment shall be public. The Board of Adjustment shall keep minutes of its proceedings showing the vote of each member upon each question; or if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions, all of which shall immediately be filed in the office of the Athens-Clarke County Clerk and on due cause shown.

(4) The Board of Adjustment shall make written findings of facts and conclusions of law giving the facts upon which it acted and its legal conclusions from such facts in reversing, affirming, or modifying any order, requirement, decision, or determination which comes before it under the provisions of this Ordinance.

(5) The concurring vote of a majority of the members of the Board of Adjustment shall be sufficient to reverse any order, requirement, decision, or determination of the Zoning Administrator or decide in favor of the applicant on any matter upon which it is required to pass under this Ordinance, or to effect variation to this Ordinance.

SECTION X: APPEALS

(1) Any person aggrieved, or any taxpayer affected, by any decision of the Zoning Administrator made in the administration of the Ordinance, may appeal to the Board of Adjustment.

(2) All appeals hereunder must be taken within a reasonable time as provided by the rules of the Board of Adjustment, by filing with the Zoning Administrator a notice of appeal specifying the grounds thereof. The Zoning Administrator shall forthwith transmit to the Board of Adjustment all the papers constituting the record upon which the action appealed from was taken.

(3) An appeal shall stay all proceedings in furtherance of the action appealed from unless the Zoning Administrator certifies to the Board of Adjustment, after the notice of appeal has been filed with it, that by reason of the facts stated in the certificate a stay would in the opinion of the Zoning Administrator cause imminent peril to life or property. In such case,

proceedings shall not be stayed except by order of the Board of Adjustment or notice to the Zoning Administrator and on due cause shown.

(4) The Board of Adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person or by agent or by attorney.

(5) The Board of Adjustment may, in conformity with the provisions of this Ordinance, reverse or affirm, in whole or in part, or modify the order, requirement, decision, or determination appealed from and may make such order, requirement, decision, or determination as may be appropriate under the circumstances.

SECTION XI: JUDICIAL REVIEW

Any person aggrieved, or any taxpayer affected, by any decision of the Board of Adjustment, may appeal to the Circuit Court as provided in applicable Public Laws.

SECTION XII: PENALTIES

Each violation of this Ordinance or of any regulation, order, or ruling promulgated hereunder shall constitute a misdemeanor and be punishable by a fine of not more than __________ dollars or imprisonment for not more than ____ days or both; and each day a violation continues to exist shall constitute a separate offense.

SECTION XIII: CONFLICTING REGULATIONS

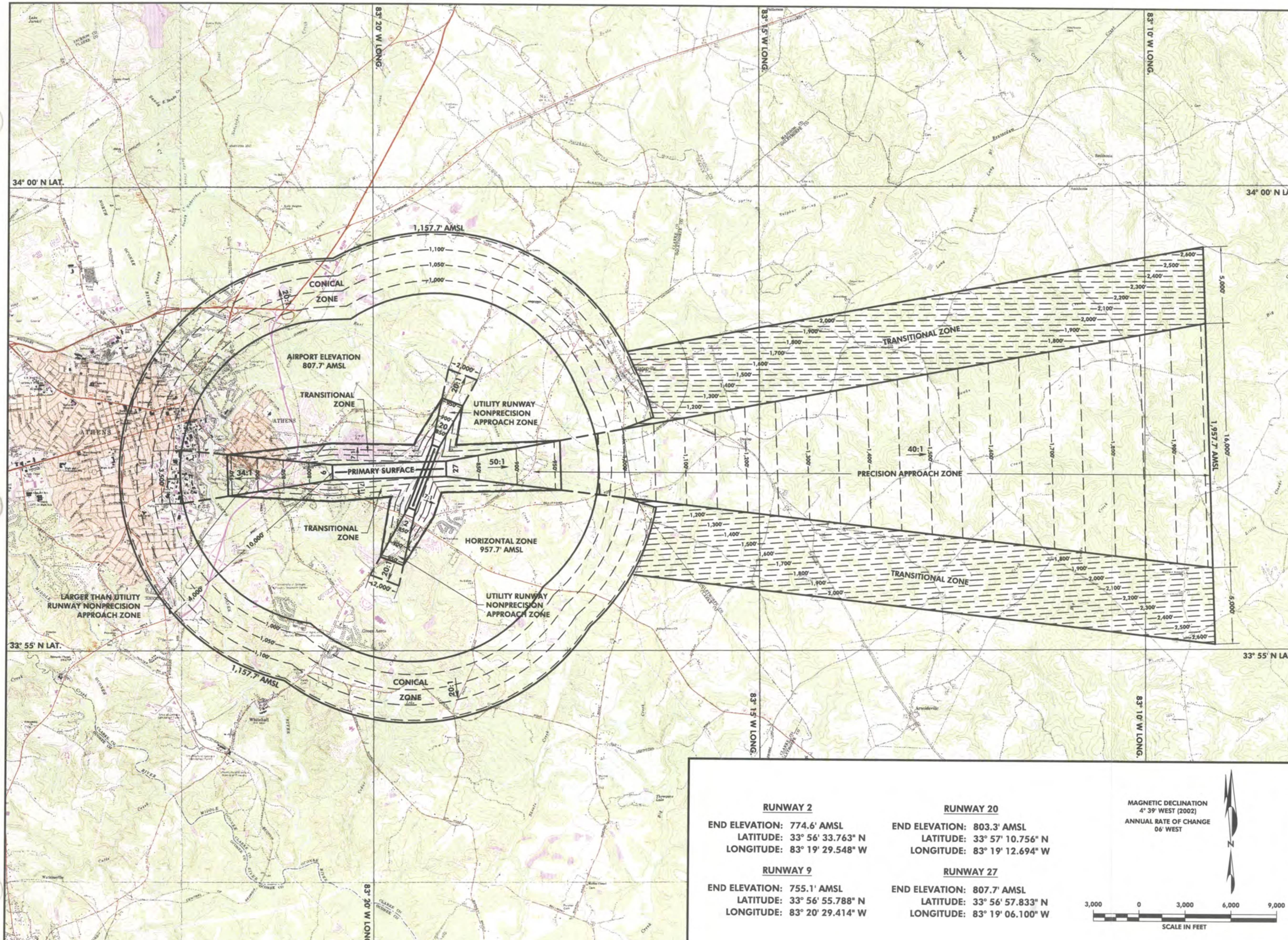
Where there exists a conflict between any of the regulations or limitations prescribed in this Ordinance and any other regulations applicable to the same area, whether the conflict be with respect to the height of structures or trees, and the use of land, or any other matter, the more stringent limitation or requirement shall govern and prevail.

