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Chapter One - Introduction

OVERVIEW

This Airport Master Plan is designed to provide the City of Tallahassee, owner and operator of the Tallahassee Regional Airport (TLH), with long-term guidance, relating to on-going development needs, project phasing, financial requirements, and viability of the airport over the twenty-year planning period. The Federal Aviation Administration (FAA) has very specific guidelines and criteria that are used in developing an airport master plan. In the most general terms, a master plan involves determining an airport's future facility requirements based upon FAA reviewed and approved forecasts of future aviation activity. The master plan then establishes a schedule of financial and construction priorities as well as identifying the funding sources to be used to pay for improvements during the twenty-year planning period. 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 City of Tallahassee is sponsoring this eighteen-month study, and the study is funded with state and local monies. The LPA Group Incorporated (LPA) was selected to lead this endeavor, which began in December 2002 and was completed in April 2004. This Master Plan Update for the Tallahassee Regional Airport was prepared in accordance with the requirements of the FAA, the Florida Department of Transportation (FDOT) Aviation Office, and the needs of the City of Tallahassee, Florida. All portions of this document are based on the criteria set forth in the FAA Advisory Circulars (AC) 150/5070-6A, *Airport Master Plans*; FAA AC 150/5300-13, Change 7, *Airport Design*; and the FDOT *Guidebook for Airport Master Planning*. These requirements include the need for public input because TLH, like any community airport, affects the general quality of life of its community.

As such, throughout this planning process, a variety of community and user groups were given an opportunity to provide input. Groups included airport tenants, users, local government officials, community leaders, TLH's standing Airport Advisory Committee, and the general public. At the beginning of this study, a brochure was produced and distributed to interested parties giving an overview of this process and instructions on how to provide the study team with comments. This information was also made available via the airport's website. The City Council of Tallahassee was briefed near the end of this study period, allowing the Council an opportunity to provide feedback. At the conclusion of the study, a public workshop was held to receive comments from interested citizens on the proposed development plan. Throughout this process coordination with airport staff occurred to ensure the study reflected the stated goals and objectives.

STUDY OBJECTIVES

The primary goal of this study is to provide direction for the future operation and improvement of the Tallahassee Regional Airport. In support of this goal, the following objectives were specifically considered:

- ✈ Identify airside, landside, and airspace improvements, and recommend options that optimize the economic benefits of the airport to the community.
- ✈ Enhance the safety, ease, and operational capability of the landside and airside of the airport.
- ✈ Identify short-term improvements and optimize short-term funding opportunities.

- Establish an implementation schedule for short, intermediate, and long-term improvements, and ensure that they are financially feasible.

- Ensure that short-term actions and recommendations are consistent with and do not preclude long-range planning options.

- Incorporate the interests of and work closely with the public and governmental entities during the planning process.

- Remain sensitive to the overall environmental characteristics and issues in areas surrounding the airport.

- Coordinate with other related planning studies developed by the airport, government bodies, or community groups.

In addition, this document will provide the guidance to satisfy the aviation demand in a financially feasible and responsible manner, while at the same addressing the community issues and formulating a realistic development program that will satisfy the airport's needs.

KEY ISSUES

It has been over six years since TLH last had an update to their Airport Master Plan. Since that time many changes have occurred not only in the Tallahassee community, but also in the aviation industry. Some of these changes include: continued community growth leading to more congested roads, community initiatives targeting the area northeast of TLH for economic development, the introduction of regional jets to airline fleets, and the terrorist attacks on 9/11. Taking these events into consideration, the City and airport staff, as well as the FAA and FDOT, have identified a number of key issues requiring attention, including:

- Development of a comprehensive on-airport land use plan with an emphasis on the flightline configurations located along the east side of Runway 18-36 and the north side of the Runway 9-27. To remove operational conflicts, this land use plan should address separation of major activity types, such as general aviation and cargo activities.

- Improvement of ground access to TLH and of internal circulation patterns for tenants and public users. Currently, the airport has no direct access to the Tallahassee downtown area and the current access to Interstate 10 is overly congested. Internal access routes have been developed piecemeal over the life of the TLH and are not very direct.

- An assessment of the current terminal area to improve passenger access, convenience, and services. Several changes to the operating patterns of the airlines, as well as the advent of the Transportation Security Administration after the events of 9/11, have created congestion points in the passenger check-in process. Other issues related to the terminal area include the lack of concessionaire space past the security checkpoint and the inadequacy of the existing public parking areas.

- An evaluation of industrial/business development options on current TLH property. Areas nearby to the airport had, at the start of this study, begun to see limited industrial/business developments. As a measure to keep airline and other user fees to a minimum, the City

would ultimately like to develop certain outlying property areas that due to their location are not likely to be developed for an aviation-related use.

- Identification of any neighboring areas that the airport would need to acquire to support the short, intermediate, and long-term developments proposed by this study. This involves not only land needed for physical developments, but also any land that could potentially be developed into incompatible land uses.

The preceding list is not intended to be an exhaustive delineation of issues but it does present an overview of the key considerations that were included in this Master Plan update. By addressing these and other issues, this Master Plan developed an action plan to address current and future aviation demand at TLH and to improve the quality of life in the surrounding community.

MASTER PLAN PROCESS

This Airport Master Plan provides a step-by-step outline of the development actions required to maintain the airfield facilities. This process is defined by the FAA but allows the planning process to be responsive to airport and community specific needs and issues. To accomplish the objectives previously identified, the study team completed the following tasks:

- Conducted an inventory of the existing documents related to TLH, the physical facilities, the demographics of the airport service area, and the airport environment.
- Collected historical operational data, conducted tenant interviews, and forecasted aviation activity through the year 2023.
- Evaluated and compared the airfield and terminal capacity to the expected aviation activity.
- Determined the airfield and terminal facilities required to meet the forecast demand.
- Developed and evaluated alternative methods to meet the facility requirements of the airfield and terminal.
- Created a concise Airport Layout Plan (ALP) drawing set reflecting the proposed improvements through the year 2023.
- Compiled a schedule of the proposed improvements including cost estimates and phasing.

Additionally, this study process considered another planning study that the airport was involved in during this same timeframe. The Stormwater Master Plan for the airport that was also developed for TLH as a separate study. The recommendations from this stormwater plan related to needed capital improvements were incorporated into this Master Plan.

Overall, the Master Plan should provide the sponsor with a comprehensive overview of the airport's needs over the next twenty years, including issues related to the timing of proposed development, costs for this development, methods of financing, management options, and a clear plan of action. The product of this process includes a Capital Improvement Program for future development of TLH. Also, a financial analysis leading to the development of a Financial Plan was conducted by LPA with TLH staff coordination. Implementation of the study recommendations will begin following FAA and FDOT review of the ALP.

SUMMARY

While the outlook for aviation over the next twenty years and what impact it will have on Tallahassee Regional Airport remains to be seen, it is anticipated that aviation will continue to grow as a major component of the transportation industry nationally, in Florida, and in the Tallahassee vicinity. A key factor in TLH's future success depends upon determining the viability of the present airfield and terminal facilities to meet demand well into the future, which is the major goal of this Master Plan. This process also provides the forum for discussion and establishment of links between community and airport goals. Thus, this Airport Master Plan should serve as a guide to decision makers, users, and the general public relative to realistic and achievable development that is in line with both airport and community objectives.

Chapter Two – Inventory of Existing Conditions

INTRODUCTION

The master planning process requires the gathering of information related to the existing conditions of the airport. This information serves as the basis for future steps in the planning process. As such, information related to the Tallahassee Regional Airport (TLH) and its surrounding areas was collected in order to help identify future aviation needs of the community. Data collected in this phase will provide an inventory of the following:

- Existing physical facilities: runways, taxiways, parking aprons, navigational aids, airport terminal, and facility areas for general aviation, corporate, air cargo, and aviation support.
- The airport's role in the overall Tallahassee community: development history, location, and access relationship to other transportation modes.
- The community's population, socioeconomic, and business trends within the Tallahassee Regional Airport's potential service area, including the Tallahassee Metropolitan Statistical Area defined as Leon and Gadsden Counties. This information provides an indication of potential trends that can have a direct bearing upon the level and type of aviation services that the airport needs to plan for in the future.
- Existing community, airport, and regional plans and studies that contain information that may relate to the development and eventual implementation of the recommendations of the Master Plan. This information is particularly relevant to future industrial/business development on or adjacent to the airport.

An inventory addressing these and other issues requires data from a variety of sources in order to obtain an accurate depiction of TLH and its surrounding community, including:

- Interviews with TLH management and staff
- Interviews with TLH users and tenants
- Contacts with local, state, and federal agencies
- Research and review of previous airport planning analyses and studies
- Review of aerial photography, mapping, and airport and terminal plans
- Review of facility directories, approach plates, sectional charts, etc.
- Review of Federal Aviation Administration (FAA) Air Traffic Control Tower (ATCT) information relating to air traffic activity and peaking characteristics, as well as airfield usage
- Reference materials, such as FAA publications, activity data sites, flight strip information, and planning guidelines
- Review of airport and FAA statistical reports

FAA CERTIFICATION AND CLASSIFICATION

Although most commercial service airports are owned and operated at the local government level, the authority to do so is granted to them on a case-by-case basis by the Federal Aviation Administration. Many of the parameters that will dictate future developmental needs at TLH are based upon FAA guidelines for airport and aircraft operation. Adherence to these parameters is a requirement for the continued operation of the airport. The following sections review the operating certification requirements and FAA classifications of TLH.

FAR Part 139 Certification

Airports offering commercial passenger service on aircraft carrying more than 30 passengers per flight are required to be fully certificated by the FAA. TLH must meet certain certification requirements outlined in Federal Aviation Rules (FAR) Part 139. These requirements include, but are not limited to, the following:

- An up-to-date Certification Manual, which includes an emergency response plan, must be kept.
- Aircraft operating areas must be maintained in proper working condition, including markings, lighting, navigational aids, safety areas, and pavement.
- The airport must comply with Aircraft Rescue and Fire Fighting requirements for personnel and equipment levels.
- A controlled-access system to aircraft operating areas must be kept operational.

Tallahassee Regional Airport obtained this certification in May 1973 and annually undergoes a certification inspection by the FAA to keep the Part 139 certification current.

FAA Classifications

The FAA classifies TLH as a primary commercial service airport for the 1998-2002 planning period in the National Plan of Integrated Airport System (NPIAS). The NPIAS includes a listing of all airports that are defined as essential to meet the needs of civil aviation in the U.S. This listing denotes the service level that the airport is expected to provide at the end of the five-year planning period. Congress also uses these service levels in making funding decisions.

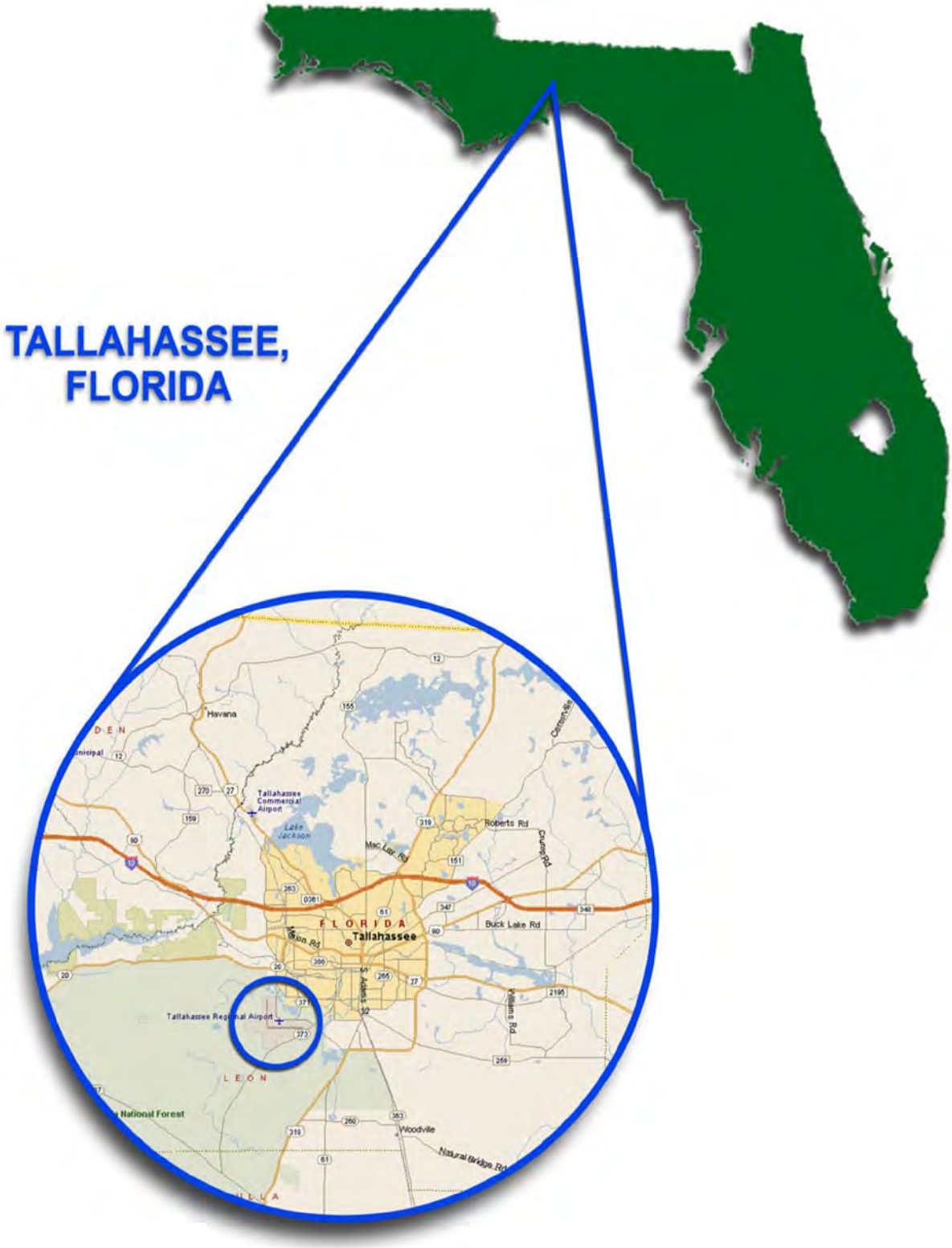
The NPIAS also classifies commercial service airports based upon the percent of the national annual enplanements that occurred at that airport. TLH is considered a small hub airport, which means that TLH's annual enplanement levels equate to 0.05 to 0.25 percent of the national enplanement levels. The NPIAS currently lists 74 airports which fall into this small hub category. It should be noted that airports in this classification generally handle a high level of general aviation traffic and are not usually congested.

Another important FAA classification system is the Airport Reference Code (ARC) system. The ARC relates the operational and physical characteristics of the aircraft expected to operate at an airport to FAA design standards. These standards will be utilized in developing future development needs during this master plan. This is important in the planning process in the demand capacity analysis. The last master plan update for TLH lists an ARC of C-IV. The letter refers to the aircraft approach category, related to the approach speed of the aircraft, and the Roman numeral refers to the airplane design group, related to the aircraft wingspan. An updated discussion on the ARC for TLH will be included in the chapter on Facility Requirements.

AIRPORT SETTING

Located in Tallahassee, Florida, TLH is a commercial passenger service airport situated in the central portion of Leon County. The County is located in the northern portion of Florida, sometimes referred to as the Apalachee area. The airport is owned and operated as a division within the Development and Transportation Department of the City of Tallahassee. **Exhibit 2-1** depicts the general location of TLH in the Florida area.

TALLAHASSEE REGIONAL AIRPORT



LOCATION MAP

2-1

Locale

The airport consists of 2,743 acres situated on the southwestern edge of the City of Tallahassee's limits. TLH is located directly off of Capital Circle S.W., which serves as a loop around the metropolitan area, as depicted in **Exhibit 2-2**. Approximately six miles south of Interstate 10 and six miles southwest of the Tallahassee downtown area, the airport's property is bordered by Capital Circle S.W. on its northeastern edges, by Springhill Road on the southeastern border, and by unincorporated Leon County on its western borders. Leon County is bordered by Gadsden and Liberty Counties to the west, Wakulla County to the south, Jefferson County to the east, and the state of Georgia to the north.

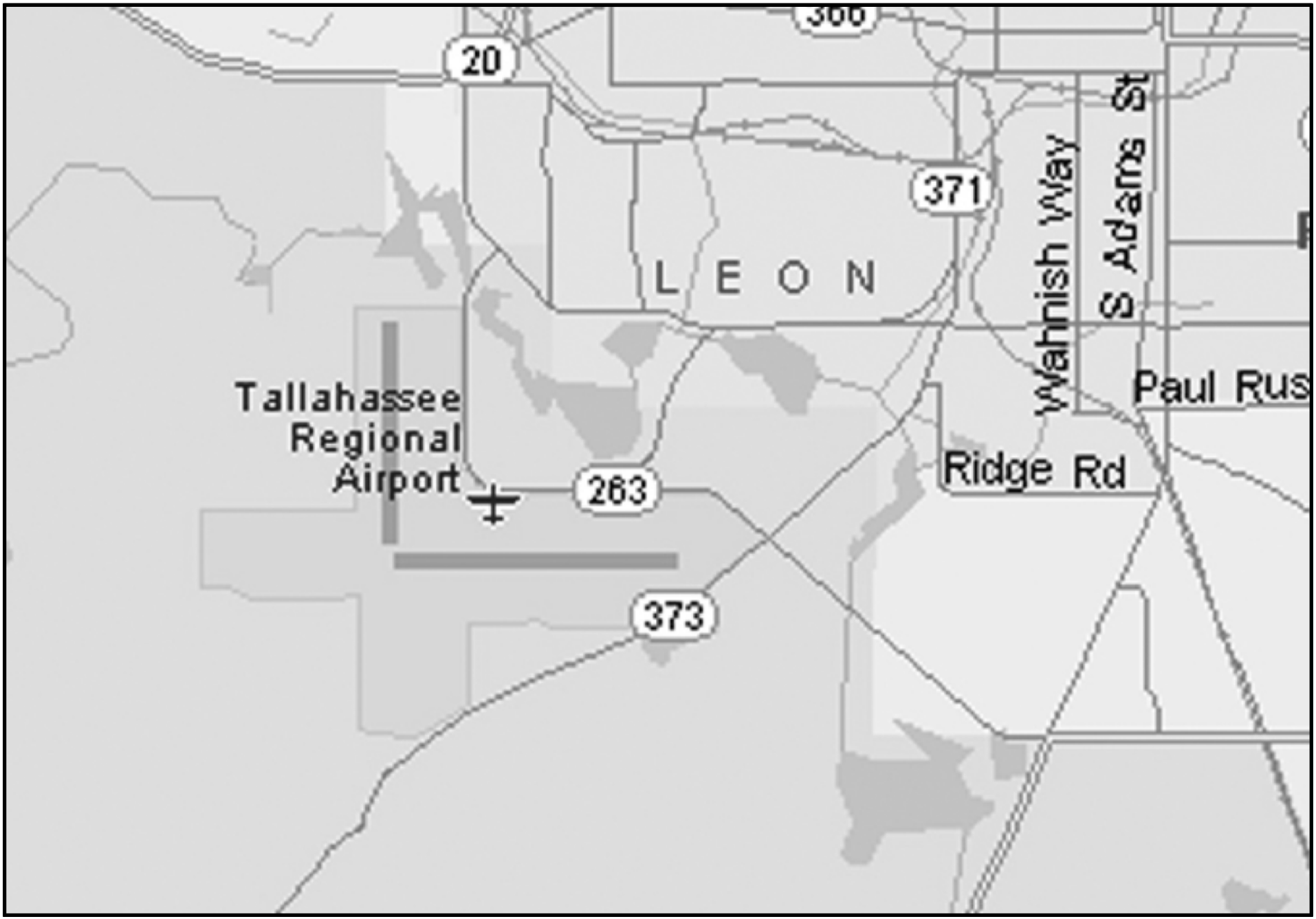
TLH is the only commercial service airport in the Tallahassee area. Tallahassee is one of the few large cities in this northern panhandle area of Florida. It is approximately 120 miles from Panama City on the coast and about 160 miles from Gainesville in the Florida interior. The city lies fairly close to the state lines of Alabama and Georgia, but no major metropolitan areas are within convenient driving distance. Dothan Regional Airport, Alabama; Southwest Georgia Regional Airport, Georgia; and Valdosta Regional Airport, Georgia are three other commercial service airports within approximately 100 miles of TLH; however, none of these airports provide commercial services much different than TLH. General aviation (GA) makes up a significant portion of air traffic at the airport. In addition to TLH, the metropolitan area has a smaller public-use general aviation facility, Tallahassee Commercial Airport. It is located in the northwestern portion of the metropolitan area. Based upon the latest airport master record information, this facility has 10 based aircraft and handles approximately 2,600 operations annually. Two privately owned turf facilities, as well as a privately owned heliport that is used exclusively for medical purposes, are also located in the area.

Airport Surroundings

Visitors to the Tallahassee area come for a variety of reasons-from business to pleasure. As Florida's capital city, Tallahassee is home to most state agency headquarters. Other public entities within the city include several hospitals and the campuses of Florida A&M and Florida State University, and Tallahassee Community College (TCC). Although government is the largest employer in the area, the Greater Tallahassee Chamber of Commerce lists Tallahassee Memorial HealthCare, Publix Supermarket, Sprint, Capital City Bank, Casper Group McDonald's and Quincy Farms as the large employers in the area. TLH lies approximately 24 miles north of the Gulf of Mexico, which offers many beaches and resort areas within a short drive. Other recreational and tourist attractions include historical points of interest and natural resources, such as nearby forested and lake areas.

Working jointly, the City of Tallahassee and Leon County have developed a comprehensive land use plan for all areas within their borders. Existing and future land uses on and off airport property are important considerations with respect to the current and future development of TLH and the surrounding community. Compatible land use issues and considerations will be utilized in the development of later chapters of this master plan. Similarly, zoning is a land use control that defines permitted uses of property within a given land use designation. The City-County Comprehensive Plan shows future land uses as mainly recreation/open space to the south and west of the airport and as mixed-use areas to the north and east. There is a small area directly south of the airport that is preserved for residential and rural (agriculture and unincorporated) uses.

Some of the proposed improvement projects at the airport will require environmental permitting through a number of different agencies, each with its own criteria and focus. Future development of TLH and the integration of environmental permitting will be critical to the success of each project as well as to the success of the airport. Coordination with the appropriate agencies for permitting requirements should be made on an



2-2 **VICINITY MAP**

individual basis as each project is funded. Additional details regarding the possible environmental impacts are included as necessary in later sections of this report.

TALLAHASSEE AREA SOCIOECONOMIC DATA

Aviation services in an area are related to several key socioeconomic factors, such as population and per capita personal income levels. To determine an appropriate area to review the socioeconomic data for, the potential users of the airport had to be identified. The potential service area of a commercial service airport generally falls within a 100-mile radius and is determined by the passenger's drive time to an airport. In reviewing the TLH service area, this 100-mile radius extends east and west into Florida and north into southern portions of Alabama and Georgia. As previously noted three commercial service airports lie north of TLH at the fringe of this radius. These airports offer limited commercial service when compared with TLH. Jacksonville International Airport (JAX) lies approximately 180 miles to the east and provides those residents within the eastern portion of the Tallahassee Regional Airport's service area with a wider range of air service options. Panama City-Bay County International Airport (PFN) is located approximately 80 miles to the west. PFN offers those residents to the west of TLH a slightly wider variety of direct service options. Therefore, it is assumed that the service area for TLH is smaller than the area of a 100-mile radius and would primarily consist of the most populous counties nearest to the City of Tallahassee, which include Gadsden and Leon Counties. It should be noted that in the long-term, it is likely that Wakulla County, located south of TLH, might also be a substantial contributor.

The following sections discuss the historical information related to these and other factors. Historical data in this section was drawn from the 2002 Florida Long-term Economic Forecast (FLEF) that is prepared annually by the Bureau of Economic and Business Research at the University of Florida. The overall growth rates and average annual growth rates presented here were calculated based upon this data. The Economic Forecast also includes projections of the factors discussed. They are included and have been extrapolated to 2023 since the most current FLEF forecasts stop at 2015.

Population

As the population of the airport service area grows it is anticipated that the airport's provision of services and its facilities would grow also. The historic population figures for the Tallahassee MSA (including Gadsden County, Jefferson County, Leon County, and Wakulla County), and the State of Florida are shown below in **Table 2-1**. The MSA is used in many federally funded programs to determine the affected population. The U.S. Office of Management and Budget defines MSAs based upon U.S. Census data. As the data below indicates, population in all areas has increased over the last ten years. Leon County has kept pace with the overall growth rate of the State, while both Gadsden and Jefferson Counties have lagged significantly behind. The population of Wakulla County grew 20.98 percent, indicating that the county's population growth rate has outpaced the state, and more than doubled the overall growth rate of Leon County over the same time frame.

Table 2-1
HISTORIC POPULATION

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
1992	42,020	12,030	203,152	15,223	13,555,685
1993	42,283	12,233	207,711	15,845	13,808,526
1994	42,855	12,588	213,605	16,690	14,116,816
1995	43,672	12,840	218,770	17,445	14,407,849
1996	44,366	12,908	224,311	18,394	14,702,144
1997	44,618	13,070	227,813	19,443	15,011,341
1998	44,980	13,213	232,372	20,764	15,317,877
1999	45,271	13,271	236,683	21,930	15,680,778
2000	45,136	12,937	240,641	23,099	16,069,434
2001	45,337	13,079	245,127	23,997	16,399,714
Overall Growth (10 years)	7.89%	8.72%	20.66%	57.64%	20.98%
Average Annual Growth Rate	0.85%	0.93%	2.11%	5.19%	2.14%

Source: 2002 Florida Long-term Economic Forecast.

Projected population levels for these areas are given below in **Table 2-2.** Rates of growth for all areas are projected to be somewhat lower than those in historical years. Each area should experience an overall growth in population, although Gadsden and Jefferson Counties are projected to grow at much lower rates than Leon County, Wakulla County, or the State of Florida.

Table 2-2
PROJECTED POPULATION

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
Base Year					
2001	45,337	13,079	245,127	23,997	16,399,714
Forecasts					
2008	46,852	14,093	271,515	28,507	18,513,996
2013	47,974	14,357	290,989	31,765	19,881,710
2023	50,283	15,210	334,615	39,651	23,089,638
Average Annual Growth Rate	0.47%	0.66%	1.42%	2.31%	1.57%

Source: 2002 Florida Long-term Economic Forecast.

Per Capita Income

Per capita income is an important indicator of the future growth in an area. It is related to aviation needs in a community since non-business related air travel is often very discretionary in nature. Hence, as the per capita income level increases the demand for more aviation services should also rise. During the 10-year period, each study area saw an increase in per capita values. Jefferson County and Wakulla County have seen the largest percent change in levels, although the actual per capita levels in the county have been lower than either Leon County or the State of Florida.

Table 2-3
HISTORIC PER CAPITA INCOME LEVELS

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
1992	$15,056	$16,178	$20,997	$16,824	$22,412
1993	$15,189	$16,343	$21,378	$17,054	$22,864
1994	$15,278	$16,392	$21,658	$17,180	$23,014
1995	$15,642	$16,906	$22,328	$18,680	$23,597
1996	$15,824	$17,608	$22,557	$19,632	$24,155
1997	$16,429	$18,102	$22,980	$20,661	$24,679
1998	$17,021	$18,901	$24,098	$20,478	$25,628
1999	$17,262	$19,468	$24,410	$20,767	$25,538
2000	$17,811	$20,293	$24,757	$20,964	$25,915
2001	$17,992	$21,117	$24,805	$21,579	$26,051
Overall Growth (10 years)	19.50%	30.53%	18.14%	28.26%	16.24%
Average Annual Growth Rate	2.00%	3.00%	1.87%	2.80%	1.69%

Source: 2002 Florida Long-term Economic Forecast.

It is anticipated that in future years, per capita levels will continue to rise. The FLEF showed increases in the average annual growth rate for Florida and Gadsden County; while Jefferson and Wakulla had reduced projections and Leon County remained the same as the historic growth. The projected per capita income levels based upon the FLEF data is shown in **Table 2-4**.

Table 2-4
PROJECTED PER CAPITA INCOME LEVELS

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
Base Year					
2001	$17,992	$21,117	$24,805	$21,579	$26,051
Forecasts					
2008	$21,185	$23,460	$27,803	$24,416	$30,091
2013	$23,748	$26,318	$30,867	$27,576	$34,055
2023	$29,880	$32,367	$37,275	$33,989	$42,722
Average Annual Growth Rate	2.33%	2.00%	1.87%	2.08%	2.27%

Source: 2002 Florida Long-term Economic Forecast.

Employment/Unemployment

A good indicator of the general economic health of a community is the number of employed and unemployed persons in an area. Again, due to the discretionary nature of airline travel, the more persons employed the greater the demand should be for aviation services. The following tables provide both historic and projected employment levels and unemployment rates for the Tallahassee area and the state. This data, along with the above population data, can be used to determine changes in overall employment/unemployment rates for an area.

Table 2-5 shows that historically the state of Florida has seen an overall growth of 25.42 percent in the number of persons employed. With the exception of the Wakulla County, the counties included in the Tallahassee MSA have seen lower overall growth rates between 6.51 and 22.13 percent. Employment levels in the Wakulla County have outpaced that of the state at an annual average growth rate of 4.42 percent. The average annual growth rates for Gadsden, Jefferson, and Leon Counties are also lower than the corresponding state level, indicating that economic development through job creation is somewhat slower in the Tallahassee area than in the rest of Florida.

Table 2-5
HISTORIC EMPLOYED PERSONS

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
1992	17,077	5,595	112,760	8,000	6,063,531
1993	17,388	5,715	116,880	8,326	6,265,407
1994	17,711	5,628	120,996	8,381	6,463,162
1995	18,112	5,767	124,865	8,856	6,601,244
1996	18,645	5,972	124,343	9,227	6,757,020
1997	18,369	5,984	127,336	9,747	6,960,898
1998	18,742	5,939	130,658	10,508	7,126,418
1999	19,188	5,921	134,851	10,715	7,313,934
2000	19,311	5,845	136,515	11,304	7,487,745
2001	19,368	5,959	137,717	11,811	7,604,668
Overall Growth (10 years)	13.42%	6.51%	22.13%	47.64%	25.42%
Average Annual Growth Rate	1.41%	0.70%	2.25%	4.42%	2.55%

Source: 2002 Florida Long-term Economic Forecast.

The FLEF forecasts of employed persons again uses conservative rates of growth compared to the historical data. The following table also shows that employment levels in Gadsden and Jefferson Counties are expected to decrease.

Table 2-6
PROJECTED EMPLOYED PERSONS

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
Base Year					
2001	19,368	5,959	137,717	11,811	7,604,668
Forecasts					
2008	18,932	6,125	154,359	14,686	8,747,727
2013	18,480	6,041	166,256	16,786	9,529,926
2023	17,628	5,957	193,428	22,163	11,335,016
Average Annual Growth Rate	-0.43%	-0.04%	1.56%	2.92%	1.83%

Source: 2002 Florida Long-term Economic Forecast.

Unemployment levels were higher in the early 1990s due to the recession that took place during this period. Since then, levels generally dropped until 2001 when the country again entered a period of economic recession. The overall decrease in the unemployment rates in the Gadsden, Leon, and Wakulla Counties is less than the impressive decrease for the entire state over the past ten years.

Table 2-7
HISTORIC UNEMPLOYMENT RATES

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
1992	7.06%	5.50%	3.84%	4.98%	8.29%
1993	6.28%	4.62%	3.58%	4.41%	7.06%
1994	5.53%	4.97%	3.50%	4.57%	6.59%
1995	4.23%	4.76%	2.77%	4.16%	5.51%
1996	4.74%	4.69%	2.86%	4.23%	5.10%
1997	4.58%	4.49%	2.84%	3.62%	4.79%
1998	4.45%	4.15%	2.80%	3.36%	4.33%
1999	3.57%	4.22%	2.45%	3.03%	3.89%
2000	3.66%	4.17%	2.36%	3.16%	3.62%
2001	4.62%	5.88%	2.88%	3.42%	4.79%
Overall Growth (10 years)	-34.59%	6.89%	-25.05%	-31.42%	-42.27%
Average Annual Growth Rate	-4.61%	0.74%	-3.15%	-0.41%	-5.92%

Source: 2002 Florida Long-term Economic Forecast.

The forecasted unemployment rates indicate that Leon County is expected to experience an overall increase, while the state, Gadsden, Jefferson, and Wakulla Counties are expected to have lower unemployment rates. The overall increase in forecasted unemployment rates for Leon County, as well as the initial increases for Wakulla County and the State are attributed to the current economic recession the nation is currently experiencing. Over the planning period, it is not expected that these forecasted levels would reach the historic highs seen in the early 1990s.

Table 2-8
PROJECTED UNEMPLOYMENT RATES

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
Base Year					
2001	4.62%	5.88%	2.88%	3.42%	4.79%
Forecasts					
2008	4.42%	4.52%	3.03%	3.74%	4.89%
2013	4.09%	4.33%	3.04%	3.61%	4.52%
2023	3.84%	3.90%	3.13%	3.40%	4.41%
Average Annual Growth Rate	-0.83%	-1.29%	0.38%	-0.78%	-0.37%

Source: 2002 Florida Long-term Economic Forecast.

Construction Indicators

Another indicator of the economic health of a region is the number of building permits issued. The FLEF did not contain such data, but did include the number of households in the state and in each county. Over the 10-year period, all areas experienced a growth in the number of households. Both Leon County and Wakulla County experienced a rate higher than the entire state.

Table 2-9
HISTORIC NUMBER OF HOUSEHOLDS

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
1992	13,942	4,098	79,517	5,632	5,378,715
1993	14,081	4,173	81,587	5,886	5,480,057
1994	14,362	4,240	84,126	6,227	5,600,325
1995	14,742	4,295	86,440	6,536	5,714,418
1996	14,912	4,369	89,388	6,921	5,829,649
1997	15,168	4,425	90,904	7,283	5,952,621
1998	15,425	4,489	93,039	7,647	6,074,861
1999	15,614	4,533	95,139	8,055	6,218,758
2000	15,885	4,708	97,004	8,540	6,372,738
2001	15,844	4,561	99,165	8,779	6,510,801
Overall Growth (10 years)	13.64%	11.30%	24.71%	55.88%	21.05%
Average Annual Growth Rate	1.43%	1.20%	2.48%	5.06%	2.15%

Source: 2002 Florida Long-term Economic Forecast.

Table 2-10 shows that Leon and Wakulla Counties are expected to keep pace with the growth in Florida, while Gadsden and Jefferson Counties are projected to see growth but at a rate that is nearly half of that for the state.

Table 2-10
PROJECTED NUMBER OF HOUSEHOLDS

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
Base Year					
2001	15,844	4,561	99,165	8,779	6,510,801
Forecasts					
2008	16,895	5,008	110,016	10,479	7,465,324
2013	17,377	5,138	120,371	11,912	8,175,939
2023	18,643	5,547	142,908	15,355	9,824,867
Average Annual Growth Rate	0.74%	0.86%	1.67%	2.59%	1.89%

Source: 2002 Florida Long-term Economic Forecast.

Real Taxable Sales

Real taxable sales, tracked by the Florida Department of Revenue, give a good indication of how much money both residents and tourists are spending in an area. The overall growth in taxable sales increased in all areas; however, as with previously discussed indicators, the Tallahassee area has not seen quite the same level of growth as the entire state.

Table 2-11
HISTORICAL REAL TAXABLE SALES

Year	Tallahassee MSA				State of Florida
	Gadsden County	Jefferson County	Leon County	Wakulla County	
1992	$154,007	$40,738	$1,980,015	$50,551	$146,192,072
1993	$153,323	$34,693	$2,153,375	$45,322	$156,120,595
1994	$168,630	$35,674	$2,318,834	$45,634	$165,293,105
1995	$174,529	$38,717	$2,439,204	$53,129	$173,569,293
1996	$171,510	$38,607	$2,565,903	$59,428	$184,485,378
1997	$178,946	$41,212	$2,602,455	$64,640	$194,902,967
1998	$194,101	$43,306	$2,728,166	$75,007	$209,513,929
1999	$201,622	$42,711	$2,916,082	$79,400	$226,172,292
2000	$200,754	$44,956	$2,961,509	$82,491	$236,654,104
2001	$201,829	$43,789	$2,960,369	$82,020	$237,565,214
Overall Growth (10 years)	31.05%	7.49%	49.51%	62.25%	62.50%
Average Annual Growth Rate	3.05%	0.81%	4.57%	5.52%	5.54%

Source: 2002 Florida Long-term Economic Forecast.

The FLEF forecasts of future taxable sales are slightly conservative when compared to the historic average annual growth rates shown in **Table 2-11**. Leon County and Florida are expected to experience annual growth of 3.7 percent. While Gadsden and Jefferson Counties are projected to increase at a slower rate (between 2.40 and 2.75 percent), Wakulla real taxable sales will experience a rate higher than the entire state, at 4.54 percent.

Table 2-12
PROJECTED REAL TAXABLE SALES

		Tallahassee MSA			
	Year	Gadsden County	Jefferson County	Leon County	Wakulla County	State of Florida
Base Year						
	2001	$201,829	$43,789	$2,960,369	$82,020	$237,565,214
Forecasts						
	2008	$238,575	$52,180	$3,747,124	$114,139	$301,688,254
	2013	$276,765	$58,161	$4,548,032	$141,459	$367,521,763
	2023	$366,702	$73,143	$6,589,310	$218,001	$529,935,145
Average Annual Growth Rate		2.75%	2.40%	3.70%	4.54%	3.71%

Source: 2002 Florida Long-term Economic Forecast.

The various socioeconomic indicators discussed above tend to indicate that the Tallahassee area will generally see continued growth throughout the entire master planning period, although at a somewhat lower rate than the state as a whole. This data will be helpful in evaluating trends in the future Aviation Activity Forecast Chapter.

METEOROLOGICAL CONDITIONS

Aircraft operating parameters are affected by the weather conditions; thus, several airfield characteristics, such as runway length and orientation, are based partly on the prevailing meteorological conditions at the airport. The following sections discuss the general climate of the area along with the results of a detailed wind coverage analysis.

Climate

The airport lies within the central portion of the Florida panhandle at an elevation of 82 feet above mean sea level. The city experiences a fairly moderate climate without large extremes in weather conditions. The average temperature throughout the year is 68ºF with an average high of 79ºF and a low of 56ºF. During the summer months, the average high is around 91ºF, although highs over 100ºF are not uncommon during late summer with 103ºF being the current record high. Historically, the area averages normally 86 days with temperatures over 90ºF and 286 days with temperatures over 70ºF. TLH does not often deal with freezing temperatures. The average winter temperature from December through February is 54ºF, with January traditionally being the coldest month. A record low of 6ºF was recorded in January 1985, but temperatures this low are rare Generally, temperatures below 32ºF are seen 31 days out of the year with the majority of them occurring in December and January.

Precipitation is relatively frequent in the area. On average, some type of precipitation, mostly in the form of rain, will occur 151 days out of the year. The annual average precipitation is 63.3 inches with the summer months being the wettest for the region. Thunderstorms do occur throughout the year (average of 83 days), although the summer months see most of these storms. Snow does not often occur in the city, although historically trace amounts have been recorded from December through March. Another weather condition that can adversely affect aviation activities by reducing visibility is fog, which occurs very frequently at TLH. On average, foggy conditions occur 202 days throughout the year.

Wind Coverage

Runway orientation and use is determined by prevailing wind and velocity over time. As part of the inventory, historical wind data was obtained from the National Climatic Data Center. This element is important since aircraft takeoff and land into the wind. The FAA recommends that sufficient runways be provided to achieve at least 95 percent wind coverage. This is calculated by using a 10.5-knot crosswind component for the smaller and light aircraft, while the 13-knot, 16-knot, and 20-knot crosswind components are utilized for the larger aircraft utilizing the airport.

FAA Advisory Circular (AC) 150/5300-13, Change 7, "Airport Design," requires that a period of at least 10 consecutive years be examined for determining the wind coverage when carrying out an evaluation of this type. Hourly wind observations collected by the National Climatic Data Center from 1992 through 2001 were obtained for the Tallahassee Regional Airport. To determine the wind coverage at TLH, the current runways were evaluated independently and together. It was determined that any combination of at least two runways would provide enough coverage to more than satisfy FAA recommendations. **Table 2-13** summarizes the percent of wind coverage for the various runway configurations under all weather, visual flight rules (VFR), instrument flight rules (IFR), and below minimum weather conditions. This wind data is also presented in a graphic form on the Airport Layout Plan drawing.

Table 2-13
PERCENTAGE WIND COVERAGE

Airfield Configuration	Crosswind Component 10.5-knots (12 mph)	13-knots (15 mph)	16-knots (18.4 mph)	20-knots (23 mph)
All Weather Conditions				
Runway 9	86.11	87.75	89.49	89.78
Runway 27	81.14	82.79	84.47	84.71
Runway 18	81.28	82.36	83.44	83.62
Runway 36	84.73	86.00	87.11	87.28
Runway 9-27	95.41	97.58	99.62	99.94
Runway 18-36	96.73	98.37	99.73	99.96
Combined	***99.70***	***99.95***	***99.99***	***100.0***
VFR Conditions (Ceiling > 1000 feet; Visibility > 3 miles)				
Runway 9	85.62	87.29	89.05	89.32
Runway 27	80.93	82.62	84.33	84.57
Runway 18	80.66	81.79	82.94	83.12
Runway 36	84.20	86.14	87.33	87.50
Runway 9-27	95.36	97.58	99.64	99.95
Runway 18-36	96.56	98.30	99.74	99.96
Combined	***99.71***	***99.96***	***100.0***	***100.0***
IFR Conditions (Ceiling between 200' and 1000'; Visibility between 0.34 (1800') and 3.0 statute miles)				
Runway 9	87.86	89.76	91.89	92.38
Runway 27	78.66	80.32	82.19	82.53
Runway 18	83.05	83.84	84.50	84.75
Runway 36	80.54	81.27	81.88	82.11
Runway 9-27	94.62	96.88	99.25	99.80
Runway 18-36	97.56	98.72	99.59	99.91
Combined	***99.49***	***99.82***	***99.95***	***99.99***
Below Minimums (Ceiling less than 200'; Visibility less than 0.34 statute miles (1800 feet))				
Runway 9	98.34	98.42	98.51	98.56
Runway 27	95.77	95.89	96.00	96.04
Runway 18	98.11	98.14	98.16	98.19
Runway 36	94.49	94.51	94.55	94.58
Runway 9-27	99.71	99.84	99.94	99.98
Runway 18-36	99.83	99.89	99.94	100.0
Combined	***99.97***	***100.0***	***100.0***	***100.0***

Source: National Climatic Data Center (NCDC), 1992-2001.

HISTORIC DATA

An important part of any planning process requires having a historical basis for future needs. This section will review information related to the airport's history, facilities, and past levels of operations, enplanements, and based aircraft. Information for this section was taken from airport records and previous planning documents.

Airport History

Aviation services were first offered in the Tallahassee area in 1929. At that time, the city operated Dale Mabry Field, a turf airfield. As with many other public use airports, the advent of World War II lead to dramatic changes for the airfield in Tallahassee. The U.S. Army established a fighter pilot training school in 1938 and upgraded the one grass landing strip to three paved runways. Throughout this period and after the war ended, commercial services were offered at this facility. In 1961, the Dale Mabry site was abandoned and a new airport was established approximately four miles away at TLH's present location.

The airfield at TLH has undergone several changes since opening in 1961. Early on in the Airport's development, Runway 18-36 was the longer of the two runways and handled the majority of all operations. In the late 1970s, the present day Runway 9-27, then referred to as 9R-27L, was constructed adjacent and parallel to an existing runway. In the early 1980s this older, shorter runway 9L-27R was decommissioned and eventually became a portion of the parallel taxiway to present day Runway 9-27, which now handles the majority of commercial operations.

The airport has continued to expand and upgrade facilities as demands have warranted the improvements. The terminal that opened in 1961 served the community until the late 1980s. The current terminal, opened in December 1989, cost $33 million at the time and included approximately 170,000 square feet of operating space. This terminal was dedicated and renamed in February 2000 in honor of Ivan Monroe, who was an aviation pioneer from the Tallahassee area.

Another area that has seen upgrades is the area serving general aviation. In 1994, a new GA terminal was opened to serve the needs of the area's GA pilots and aircraft owners. The 17,500 square foot terminal includes the necessary facilities for local and transient pilots. General aviation facilities at the time could house up to 115 aircraft in hangars and tie down locations.

Previous Planning Documents

Development at TLH has been a continual process since its inception. Throughout this time, a variety of studies related to the airport have been conducted. The following listing of recent studies is not intended to be exhaustive in nature:

- 1996 Master Plan Update, Avcon
- 2000 Florida Aviation System Plan, FDOT
- 2000 Development of Regional Impact Notice of Proposed Change, RS&H
- 2001 Aviation Activity and Noise Exposure Map Update, LPA
- 2002 Natural Features Inventory, WSA
- 2002 Air Cargo Study, LPA
- 2002 Terminal Area Forecasts, FAA

Historic Aviation Activity

Reliable forecasts of future aviation activity at TLH are contingent upon having good quality historical information. Information related to past passenger enplanements, based aircraft, and annual operations was obtained primarily from official airport records. This information, along with information related to industry and socioeconomic trends, will provide the framework for the forecasts that will be discussed in the next chapter.

Passenger Enplanements

Historic levels of passenger enplanements are given from 1993 through 2002 in **Table 2-14**. During this 10-year period, overall annual enplanement levels have generally increased with a high of 543,674 occurring in 2002. An overall growth of 24.53 percent was seen for this period and an average annual growth rate of 2.47 percent.

Table 2-14
HISTORIC PASSENGER ENPLANEMENTS

Year	Annual Enplanements
1993	436,584
1994	511,344
1995	531,308
1996	460,362
1997	480,064
1998	465,728
1999	450,403
2000	468,703
2001	427,892
2002	543,674
Overall Growth (10 years)	24.53%
Average Annual Growth Rate	2.47%

Source: 2002 Airport Records.

Based Aircraft

General aviation users typically house or base their aircraft at the airport they use the most and/or that is the most convenient to them. **Table 2-15** includes data related to the number of aircraft based at TLH. This information will help to determine future airfield and hangar needs. The number of based aircraft at TLH has remained relatively stable. The overall growth for the 10-year period of 1993 through 2002 is 7.4 percent with an average annual growth of less than one percent.

Table 2-15
HISTORIC BASED AIRCRAFT

Year	Total
1993	121
1994	121
1995	139
1996	139
1997	151
1998	146
1999	128
2000	128
2001	129
2002	130
Overall Growth (10 years)	7.44%
Average Annual Growth Rate	0.80%

Source: 2001 FAA Terminal Area Forecast

Aircraft Operations

Annual aircraft operations over the last 10 years are given in the table below. Each operation reflects either a landing or departure. The numbers below reflect a variety of aircraft operation types, including local, itinerant, training, and instrument operations. During flight training operations aircraft perform "touch-and-go" activities where an aircraft lands, but instead of stopping or slowing and exiting the runway, the aircraft takes off again. Each touch-and-go exercise counts as two operations - a landing and a departure.

Table 2-16
HISTORIC AIRCRAFT OPERATIONS

Year	Annual Operations
1993	115,691
1994	117,743
1995	119,117
1996	113,272
1997	118,139
1998	111,996
1999	118,902
2000	121,803
2001	105,671
2002	114,765
Overall Growth (10 years)	- 0.8 %
Average Annual Growth Rate	- 0.09 %

Source: 2002 Airport Records

Based upon the information in **Table 2-16**, it can be observed that annual operations have ranged from a low of 105,671 in 2001 to a high of 121,803 in 2000. The overall growth rate for the period showed a decline of 0.8 percent. Air traffic activity, such as touch-and-go's and local versus itinerant operations, will be discussed in the forecasting chapter.

AIRFIELD ENVIRONMENT

The airfield is generally considered to be the area where aircraft operate and includes the runways, taxiways, lighting systems, NAVAIDs, pavement markings, and associated signage. Access is generally limited to these areas for safety and security reasons. This section will discuss the current airfield facilities at TLH to provide the basis for the airfield demand/capacity analysis and the determination of future facility developments, both of which will be discussed in subsequent chapters. **Exhibit 2-3** provides a graphical representation of TLH's existing airfield facilities.

In addition to the information discussed below, numerous safety-related criteria exist for airfield areas. These are primarily contained in FAA AC 150/5300-13, Change 7, "Airport Design" and in FAR Part 77, *Objects Affecting Navigable Airspace.* Safety areas related to airport design issues will be addressed in the Facility Requirements Chapter, whereas airspace imaginary surfaces will be discussed in the Airport Layout Plans Chapter of this study.

Runways

Obviously, the most important part of any airfield environment is the available runways at the airport. Tallahassee Regional currently has two active runways oriented at 90-degrees to each other, yet not intersecting. This arrangement provides the necessary wind coverage for the aircraft expected to operate at the airport.

Runway 9-27

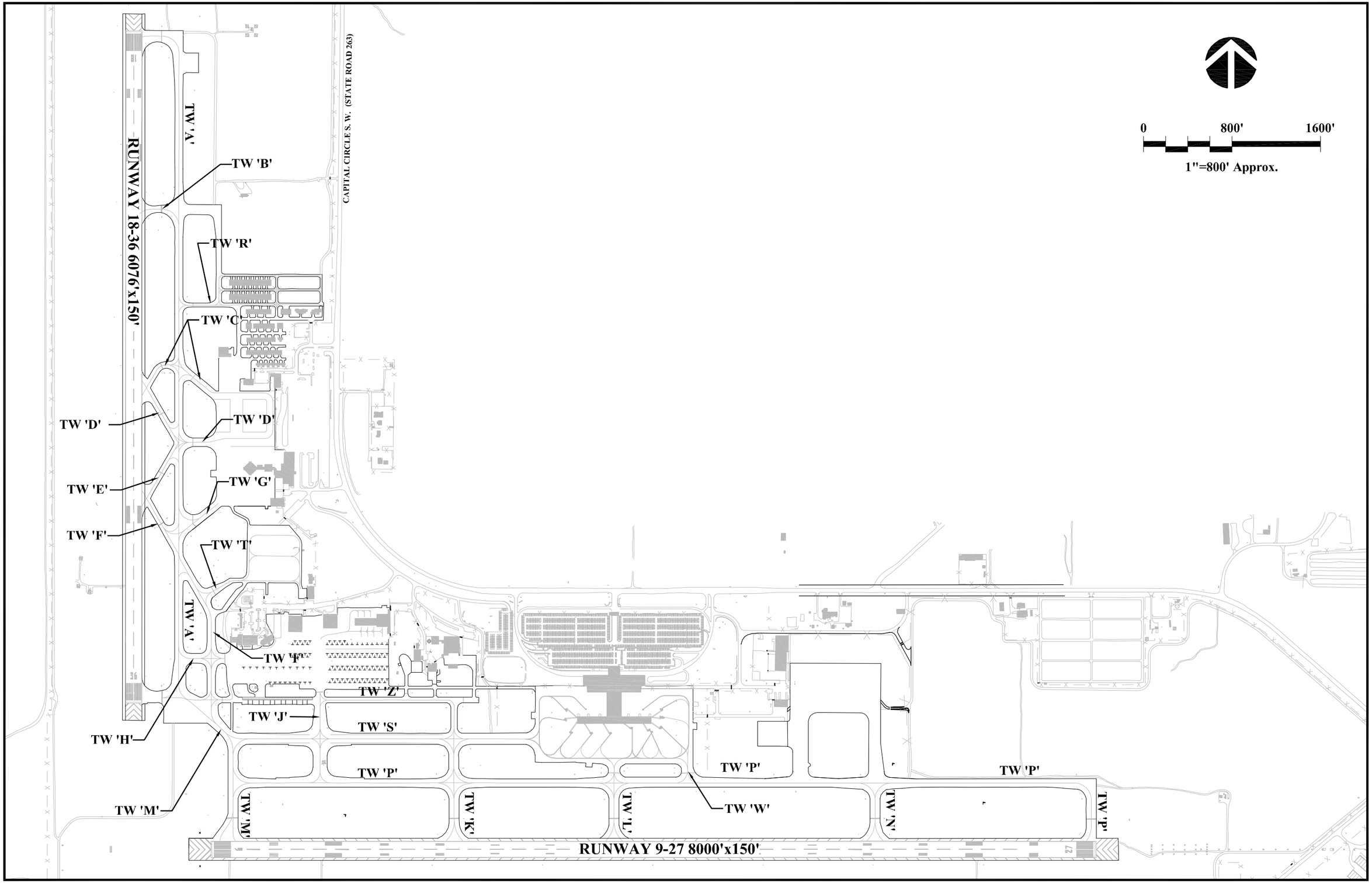
Commercial air carriers predominantly use Runway 9-27, which is the longer of the two runways and is also considered the primary runway at TLH. This runway was originally added to the airfield in the late 1970s and at the time was called 9R-27L. It was built parallel to the then existing GA airstrip, which now serves as a portion of Taxiway S. Runway 9-27 is 8,000 feet in length and 150 feet wide, with paved shoulders of 25 feet, and has an east/west orientation. These dimensions allow for aircraft up to Design Group IV, which have wingspans ranging from 118 feet to 170 feet, to operate on this runway. The full length of pavement is available for arrivals and departures.

The asphalt pavement is grooved which allows for better traction during wet conditions. The runway surface had a 2.5-inch overlay applied in 1992 and is currently in good condition according to field observations. As reported on the airport master record, the runway's pavement is stressed to accommodate aircraft with the following main gear and maximum gross weight configurations:

Single Wheel	115,000 lbs.
Dual Wheel	170,000 lbs.
Dual Tandem	330,000 lbs.

The above pavement strengths would accommodate many aircraft types, including the Canadair Regional Jet, Gulfstream V, and Boeing 757-200. With these pavement strengths, the majority of

EXISTING AIRFIELD LAYOUT



aircraft operating in the airlines' domestic fleets, as well as most general aviation and business/corporate jets, can use Runway 9-27.

Both ends of the runway have blast pads that are 200 feet in length and 200 feet in width. These paved surfaces serve to decrease the likelihood of loose material being blown at high velocities by engine blast. Although this area does not have the full strength of the runway pavement it does serve as an overrun area should an aircraft fail to stop.

As previously noted, air carriers primarily use this runway, weather and operational loads permitting. This is very convenient since the passenger terminal lies north of the runway and is easily accessible by the associated taxiways. There are times when the ATCT will operate arrivals exclusively on Runway 9-27 with departures on Runway 18-36. Precision approaches are available to Runway 27 and are discussed in further detail in a subsequent section.

It should be noted that the runway is not in compliance with AC 150/5300-13 recommendations for the longitudinal grades. The AC recommends that aircraft at one threshold have a clear line of sight to the other threshold for obvious safety reasons. However, at TLH a standing NOTAM (Notice to Airmen) states that there is not the proper line of sight on Runway 9-27. The difference in the elevations (approximately 20 feet) between the Runway 27 end and the highest point, which occurs near Taxiway K, is too great to maintain the needed visual range.

Runway 18-36

Runway 18-36 is primarily utilized by general aviation traffic at the airport. It is 6,070 feet in length and 150 feet in width, is oriented north/south, and is considered the crosswind runway at TLH. As with Runway 9-27, these dimensions allow Design Group IV aircraft to operate on it. The full length of pavement is available for arrivals and departures. This runway had a 3.5-inch asphalt overlay applied in 1993. Pavement condition is reported as being good and as having the following pavement strengths:

Single Wheel	115,000 lbs.
Dual Wheel	170,000 lbs.
Dual Tandem	330,000 lbs.

Runway 36 is equipped so that aircraft can conduct precision approaches. The specifics of the approach are discussed in a subsequent section. Runway 18-36 does not currently have paved shoulders. Blast pads at the runway ends were, in the last five years, brought into compliance with FAA recommendations (200-feet square).

Taxiways

Aircraft use taxiways to maneuver to/from the runways, aprons or other parking areas. The type of aircraft expected to utilize the taxiway determines the dimensional requirements. Aircraft weight, wheel base width, and wingspan all need to be considered in taxiway design. For ease of discussion, the taxiway system at TLH will be broken into two groups. The "Southern Taxiway System" section below will describe all parallel and connecting taxiways related to Runway 9-27, whereas the "Northern Taxiway System" will describe those taxiways related to Runway 18-36.

Southern Taxiway System

This system of taxiways facilitates aircraft movements between the commercial passenger terminal and Runway 9-27. This system is connected to the northern system by Taxiway M, which makes the 90-degree turn near the point that the two runways converge. This system consists of two partial parallel and one full-length parallel, as well as a variety of connecting taxiways which are more fully described below.

Taxiway P is a full-length, parallel taxiway to Runway 9-27 and runs just south of the commercial terminal apron. Access from the runway is via connector taxiways K, L, M, and N, as shown on **Exhibit 2-3**. On the eastern edge of the runway, Taxiway P takes a 90-degree turn to provide the direct connection with Runway 27. This taxiway is 75 feet wide (except at the runway end where it is 90 feet wide) and is sized to accommodate up to Design Group IV aircraft. The four connector taxiways (K, L, M, and N) all intersect the runway at 90 degrees and are 90 feet in width. In 1992, these taxiways received a 2.5-inch asphalt overlay and based upon field inspection are generally in good condition.

Direct access to the commercial airline air cargo apron, located east of the terminal apron, is provided off of Taxiway P. Access from Taxiway P to the terminal apron is along Taxiways L or W. Taxiway W is located at the eastern edge of the apron and is 75 feet wide. Utilizing either Taxiway J, K, or M, aircraft traffic from Taxiway P can connect with the two partial parallel Taxiways S and Z. This provides access to the south GA apron that is used by Flightline, Lively Aviation, and various governmental agencies. Taxiway S also connects into the western edge of the commercial terminal apron. Taxiway J serves to connect S and Z. Being 50 feet in width, Taxiways J and Z are not designed to handle aircraft larger than those in Design Group III. The portion of Taxiway Z between Taxiway F on the west and Taxiway J on the east has been closed and is used as a parking/storage area for helicopters.

Northern Taxiway System

Runway 18-36 is served by a full-length, parallel taxiway designated as Taxiway A. It is 75 feet wide along the parallel section and 100 feet wide once it turns to connect at the Runway 18 end. Access between the runway and Taxiway A can be made via connector Taxiways B, C, D, E, and F. Except for B, which meets the runway at 90-degrees, the others serve as acute angle exit taxiways. These taxiways allow aircraft to exit the runway at a higher speed thus lowering their runway dwell time. These five taxiways are 60 feet wide, allowing them to handle up through Design Group III aircraft. They are reported to be in good condition having had a three to four inch overlay in 1993.

Several GA facilities and the old commercial terminal are east of Taxiway A. Access off of Taxiway A to the northern cluster of hangars is via Taxiway R, which is 35 feet wide and is limited to use by Design Group II aircraft. From Taxiway A, the north GA apron area can be accessed by Taxiways C, D, and G. All are 75 feet wide in this area. Aircraft wishing to go to either the commercial terminal apron or the south GA apron can exit Taxiway A onto either Taxiway F or H near the southern end of Runway 18-36. Taxiway F is 75 feet wide at this point and Taxiway H is 50 feet wide. In this same vicinity, Taxiway T currently ends at the site of the former south t-hangar area. It will eventually provide access to an apron in front of the Capital Avionics hangar. It is 30 feet wide, limiting it to access by aircraft that are in Design Group I with the occasional passage of small Design Group II aircraft.

Instrument Approach Procedures

Related to the airfield layout are the types of approaches aircraft can utilize to land at a facility. There are two general classes of procedures under which pilots operate aircraft. These procedures are dependent upon the visibility and weather conditions. Under clear conditions with the cloud ceiling greater than 1,000 feet above ground level (AGL) and with visibility greater than three statute miles, pilots can operate aircraft under visual flight rules (VFR). No special approach procedures have to be followed under VFR conditions. During times of inclement weather when the cloud ceiling falls below 1,000 feet and visibility is less than three statute miles, instrument flight rules (IFR) must be followed. These procedures allow aircraft to land safely when ideal weather conditions are not experienced. During IFR conditions, air traffic control services are provided during departure, en route, and arrival to ensure aircraft are kept at safe operating distances from one another. IFR arrival procedures at any airport are based upon the types of instrument systems at that facility.

The two basic types of instrument approaches are precision and non-precision. Both types of IFR approaches provide horizontal guidance to the intended runway centerline. The accuracy of this horizontal guidance improves with the sophistication of the instrument approach aid, which is reflected in the minimum operating parameters for each defined approach. With a precision approach, vertical guidance is also given to the aircraft as it makes its landing, allowing for a smooth rate of descent to the runway even if the runway surface is not yet visible. Visibility minimums, measured in feet or miles, are associated with instrument approaches. If visibility falls below the minimum, then that specific IFR approach cannot be attempted. During an IFR approach, the pilot must ultimately make a visual confirmation of the runway. If the runway cannot be visually confirmed, they must execute a missed approach procedure. Each IFR approach procedure has a published height related to the aircraft's distance above the runway touchdown zone elevation, at which point the pilot must have visual confirmation. For non-precision approaches this is referred to as the minimum descent altitude (MDA) and for precision approaches it is the decision height. If the visual confirmation is not initially attained, the pilot has to abort the landing and then can attempt the approach again or request to land at another airport.

There are three general categories for precision instrument approaches. The defining characteristics of each are based upon the decision height and visibility minimums under which a pilot can operate an aircraft. These three categories are described in the table below. CAT II and CAT III approaches require pilots and aircraft to have specific certifications to execute these approaches.

Table 2-17
PRECISION APPROACH CATEGORIES

Category	Decision Height	Visibility Minimum
CAT I	200 feet	Greater than ½ mile
CAT II	100 feet	RVR of at least 1,200 feet
CAT III	Less than 100 feet	RVR lower than 1,200 feet

Source: FAA AC 5300-13, Change 7, "Airport Design".

In addition to normal VFR approaches, a variety of instrument approaches are available to pilots landing at TLH. Each approach is dependent upon the type of instrumentation associated with each runway approach. The following sections briefly describe the approaches at TLH available on each of its two runways.

Runway 9-27

Runway 27 is equipped with an instrument landing system (ILS) that allows for precision approaches. An instrument landing system is comprised of the following four components: 1) localizer antenna array, 2) glide slope antenna array, 3) marker beacons, and 4) runway approach lighting system. With these four components, an aircraft is guided to a touchdown point just beyond the approach end of a runway. Additional information on the ILS system is included in a later section of this chapter. An ILS is runway-end specific; therefore, precision approaches using this particular system may only be conducted to the Runway 27 end at TLH. There are two categories of precision approaches to Runway 27 as shown in **Table 2-18** below. Both approaches include a straight-in ILS approach utilizing both the localizer and glide slope for guidance information.

Table 2-18
RUNWAY 27 PRECISION APPROACH MINIMUMS

Instrument Procedure	Height Above Touchdown Zone Elevation (feet)	Visibility (miles)
ILS Approach	200	½ (A, B, C, & D)
ILS CAT II Approach	100 or 150	Less than ½ mile

Source: Southeast U.S. Terminal Procedures
Notes: Minimums based on local altimeter setting. Visibility letters refer to aircraft approach categories.

Non-precision approaches are available to both ends of Runway 9-27. These approaches are based upon navigation utilizing either the Runway 27 localizer or GPS technology and offer a wide variety of approach procedures to be used. The GPS approaches utilize a grouping of Global Positioning Satellites (GPS) to establish an aircraft's position. GPS technology is based upon the time it takes for a signal to reach and return from a fixed reference in space (the satellite). Usually several satellites are used to gain more accurate positioning information. Localizer only approaches utilize the Runway 27 localizer for horizontal guidance, but do not use the vertical guidance from the glide slope. TLH also has a Very High Frequency Omnidirectional Radio Range (VOR) fix point that allows for lower minimums to be attained. This fix point, which is named SPADD, can be used by pilots if their aircraft is equipped with a VOR receiver. The pilot would inform the air traffic center that they have located the fix point. They would then be given permission to execute the desired approach procedures. The published minimums for each of these approaches are given in **Table 2-19**.

Table 2-19
RUNWAY 9-27 NON-PRECISION APPROACH MINIMUMS

Instrument Procedure	Height Above Touchdown Zone Elevation (feet)	Visibility (miles)
RWY 9 GPS Approach	429	1 (A, B) & 1 ¼ (C) & 1 ½ (D)
RWY 9 GPS Circling Approach	498 (A, B, & C) & 558 (D)	1 (A, B) & 1 ½ (C) & 2 (D)
RWY 27 GPS Approach	406	½ (A, B) & ¾ (C) & 1 (D)
RWY 27 GPS Circling Approach	498 (A, B, & C) & 558 (D)	1 (A, B) & 1 ½ (C) & 2 (D)
RWY 27 S-LOC Approach	686	½ (A, B) & 1 ½ (C) & 1 ¾ (D)
RWY 27 Circling LOC Approach	658	1 (A, B) & 2 (C) & 2 ¼ (D)
RWY 27 S-LOC w/SPADD intercept	386	½ (A, B, & C) & ¾ (D)
RWY 27 Circling LOC w/SPADD intercept	498	1 (A, B) & 1 ½ (C) & 2 (D)

Source: Southeast U.S. Terminal Procedures
Notes: Minimums based on local altimeter setting. Visibility letters refer to aircraft approach categories.

Runway 18-36

A precision CAT I approach is also available on Runway 36 utilizing an ILS. The approach minimums are given in the following table.

Table 2-20
RUNWAY 36 PRECISION APPROACH MINIMUMS

Instrument Procedure	Height Above Touchdown Zone Elevation (feet)	Visibility (miles)
ILS Approach	200	¾ (A, B, C, & D)

Source: Southeast U.S. Terminal Procedures
Notes: Minimums based on local altimeter setting. Visibility letters refer to aircraft approach categories.

Table 2-21 lists minimum standards for the variety of non-precision approaches that are available on both ends of Runway 18-36. In addition to the localizer and GPS approaches that were discussed above, additional guidance assistance is available based upon a VOR with distance measuring equipment (DME) or from a non-directional beacon (NDB). The VOR, DME, and NDB facilities are described in later sections of this study.

Table 2-21
RUNWAY 18-36 NON-PRECISION APPROACH MINIMUMS

Instrument Procedure	Height Above Touchdown Zone Elevation (feet)	Visibility (miles)
RWY 36 NDB/GPS Approach	476	1 (A, B) &1 ¼ (C) & 1 ½ (D)
RWY 36 NDB/GPS Circling Approach	519 (A, B, C) & 559 (D)	1 (A, B) & 1 ½ (C) & 2 (D)
RWY 36 S-LOC Approach	376	1 (A, B, & C) & 1 ¼ (D)
Circling LOC Approach	519 (A, B, & C) & 559 (D)	1 (A, B) & 1 ½ (C) & 2 (D)
RWY 18 VOR/GPS Approach	638	1 (A, B) & 1 ¾ (C) & 2 (D)
RWY 18 VOR/GPS Approach (w/DME/Radar Fix)	478	1 (A, B) & 1 ¼ (C) & 1 ½ (D)
RWY 18 VOR/GPS Circling Approach	638	1 (A, B) & 1 ¾ (C) & 2 (D)
RWY 18 VOR/GPS Circling Approach (w/DME/Radar Fix)	518 (A, B, C) & 558 (D)	1 (A, B) & 1 ½ (C) & 2 (D)

Source: Southeast U.S. Terminal Procedures
Notes: Minimums based on local altimeter setting. Visibility letters refer to aircraft approach categories.

Airfield Lighting

During nighttime hours and during times of inclement weather, airports need various lighting systems to ensure a safe environment for aircraft operations. TLH has a variety of lighting systems that enable it to safely function during times when either darkness or weather reduces visibility. **Exhibit 2-4** identifies the location of various airfield lighting facilities.

Identification Lighting

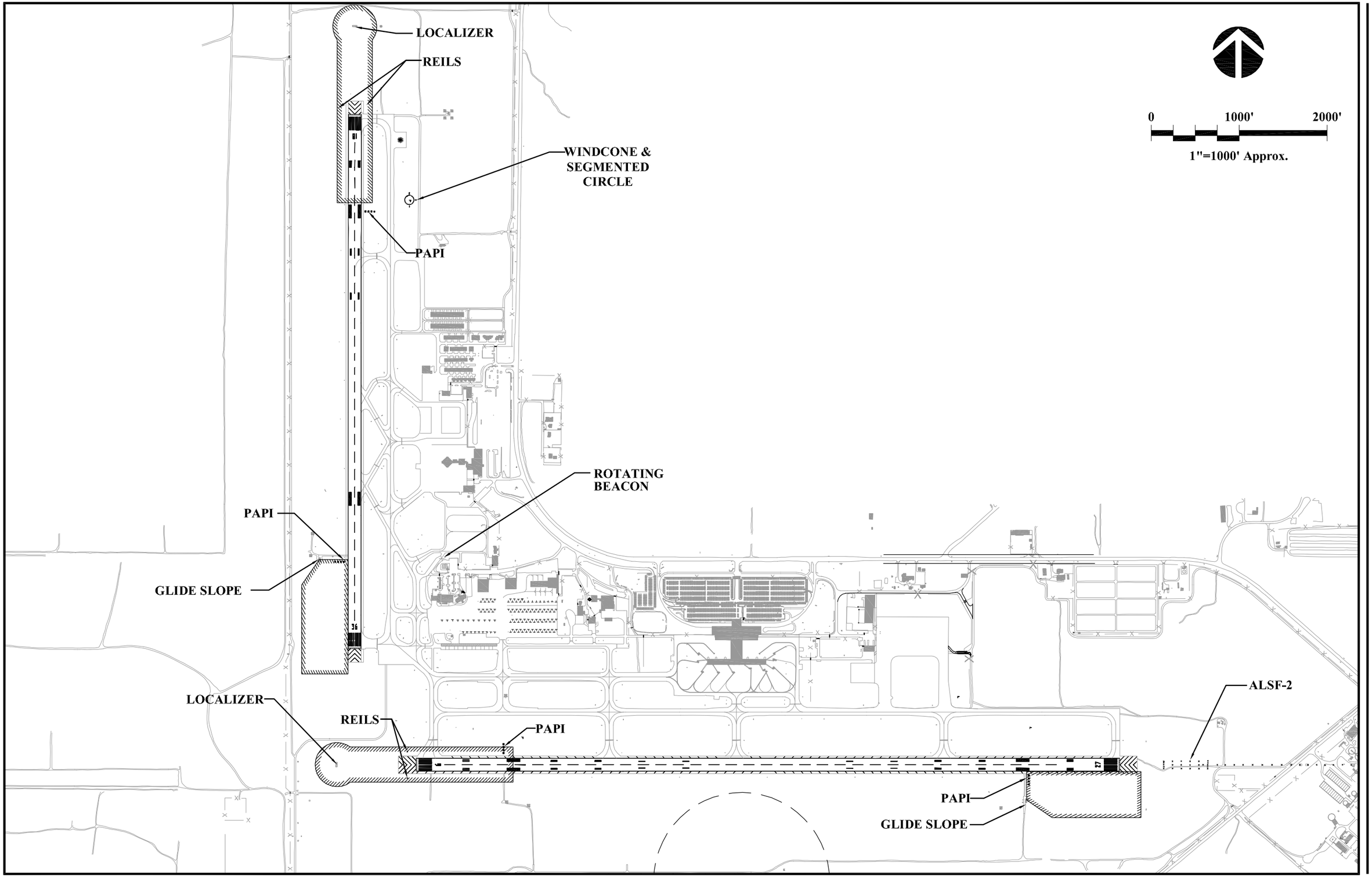
Pilots are aided in locating airports that operate at night or during very adverse weather conditions by rotating lighted beacons. At TLH, the beacon is located southeast of Taxiway T near the site of the former ATCT and the south GA apron. This beacon is approximately 65 feet high above ground level and is equipped with an optical rotating system that projects two beams of light, one green and one white. It is operated continuously at night and during instrument flight operations. The beacon at TLH is reported to be in good condition.

Runway Lighting

Various runway lighting systems can be installed as an aid to pilots. The airport currently has lights along both runways. These lights help to identify the edge of usable pavement and also serve as an indication of how much runway length is remaining. The different runway lighting systems are categorized by the brightness or intensity of light produced. Runways 9-27 and 18-36 are currently equipped with High-Intensity Runway Lights with variable intensity controls. The light system on Runway 9-27 was replaced in 2003 and is in excellent condition. Construction included light cans and conduit encasing for all associated wiring.

Both runway edge light systems are white in color except for the last 2,000 feet of lights where they are equipped with a two-color (amber/white) lens. The amber lens is facing an aircraft as it takes off.

EXISTING AIRFIELD LIGHTING AND NAVAIDS



This change in the light color from white to amber indicates that the active runway pavement is ending. This gives a pilot a visual warning in case a takeoff needs to be aborted. These high-intensity edge lights are a requirement for he precision instrument approaches.

The end of the runway is also equipped with lights so that pilots are aware of where the pavement ends or begins. At TLH each end of the four runways is equipped with a set consisting of four lights on each side of the centerline. These lights are equipped with lenses that are half green and half red. The red side faces towards the runway so that pilots have a visual warning that the pavement is ending, whereas the green side faces away from the pavement and gives pilots on arrival from the opposite direction a visual location of where the runway threshold begins. As an additional visual aid, Runways 9 and 18 are equipped with Runway End Identifier Lights (REILS) systems, which consist of a pair of synchronized flashing lights placed on either side of the runway threshold.

Runway 27 is also equipped with runway centerline lights that give pilots an aid to maintaining the aircraft in the center of the runway pavement, especially during very poor visibility. These lights are white in color up to the last 3,000 feet of the runway and are spaced every 50 feet. From runway length remaining distances of 3,000 to 1,000 feet, the lights alternate between red and white; for the last 1,000 feet, they are all red. As with other runway light systems, the color change serves a visual indicator of the length of runway pavement remaining. This centerline light system was replaced in 2003 and is, therefore, in excellent condition.

In support of very low visibility operations, Runway 27 is equipped with touchdown zone lights. These lights help a pilot target an appropriate landing position on the runway that should allow aircraft the proper distance to stop or exit the runway safely. This system consists of in-pavement white lights located on both sides of the runway centerline from 100 feet past the threshold to a distance of 3,000 feet or one-half the runway distance. The touchdown zone lights were upgraded in 2003 and are in excellent condition.

The runway light systems are controlled by air traffic controllers when the tower is open and by pilots using radio control when the tower is closed. With this feature a pilot can activate the runway edge lights, taxiway lights, REILS, PAPIs, and the ALSF-2 approach lights by tuning to the proper frequency and keying the microphone (the PAPI and ALSF-2 systems will be discussed below). Once activated the lights stay active for a preset time period, generally 15 minutes. This allows pilots time to execute an arrival or departure procedure. At TLH the Common Traffic Advisory Frequency (CTAF) of 118.7 MHz is used to control the airfield lights when the tower is closed.

Taxiway and Apron Lighting

As with the runway, edge lights are provided on the majority of taxiways at TLH. Most are equipped with Medium Intensity Taxiway Lights (MITL) that are blue in color. Having the lights a different color from those on the runway gives a visual indication of the transition from one type of operating area to another. These lighting systems have been installed with light cans and cable in conduit, and are considered to be in good condition. Taxiway P, running parallel to Runway 9-27, does not have edge lights; however, it has been equipped with green centerline lights.

Of the three apron areas at TLH, the commercial terminal ramp is the only one fully equipped with blue edge lights. As in other airfield areas, these lights serve to delineate where the pavement ends. Nighttime operations are enhanced by some degree of overhead lighting on each of the three apron areas.

Two areas at TLH are equipped with runway holdline lights. At the designated holding position on Taxiway P at the end of Runway 27 and on Taxiway A at the end of Runway 36, a series of in-pavement white lights are installed. These lights serve as visual reinforcement of the designated holding position for aircraft and vehicles prior to entering the runway area.

Approach Lighting

Approach lighting systems are located along the extended runway centerline and serve to enhance the runway visibility upon approach. A variety of systems can be used based upon the types of IFR approaches to that runway. As a requirement to conducting CAT II or CAT III instrument approaches, runways must be equipped with approach lighting systems that have sequenced flashers. These systems help to guide pilots under poor visibility conditions to the runway so that a visual confirmation of the runway can be made. Currently, two runways are equipped with such systems at the TLH.

Runway 27 has a high-intensity approach lighting system with sequenced flashing lights (ALSF-2). This system consists of a 2,600-feet long by 400-feet wide system of light bars. The sequenced flashing lights "run" toward the runway to help pilots identify the runway end. This system is maintained by the FAA and considered to be in good condition.

Runway 36 is equipped with a similar approach lighting system, a medium intensity approach lighting system with runway alignment indicator lights (MALSR), that supports the CAT I ILS approach as previously discussed. This system is 2,400-feet in length and 400 feet in width. It, too, is maintained by the FAA, was installed in 2002, and is reported to be in excellent working order.

Pavement Markings

Since both Runways 9-27 and 18-36 are precision instrument runways, their markings include runway numbers (designation), centerlines, runway thresholds, aiming points, and touchdown zone markings. Runway designators indicate the magnetic azimuth of the centerline of the runway. The runway centerlines identify the centers of the runway and provide alignment guidance during takeoff and landing operations. The runway threshold markings consist of eight longitudinal stripes of uniform dimensions disposed symmetrically about the runway centerline. The aiming point markings are located approximately 1,000 feet from the runway end threshold. These markings serve as a visual aiming point for landing aircraft. Finally, runway touchdown markings identify the touchdown zone for landing operations and are spaced to provide distance information in 500-foot increments. These markings consist of groups of one, two, and three rectangular bars symmetrically arranged in pairs about the runway centerline. In addition, both runways have side strip markings delineating the edges of the runways. These runway edge markings are white in color.

Basic taxiway markings consist of yellow centerline and holding position markings at TLH. The holding markings are used to protect the Runways 9-27 and 18-36 safety area/object free zone, ILS critical area, and approach surface, as appropriate, and designate the location that an aircraft must hold until cleared to move through the critical area or onto an active runway. In a few locations, taxiway edge striping is also found to delineate the taxiway edge.

Takeoff and Landing Aids

In addition to the lighting systems and markings previously discussed, runways are generally equipped with other navigational devices (NAVAIDS) to aid pilots in takeoff and landing procedures. Some give indications of weather conditions, while others give either visual or instrument course guidance. It should be noted that most of these systems are owned and operated by the FAA. TLH is equipped with the systems identified on **Exhibit 2-4** and discussed below

Instrument Landing Systems (ILS)

As previously mentioned, Tallahassee Regional Airport is currently equipped with two Instrument Landing Systems (ILS) to provide precision instrument approaches to Runway 27 and 36 ends. ILS systems provide both vertical and horizontal guidance to pilots on approach to the runways. An ILS is comprised of four components. The first element is the lighting system, including approach lights, centerline lights, and runway lights, as described previously in this report.

The second element consists of a glide slope facility. The glide slope facility indicates aircraft vertical position relative to the runway threshold end and the approach slope to the runway. The glide slope antenna provides two electronic beams directed towards the approach. These beams virtually form a glide path beam 1.4 degrees wide (vertically). This glide path beam allows pilots to precisely know their position in relation to the approach surface. The glide slope antennas are located along the side of the runways, approximately 1,000 feet down from the Runway 27 and 36 thresholds. The separation distance between these antennas and runway centerlines is approximately 400 feet. These glide slopes have been set up to provide a standard 3.0-degree angle approach.

The third element of an ILS consists of an electronic localizer. Since an ILS approach is provided to the Runway 27 and 36 ends, the related localizer antennas are installed off the opposite ends. The localizer antenna provides electronic azimuth steering information to the pilot based on the aircraft position relative to the runway centerline. In short, the localizer provides an electronic beam that travels above the approximate runway centerline that provides a pilot with an indication of whether the aircraft is to the left or right of the appropriate course to the runway.

Radio marker beacons are the fourth component of an ILS system. These beacons are placed along the final approach course marking the horizontal location of the runway centerline. These beacons consist of a pole mounted, radio transmitter that generates a cone-shaped signal over which aircraft fly. Three types are utilized based upon the category of the most restrictive approach procedure. An Outer Marker (OM) is generally located four to seven miles from the runway threshold and is required for all low visibility approaches. At this point, the altitude of the glide slope should be verifiable. A Middle Marker (MM) is located usually 2,000 to 6,000 feet before the threshold to mark the decision height of a CAT I approach. Inner Markers (IM), used exclusively, but not required, on runways with CAT II and III approaches, are located at the point where an aircraft on the appropriate glide slope would be at the decision height for the CAT II or III approach. Both OM (designated WAKUL) and MM facilities are located along the Runway 36 final approach course. The MM and OM are located 0.6 and 4.1 nautical miles, respectively, from the runway end. Similarly, an OM (named PALEE), a MM, and an IM are located along the Runway 27 final approach course at 0.15, 0.3, and 4.95 nautical miles from the runway end, respectively. The outer marker can also serve as fix point for non-precision instrument approaches.

Precision Approach Path Indicators

All four runway ends are equipped with Precision Approach Path Indicators, usually referred to as a PAPI. The units are located on the left-hand side of each runway approximately 1,000 feet past the runway threshold. Each PAPI unit consists of a grouping of four lights (with split red and white lenses) that give pilots on a visual approach vertical guidance on their approach slope. If the aircraft is descending at the appropriate slope, which at TLH is set at 3 degree, the pilot should see two red and two white lights. If they are too high they will see four white lights and if too low they will see all red.

Non-Directional Radio Beacon

A Non-Directional Radio Beacon (NDB) facility is located 4.1 nautical miles south of the airport. This radio beacon transmitter provides bearing information to or from the beacon, allowing pilots to track their location with respect to TLH, such as when conducting an NDB instrument approach. The NDB identifier is WAKUL, which serves as the Runway 36 outer marker for CAT I approaches.

VORTAC

The Tallahassee Very High Frequency Omnidirectional Radio Range and/or Tactical Air Navigation (VORTAC) facility, identified on aeronautical charts as SZW, is located approximately 9 nautical miles north of the airport. This facility is used to both provide and support approach capabilities at TLH. The VOR is also used for terminal and enroute navigation purposes. This ground-based electronic navigation aid transmits very high frequency navigation signals helping aircraft pilots to identify their location relative to the airport. Pilots, if their aircraft is properly equipped with distance measuring equipment (DME), can also determine their distance to or from the VOR as various radials are flown. The Tactical Air Navigation (TACAN) portion of the system is used by military pilots. This system provides air navigation aid by indicating bearing and distance to the station on a different frequency.

Weather Indicators

The airport is equipped with an Automated Surface Observing System (ASOS) that monitors weather conditions on the airfield. This information is transmitted to aircraft tuned to the correct frequency. It is located near the Runway 9 end between Taxiways P and S. It provides information such as cloud height, visibility, precipitation, wind direction/speed, and temperature. The National Weather System maintains this system.

Adverse wind conditions can be detrimental when landing or taking off, especially for smaller, general aviation aircraft. Windsocks serve as a visual indicator of wind conditions in their immediate facility. At TLH windsocks are located near the thresholds of Runways 9, 27, and 36. In addition, a wind cone and lighted segmented circle is located to the east of Taxiway A near the Runway 18 end. This facility gives a visual indication of the current wind conditions and which runway would be favored for use based on the wind's direction, especially when the control tower is closed.

Another indication of current wind conditions at TLH is monitored by the Low Level Wind Shear Alert System (LLWAS). This system consists of eight units placed around the periphery of the airport. These units detect sudden changes in wind direction or speed at altitudes lower than 2,000 feet. These sudden changes can lead to a pilot losing control of the aircraft, especially during takeoffs

and landings when aircraft are traveling at low velocities. With this system in place, pilots are alerted to low level wind shear conditions.

Airfield Signage

Airport signage provides essential guidance information that is useful to a pilot during all phases of movement on the airfield. Tallahassee Regional Airport is equipped with an array of airfield signage that comply with AC 150/5340-18C, *Standard for Airport Sign Systems*. This advisory circular contains the FAA standards for the siting and installation of signs on airport runways and taxiways. Standardized taxiway and runway designation systems enhance safety and improve efficiency. Tallahassee airport signs include six different types delineated below:

1. Mandatory instruction signs have a red background with white lettering and are used to identify an entrance to a runway or airfield critical area or areas where an aircraft is prohibited from entering. These signs include runway holding position, ILS critical area, and no entry.

2. Location signs are used to identify a runway or a taxiway on which the aircraft is situated, while other location signs are used to assist pilots in determining when they have exited a particular area. These signs generally have either a black background with yellow lettering or a yellow background with black lettering. These signs include: taxiway location signs, runway location signs, and ILS critical area boundary signage.

3. Direction signs have a yellow background with black lettering and are normally located on the left, prior to an intersecting taxiway.

4. Destination signs also have a yellow background with black inscription and always include an arrow, showing the direction of the taxi route to specified destinations on the airport. Typical destinations normally referenced will include the terminal ramp, general aviation area, or air cargo areas.

5. Information signs have a yellow background with black lettering and are used to provide information on such items as radio frequencies and noise abatement procedures.

6. Runway distance remaining signs have a black background with white numbering and are normally found along the left hand side of the runway alignment. The number on the sign indicates the distance (in thousands of feet) of the remaining runway length. Both runways at TLH are equipped with distance remaining signs.

AIR TRAFFIC CONTROL AND AIRSPACE STRUCTURE

Air Traffic Control

The Air Traffic Control Tower (ATCT) is located south of the Runway 9 threshold off Springhill Road. This facility operates from 6:00 a.m. until 11 p.m. The ATCT not only oversees aircraft flying within the controlled airspace near TLH, but also vehicles and aircraft operating on the ground within the defined movement area. Vehicle or aircraft operators must maintain contact with tower personnel in either of these areas, whether on the ground or in the air. Tower personnel's purpose is to ensure that all movements are coordinated in a safe manner. This facility also houses a terminal radar approach control (TRACON) station.

This facility maintains contact with and coordinates the movement and necessary separations for aircraft operating at or above 4,100 feet above mean sea level (MSL) within the controlled airspace around TLH.

Airspace Structure

The portion of the Jacksonville Sectional Aeronautical Chart surrounding TLH is shown as **Exhibit 2-5**. These sectional charts give pilots information on airspace obstructions, communication settings, NAVAIDs, and airspace classifications. Control over airspace has been given to the FAA, which determines minimum operating requirements for each defined airspace classification. Requirements range from maximum speeds in different airspace classification to the requirement to have two-way radio communication capabilities. According to the 2003 edition of the Aeronautical Information Manual, these classifications are based upon:

- The complexity or density of aircraft movements;
- The nature of the operations conducted within the airspace;
- The level of safety required; and
- The national and public interest.

For simplicity, only the FAA defined airspace classifications for the Tallahassee area are discussed below.

Class C Airspace

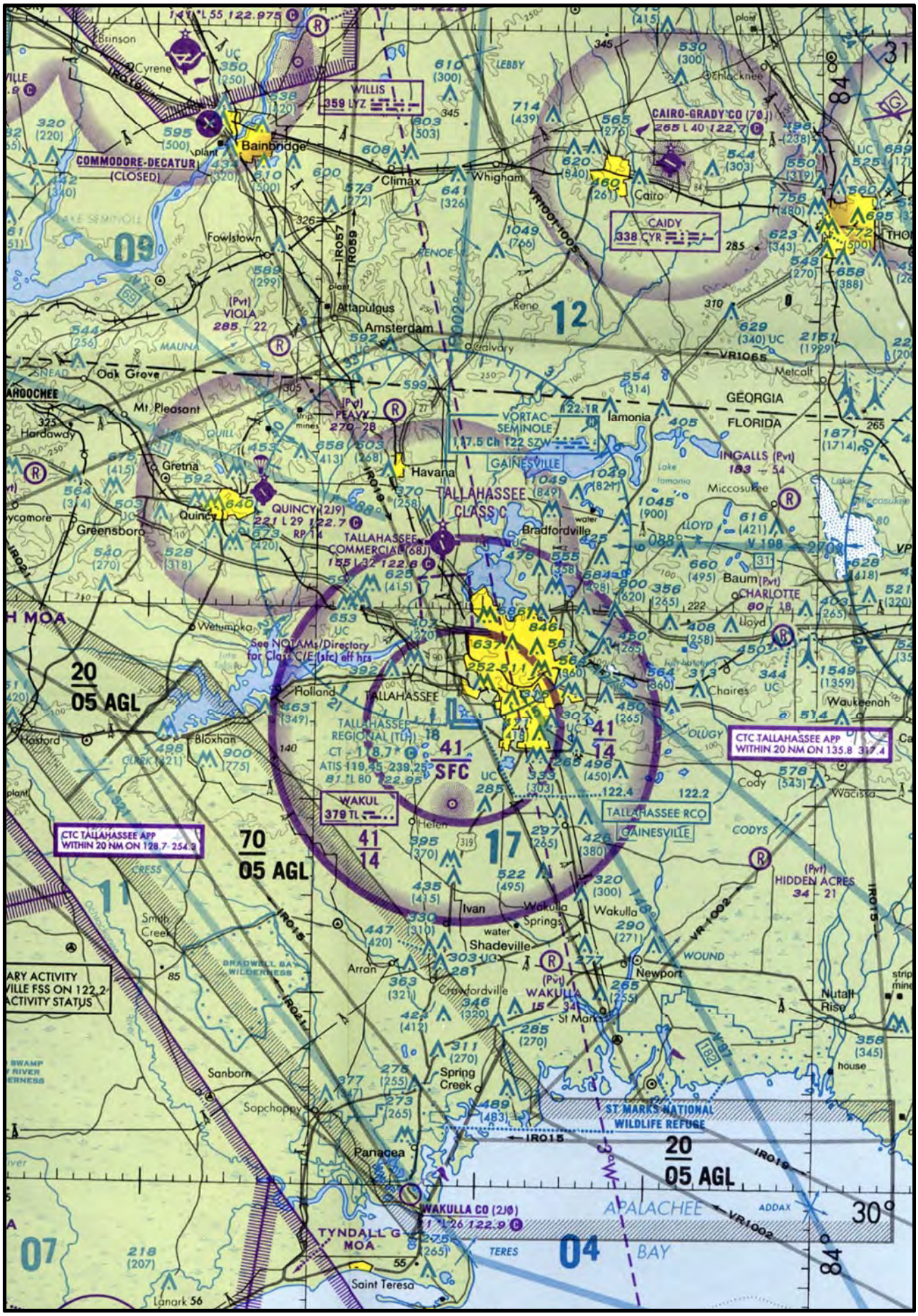
When the ATCT is open and operational, the airspace around TLH is classified as Class C. Pilots operating within airspace designated as Class C must have an aircraft equipped with a two-way radio and an operable radar beacon transponder with automatic altitude reporting equipment. Prior to entering Class C airspace, a pilot must establish radio contact with the ATCT as well as maintain contact as long as they remain in the Class C area.

The dimensions of the Class C area are customized for each airport, but generally consist of core, shelf, and outer areas. For TLH, the core area goes from the ground up to 4,100 MSL for approximately five nautical miles in radius. It is shown as the smaller magenta circle centered around the airport on **Exhibit 2-5**. The shelf area for the airport has vertical limits from 1,400 feet MSL to 4,100 feet MSL from approximately 10 nautical miles in radius centered upon the airport property. This area is shown as the larger of the two magenta circles on the aeronautical chart. An outer area, which is not shown on the aeronautical chart exhibit, extends for 20 nautical miles from the lower limit of the controllers radar to the ceiling of the defined space

Other requirements of Class C airspace include departure procedures. A pilot departing from an airport within Class C airspace must contact the ATCT before taking off. Another requirement for aircraft operating within Class C airspace is that air speed must be kept to below 200 knots when the aircraft is at or below 2,500 feet above ground elevation.

Class E Airspace

During the nighttime hours when the ATCT is closed from 11 p.m. to 6:00 a.m., the airspace around Tallahassee Regional is classified as Class E (shown on **Exhibit 2-5** as the magenta line inside of the Class C shelf line which fades toward the airport). Class E airspace is the general "all-purpose"


TALLAHASSEE CLASS C
TALLAHASSEE COMMERCIAL (TBJ)
TALLAHASSEE REGIONAL (TLH)
CTC TALLAHASSEE APP WITHIN 20 NM ON 128.7 254.3
CTC TALLAHASSEE APP WITHIN 20 NM ON 135.8 317.4
TALLAHASSEE RCO
WAKULA CO (2J0)
TYNDALL G MOA
ST MARKS NATIONAL WILDLIFE REFUGE
COMMODORE-DECATUR (CLOSED)
CAIRO-GRADY CO (7J)
QUINCY (2J9)
VORTAC SEMINOLE
GAINESVILLE
WILLIS
CAIDY
WAKUL
WAKULLA
HIDDEN ACRES
INGALLS (Pvt)
PEAVY
VIOLA
Bainbridge
Cairo
Climax
Whigham
Fowlstown
Attapulgus
Amsterdam
Oak Grove
Mt Pleasant
Hardaway
Gretna
Quincy
Greensboro
Havana
Bradfordville
Lamonia
Miccosukee
Metcalf
Baum (Pvt)
CHARLOTTE
Lloyd
Chaires
Waukeenah
Holland
Bloxham
Hosford
Wetumpka
Ivan
Wakulla Springs
Shadeville
Arran
Crawfordville
Newport
Nutall Rise
Spring Creek
Sopchoppy
Panacea
Saint Teresa
Lanark
Cody
Wacissa
Ochlocknee
Climax
GEORGIA
FLORIDA
APALACHEE BAY
09
12
04
07
11
17
31
30°
20 05 AGL
70 05 AGL
41 SFC
41 14

classification. It typically extends from 1,200 MSL up to 18,000 MSL; however, at TLH the lower vertical minimum for the Class E airspace is 700 feet above the surface within the area that is classified as Class C during ATCT operations. No special equipment is needed to operate within Class E airspace and generally VFR procedures are in affect.

Airspace Conflict Considerations

While the airspace around TLH is relatively unencumbered, there are several areas that pilots need to be aware of when operating at or near the airport. The first consideration is the location of two general aviation airports nearby. The Tallahassee Commercial Airport (FAA designation: 68J) is located within 10 nautical miles north of TLH. Airspace around it is designated as Class E with a 700-foot floor for a radius of approximately five nautical miles. Much of this area overlaps the TLH Class C/E airspace. A second GA airport is the Quincy Municipal Airport (FAA designation: 2J9) located northwest of TLH within approximately 15 nautical miles. It, too, has Class E designated airspace with a 700-foot floor.

Other areas nearby include the Tyndall Air Force Base military operations areas (MOA) D and E. The military operates training exercises at altitudes of 300 to 6,000 feet in the MOA-D and at 300 up to 18,000 feet in MOA-E. These training exercises occur intermittently during daylight hours from Monday to Friday. Pilots are required to contact the Tyndall air traffic control center for instructions, when operating in this airspace.

The military has also established an IFR training route for special unmanned aircraft. These aircraft are escorted by military tactical type aircraft and in this corridor generally operate at altitudes between 500 and 2,000 feet AGL. This corridor starts over the Apalachee Bay south of the airport and continues on a west-northwest route passing southwest of TLH. Further out from TLH are other MOAs including Moody to the northwest and northeast and Live Oak to the southeast. Pilots should be aware that at times these areas have active military operations.

For aircraft arriving from or departing to the south another consideration is the St. Marks National Wildlife Refuge along the coastline. Aircraft flying over this area should not operate lower than an altitude of 2,000 feet AGL. This requirement is for noise-related reasons.

AIRPORT FACILITIES

A wide variety of activities occur at TLH with each requiring certain physical facilities to support them. For discussion of these facilities, which are shown on **Exhibits 2-6, 2-7, and 2-8**, the airport will be divided into three areas based upon their location to one of the following aircraft aprons:

- North GA Apron
- South GA Apron
- Terminal Apron

There are a few facilities, such as the ATCT, that do not lie in close proximity to any apron area and will be discussed under the section entitled Miscellaneous Facilities.

North GA Apron

The North GA Apron area is located east of and at approximately the midpoint of Runway 18-36. Formerly, commercial passenger service was operated on this apron. The apron appears to have been originally constructed of concrete and then overlaid with asphalt. Although, the apron has undergone various maintenance activities, such as the previously mentioned overlays, the apron is in very poor condition. It is now used almost exclusively for general aviation uses. This apron can be accessed via Taxiways C, D, G, and R. Public access to these facilities is directly off of Capital Circle S.W. The following facilities are located adjacent to the North GA Apron:

- **Hangar Complex:** The northern portion of this area serves as the general aviation hangar area. These hangars allow aircraft owners to store their planes with some protection from inclimate weather. Currently, 71 aircraft (both single and twin-engine) can be stored in t-hangars and three jet aircraft in one conventional hangar. Approximately half of these hangars were added in 2002 and are in excellent condition. Of the older hangars, most appear to be in good condition except the port-a-ports located on the eastern edge of the hangar area, which are in poor condition. Flightline Group manages the leasing of these facilities.

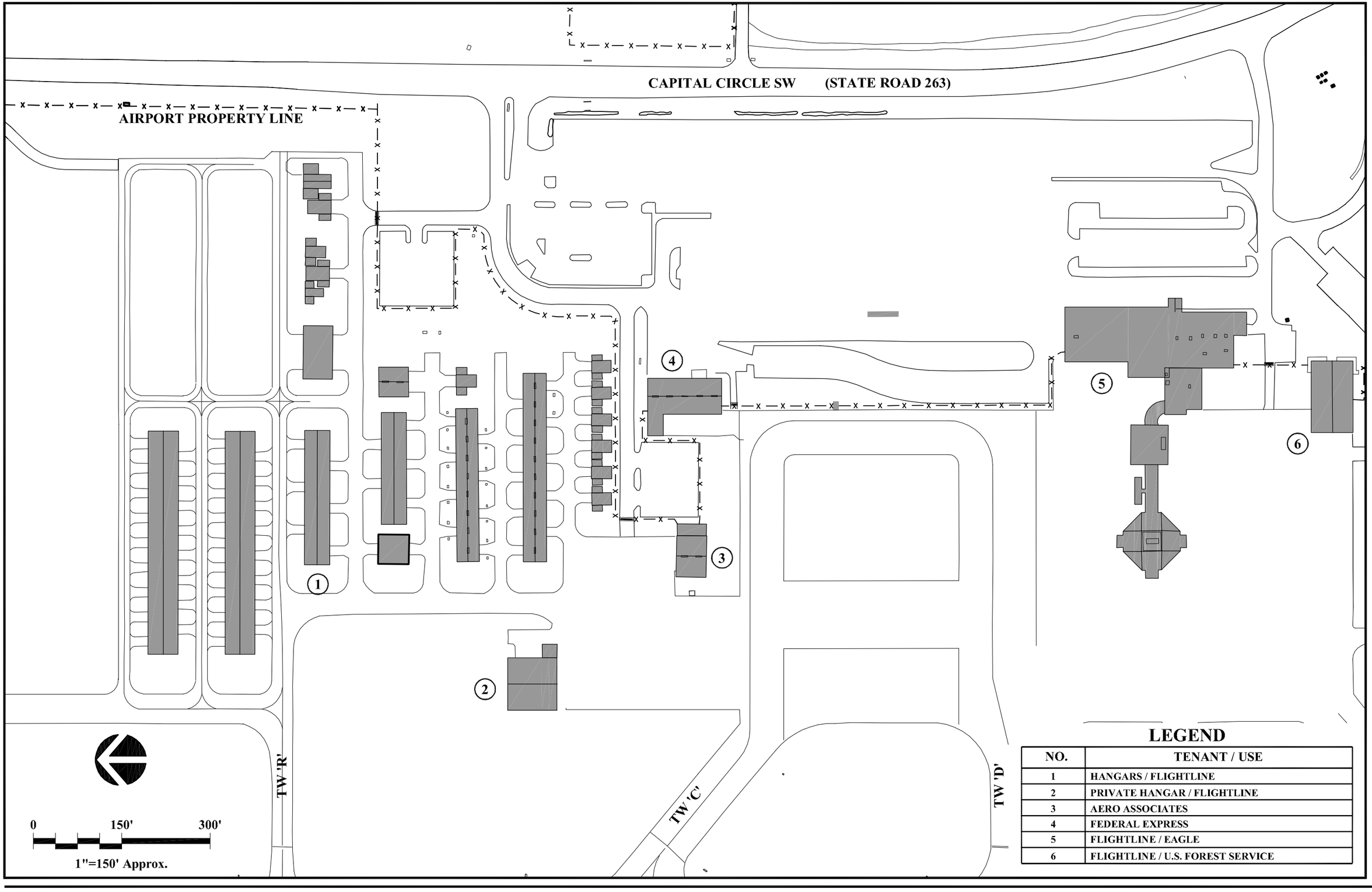
- **Aero Associates:** Located just south of the t-hangars is Aero Associates, one of three fixed-base operators (FBO) at TLH. Aero has been operating at TLH for approximately 20 years, and provides a variety of aviation services. Aero provides a variety of services, including commercial and GA aircraft maintenance, ground support equipment maintenance, and facility (such as jetbridges) maintenance. Aero operates out of one 4,500 square feet hangar that was added in the early 1990s.

- **Federal Express:** Due east of Aero Associates is Federal Express (FedEx), which operates out of one building that is 60 feet by 120 feet. The number and type of aircraft utilized by FedEx fluctuates with the amount of cargo they haul into and out of TLH. Currently, they use one B-727 and two Cessna Caravans. A recent cargo study conducted for the airport has proposed enlarging the small cargo apron east of the passenger terminal area and relocating FedEx operations there.

- **Former Commercial Terminal Building**: Located on the east side of the north GA apron, this building opened in 1961 and served commercial passengers until the current terminal opened in 1989. After the new terminal opened this building has been leased to a variety of tenants. While under lease to Aero Associates, office areas in the terminal were renovated and equipped with necessary communications infrastructure. Flightline currently leases this building and plans to relocate some of their support service offices to this building. Eagle Air Corporation, which operates as a flight school, pilot shop, aircraft rental, and charter service, subleases a portion of the terminal area. The old concourse area, generally referred to as the "Pizza Hut" is in very poor condition and should be demolished.

- **U.S. Forest Service:** Located at the southern portion of this north apron area is a 10,000 square foot hangar serving as the operational base for US Forest Service. At this location, the Forest Service conducts staff training and operates a command center during large scale fires. This building, which is approximately 15 years old, is managed by Flightline and upon inspection appears to be in good condition.

EXISTING FACILITIES - NORTH GA APRON AREA



LEGEND

NO.	TENANT / USE
1	HANGARS / FLIGHTLINE
2	PRIVATE HANGAR / FLIGHTLINE
3	AERO ASSOCIATES
4	FEDERAL EXPRESS
5	FLIGHTLINE / EAGLE
6	FLIGHTLINE / U.S. FOREST SERVICE

EXISTING FACILITIES - SOUTH GA APRON AREA

LEGEND

NO.	TENANT/USE
1	CENTRAL APRON AREA
2	CIVIL AIR PATROL
3	CAPITAL AVIONICS
4	FUEL FARM
5	ELECTRICAL VAULT
6	FLIGHTLINE
7	ARFF
8	FLIGHTLINE/GA TERMINAL
9,10	FLIGHTLINE

NO.	TENANT/USE
11	FL BUREAU OF AIRCRAFT
12	FL FOREST SERVICE
13	LEON CO. SHERIFF'S DEPT.
14	LIVELY TECHNICAL CENTER
15	HELICOPTER PARKING

0 200' 400'

1"=200' Approx.

AIRPORT PROPERTY LINE

TW 'A'

TW 'F'

TW 'G'

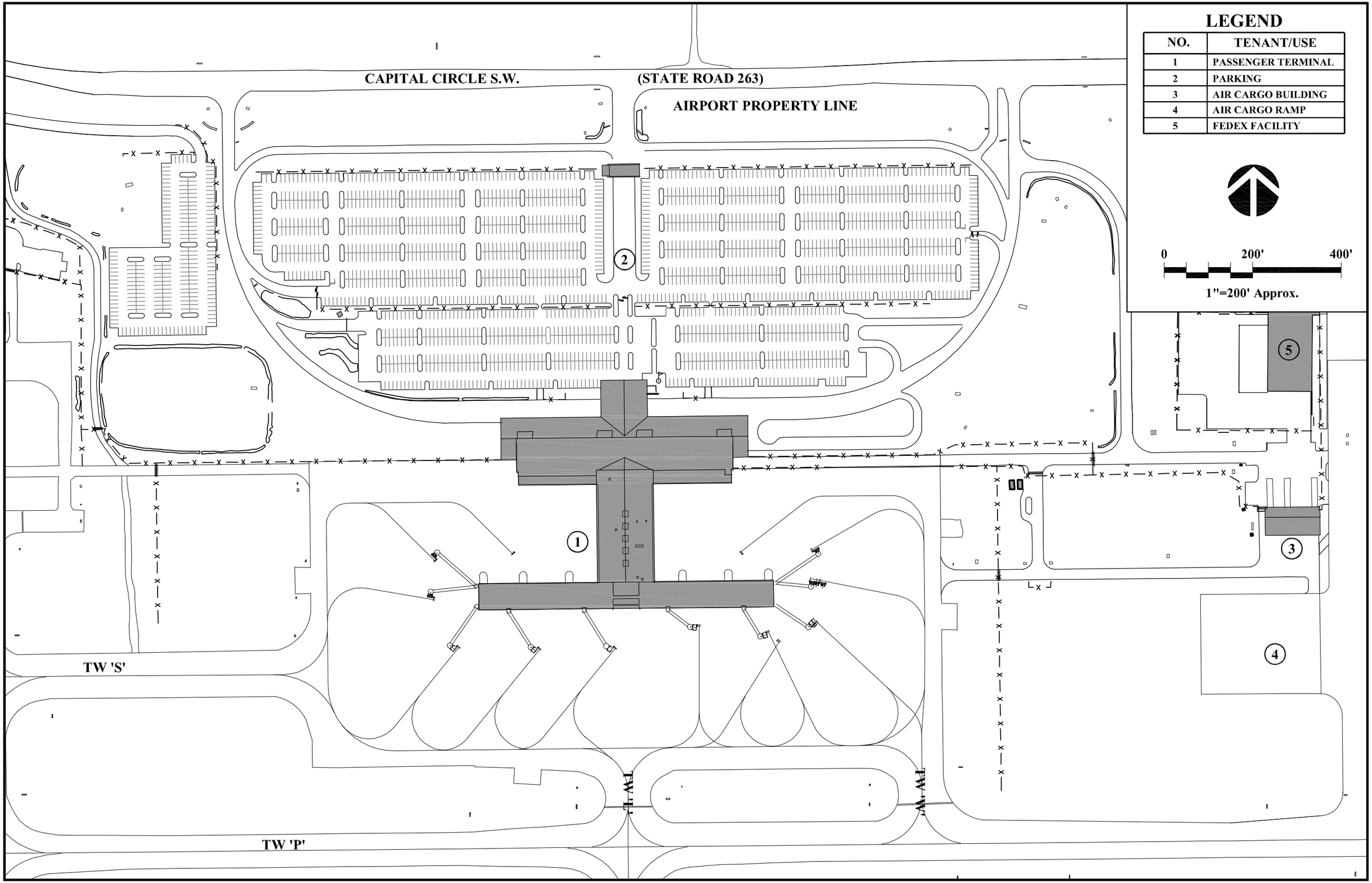
TW 'H'

TW 'S'

TW 'Z'

TW 'J'

TW 'K'



LEGEND

NO.	TENANT/USE
1	PASSENGER TERMINAL
2	PARKING
3	AIR CARGO BUILDING
4	AIR CARGO RAMP
5	FEDEX FACILITY

0 200' 400'

1"=200' Approx.

EXISTING FACILITIES - TERMINAL APRON AREA

2-8

South GA Apron

The South GA Apron area is located south of the North GA apron, north of Runway 9-27, and west of the passenger terminal. This area also serves GA users. The asphalt apron is reported to be in fair condition and has 55 tie-down areas for aircraft. Users reported flooding of the southwest corner of this apron due to poor drainage. It can be accessed via Taxiways H, J, and Z. Users and the general public can access these facilities off of Capital Circle S.W. and via internal airport vehicle roads. The following facilities are located in the vicinity of the South GA Apron:

- **Former T-hangar Area**: Located just north of the South GA Ramp is the site of former t-hangars, demolished after the new hangars were constructed. This area has poor accessibility for nearly all aircraft over Design Group I.

- **Capital Avionics Hangar and Offices**: One hangar, located on the east side of the former t-hangar area, serves as the operating center for Capital Avionics. This firm provides repair services to aircraft avionic systems as well as installing new systems into aircraft. They also serve as a developer and distributor of avionics test equipment.

- **Civil Air Patrol:** This building, located just north of Capital Avionics, houses the Tallahassee Composite Squadron of the Civil Air Patrol (CAP), which is an auxiliary unit to the U.S. Air Force. This CAP unit serves the Tallahassee region by offering assistance in emergencies, and through community education and youth training programs.

- **Fuel Farm:** Flightline operates this fuel farm facility, which is located west of the former t-hangar area. The facility consists of multiple aboveground storage tanks providing 25,000 gallons capacity of 100LL fuel, 120,000 gallons capacity of Jet A fuel, and 10,000 gallons of unleaded fuel for vehicles. This facility provides fuel for all commercial and GA aircraft at TLH. The unleaded gasoline is used exclusively for Flightline vehicles and is not for sale.

- **Electrical Vault:** This 2,300 square foot brick building located south of the fuel farm houses the necessary transformers, controllers, and generators for the airfield lighting, signage, and some NAVAIDS. Upon visual inspection, the building appears to be in good condition.

- **Vehicle Maintenance Building:** Located south of the electrical vault on the northwest corner of the south GA ramp is a vehicle and equipment maintenance facility, which was the former ARFF station. Flightline leases this facility for the maintenance of their vehicles and subleases the offices in the building to the National Weather Service.

- **ARFF (Aircraft Rescue and Fire Fighting) Facility:** FAR Part 139 sets forth minimum safety standards for emergency response personnel and equipment needed at commercial service airports. ARFF departments provide emergency response activities. The minimum personnel, equipment, and aqueous film forming foam (AFFF) agent is based upon the longest commercial passenger aircraft having an average of five or more daily operations. The categories with the aircraft length requirements are given below:

    - Index A includes aircraft less than 90 feet in length;
    - Index B includes aircraft at least 90 feet, but less than 126 feet in length;
    - Index C includes aircraft at least 126 feet, but less than 159 feet in length;

- Index D includes aircraft at least 159 feet, but less than 200 feet in length; and,
- Index E includes aircraft at least 200 feet in length.

TLH is rated as an ARFF Index C airport based upon the current level of scheduled air service. This index level requires the department to have at minimum two vehicles that carry at least 500 pounds of sodium-based dry chemical and can produce 3,000 gallons of AFFF.

Presently, the airport's ARFF department has the following vehicles: 1) 1986 Walters vehicle with a capacity of 1,800 gallons water, 180 gallons AFFF, and no dry chemical storage (considered the reserve unit); 2) 1994 International vehicle, with a capacity of 500 gallons water, 50 gallons AFFF, and 500 pounds of dry chemical; 3) 1995 E-ONE with a capacity of 3,300 gallons water, 500 gallons AFFF, and 500 pounds of dry chemical; and 4) 1996 E-ONE vehicle with a 3,300 gallons water, 500 gallons AFFF, and 500 pounds of dry chemical storage. The facility is manned 24 hours by dedicated units of three men each from the Tallahassee Fire Department. All personnel are also trained as first responder emergency medical technicians.

✈ **Flightline-Tallahassee:** Located on the western edge of the apron is the airport's largest FBO. Flightline is a full-service FBO offering services, including aircraft maintenance, fuel sales, and hangar leasing. They also provide tie-down services from this south apron area. In 1994, the company's operations were moved into a new GA terminal, which is in excellent condition. Flightline also leases from the Airport the two hangars on the north side of this ramp area. Aircraft maintenance, GA only, is performed in the westernmost hangar, and a flight school and pilot shop are operated out of the other hangar.

✈ **State of Florida Bureau of Aircraft:** The easternmost hangar located on the north of this GA ramp houses the Florida aircraft fleet. This agency provides aviation services for the governor and other state officials and agency staff.

✈ **Government Agencies:** Located on the northeast edge of the South GA Apron are two smaller apron areas with associated buildings. The first apron serves the Florida Forest Service, which includes the two buildings located east of the apron. Directly east of this apron is another small apron and building that is utilized by the Leon County Sheriff's Department.

✈ **Lively Technical Center:** The Aviation Campus of Lively Technical Center is located east of the Sheriff's Department and just west of the passenger terminal. This area consists of several buildings that support an airframe and power plant (A&P) mechanics school.

Terminal Area

The terminal area at Tallahassee Regional Airport (TLH) consists of the facilities essential for commercial air service, including the passenger terminal building, the commercial service apron, the public parking lots, employee parking, and the rental car ready/return lot. This section describes each of these areas and identifies constraints and opportunities that will be considered during the alternatives evaluations later in this study. Other miscellaneous facilities located within or adjacent to the immediate terminal area include Lively

Aviation School, the Sheriff's hangar, and an air cargo facility. **Exhibit 2-9** illustrates the key areas of the Terminal Area Facilities.

Short-Term Parking

Short-term parking is located north of terminal building directly across the terminal access road adjacent to the rental car ready/return lot. A short entry road from the access road is located "upstream" from the terminal building in the northwest corner of the lot. Vehicles exit via a drive leading through the center of the long-term parking lot to the common toll-plaza. Currently there are 326 short-term parking spaces.

Long-Term Parking

The long-term parking lot is located within the terminal access loop road north of the terminal building. The first entrance to this lot is located upstream from the terminal building prior to reaching the entrance to the short-term lot, a second entrance is provided downstream from the terminal. An exit drive leading to the toll-plaza bisects this parking lot. All traffic exiting the short and long-term parking lots use this toll-plaza. The long-term lot has a total of 1,377 parking spaces.

Rental Car Ready and Return

The rental car ready/return lot is located to the north of the terminal across the terminal area access road adjacent to the short-term and long-term parking lots. The entry to the ready/return lot is located downstream from the terminal building. Traffic exits the ready/return lot via a short exit drive, leading to the terminal access road. Currently this lot has 264 ready/return spaces.

Employee Parking

A large surface lot northwest of the terminal building outside of the terminal access loop road provides employee parking. Employees are provided access in and out of this lot via an entrance road off of Capital Circle Southwest. There are 223 employee parking spaces in this lot. **Table 2-22** summarizes the existing Terminal Area parking lot capacities:

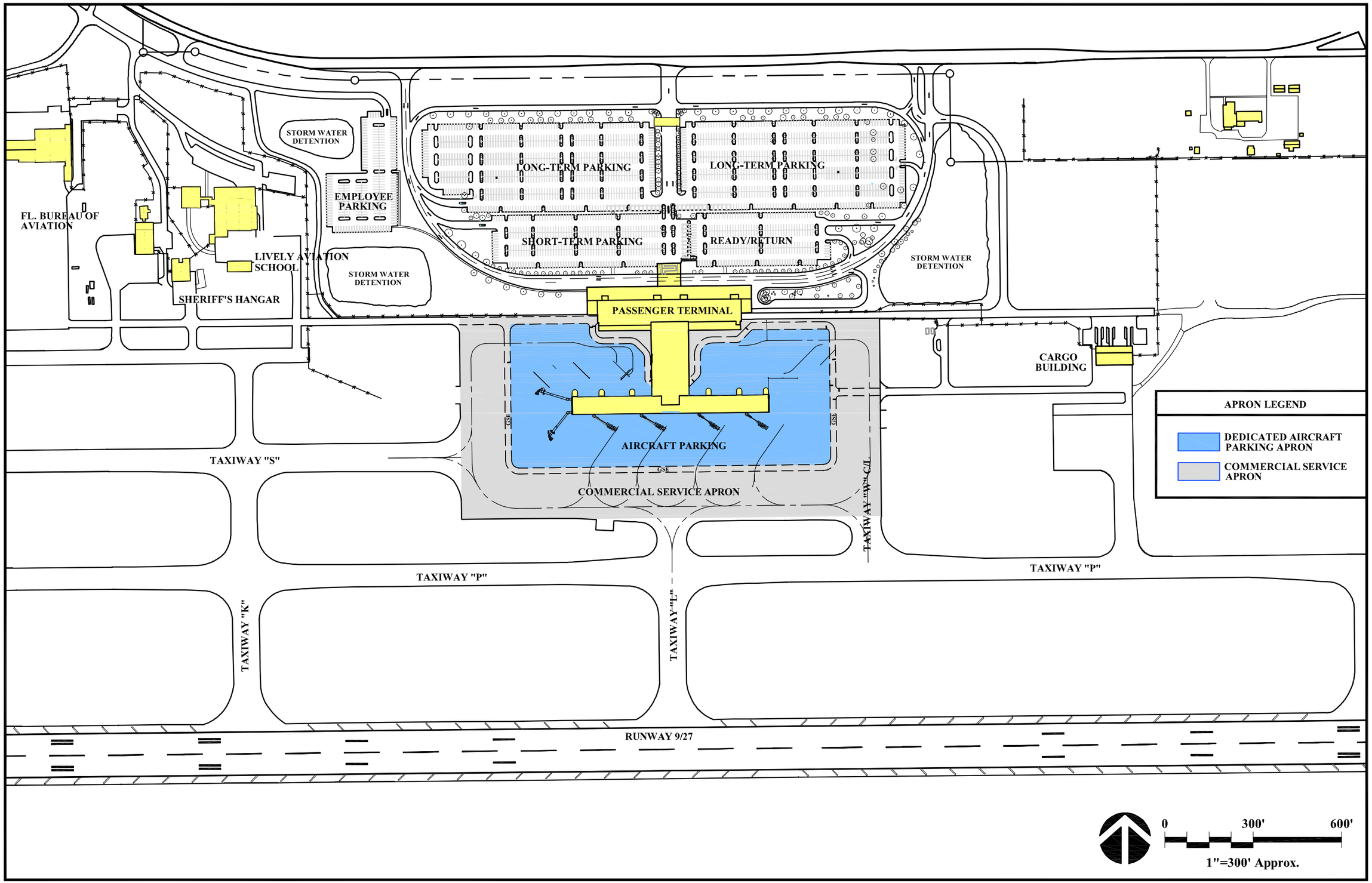
Exit Toll Plaza

All vehicles leaving the short-term and long-term parking lots are directed to a single Exit Toll Plaza located within the long-term parking lot.

Existing Commercial Service Apron

The commercial service apron at Tallahassee Regional Airport is bordered by the passenger terminal building to the north, Taxiway "W" to the east, and Taxiway "P" to south. Taxiway "S" to the west provides access to various fixed Base Operators (FBO's) and air cargo operations. Commercial aircraft traffic flows between the apron and Runway 9/27 via the perpendicular taxiways. The overall area of the commercial service apron is approximately 97,285 square yards, of which approximately 45,440 square yards is considered the effective aircraft parking area as indicated in Exhibit 2-9.

TERMINAL AREA FACILITIES



Terminal Building Layout

The existing passenger terminal facility (The Ivan Monroe Terminal) at TLH was constructed in the late 1980's to replace the original terminal structure. The three-story facility is approximately 203,400 square feet in size, including the covered areas under the main floor.

The majority of public activity at TLH occurs on the main level of the terminal building (114,526 s.f.) while administrative and support functions are located on the upper and apron (lower) levels. Major functions of the terminal, including ticketing, baggage claim, security screening, concessions, and passenger holding are all located on the main level. Passengers enter the building from the curb road and parking lots from one of six vestibules located along the north face of the terminal. Two vestibules are located directly north of the ticket counters, two are located in the center of the building, and two are located directly to the north of baggage claim. After entering the building, the ticketing and baggage claim areas are visible. Signage reinforces direction to the major areas of the terminal. Once inside the terminal building, passengers either proceed to ticketing, or directly to the passenger screening area, depending on whether they must check baggage, obtain boarding passes, or coordinate with an airline representative.

The ticketing area is located at the far west end on the north (land) side of the terminal building. It includes the ticket lobby, ticket agent area, and airline ticket offices (ATO). In response to the terrorist events of 9/11, new security regulations developed by the Transportation Security Administration (TSA) require that all checked baggage is screened prior to loading onto a commercial aircraft. Currently, there are three Explosive Detection Systems (EDS) fulfilling the screening requirements of TLH located in ticket lobby. The Secretary of Transportation has publicly stated that the best location for checked baggage screening is not in the lobbies of airports where panic can occur if something suspicious is found. It should be in a back-of-house area specifically for baggage screening. However, many small- and medium-hub airports were forced to accept baggage screening in their lobbies as short-term solutions due to the cost, complicated requirements, and time necessary to modify the terminals for behind-the-scenes retrofit. Because they were placed in an already congested area, the baggage screening system at TLH significantly reduces the effective useable area of the ticket lobby. The outgoing baggage make-up area for each airline is located on the lower level of the terminal building below the ATO. Currently, Delta Airlines (and subsidiaries including Atlantic Southeast, Chautaugua, Comair, and Skywest), Airtran, Northwest Airlink, and US Airways Express serve TLH.

After enplaning passengers have received the proper credentials at the ticket counters, they proceed to a security screening area that includes two screening stations located in a north-south corridor that connects the ticketing and baggage claim areas to the secure concourse. Various concessions and miscellaneous functions including restrooms, stairways, etc., are located along this corridor on both sides. During peak periods the congestion at the security checkpoint queuing area obscures the view and access to the concessions and restrooms. The restrooms located along this corridor are the only public restrooms serving the un-secure side.

While the majority of concessions at TLH are located on the un-secure side of the terminal, passengers are afforded a modest selection of concessions in the secure passenger holding area. Traditionally, at airports the size of TLH, concessions were located on both sides of security. Often times a heavier percentage of concessions including restaurants and gift shops were located on the un-secure side. Since new TSA regulations in effect since 9/11 have caused the security screening process to be more time intensive and stressful to passengers, airports the size of TLH must consider

the balance of secure versus un-secure concessions. Since the trend of passengers is to now clear security as soon as possible, and arrive at their assigned holding area, they are more likely to utilize concessions in the secure area.

Once clearing the security checkpoint, enplaning