SECTION XIV: SEVERABILITY

If any of the provisions of this Ordinance or the application thereof to any person or circumstances are held invalid, such invalidity shall not affect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end, the provisions of this Ordinance are declared to be severable.

SECTION XV: EFFECTIVE DATE

WHEREAS, the immediate operation of the provisions of this Ordinance is necessary for the preservation of the public health, public safety, and general welfare, this Ordinance shall be in full force and effect immediately after its passage, publication, and posting, as required by law.



ATHENS CLARKE COUNTY

ATHENS-BEN EPPS AIRPORT

ATHENS, GEORGIA

THE LPA GROUP
TRANSPORTATION CONSULTANTS

ATLANTA, GA • BATON ROUGE, LA • CHARLESTON, SC
CHARLOTTE, NC • CHICAGO, IL • COLUMBIA, SC
GREENSBORO, NC • JACKSONVILLE, FL • KNOXVILLE, TN
MOBILE, AL • ORLANDO, FL • RALEIGH, NC • RICHMOND, VA
SARASOTA, FL • TALLAHASSEE, FL • TAMPA, FL • WEST PALM BEACH, FL

Designer:	TGM
Technician:	TGM
Checked by:	JD
Project Number:	PL207015

NOTES

1. COORDINATES SHOWN HEREON ARE IN NAD83.
2. ELEVATIONS SHOWN ARE ABOVE MEAN SEA LEVEL (AMSL).
3. BASE MAP TAKEN FROM THE U.S.G.S. 7.5 MINUTE SERIES QUADS:
   ATHENS EAST, GA 1986;
   ATHENS WEST, GA 1984;
   BARNETT SHOALS, GA 1986;
   CRAWFORD, GA 1971;
   DANIELSVILLE SOUTH, GA 1972;
   HULL, GA 1964;
   MAXEYS, GA 1971;
   NICHOLSON, GA 1985;
   WATKINSVILLE, GA 1986.
4. RUNWAY 9/27 IS SHOWN AT THE FUTURE LENGTH OF 7,022' TO PROTECT THE AIRSPACE FOR THE FUTURE CONDITION.

REVISIONS

No.	Description	Date	By

RUNWAY 2

END ELEVATION: 774.6' AMSL
LATITUDE: 33° 56' 33.763" N
LONGITUDE: 83° 19' 29.548" W

RUNWAY 9

END ELEVATION: 755.1' AMSL
LATITUDE: 33° 56' 55.788" N
LONGITUDE: 83° 20' 29.414" W

RUNWAY 20

END ELEVATION: 803.3' AMSL
LATITUDE: 33° 57' 10.756" N
LONGITUDE: 83° 19' 12.694" W

RUNWAY 27

END ELEVATION: 807.7' AMSL
LATITUDE: 33° 56' 57.833" N
LONGITUDE: 83° 19' 06.100" W

MAGNETIC DECLINATION
4° 39' WEST (2002)
ANNUAL RATE OF CHANGE
06' WEST

3,000 0 3,000 6,000 9,000
SCALE IN FEET

Project Name:
AIRPORT MASTER PLAN UPDATE

Drawing Name:
HEIGHT ZONING MAP

FAA A.I.P. Project Number:

Autocad Drawing Reference:

Date: JUNE 2002	Division: PLANNING
Scale: 1" = 6,000'	Drawing Number: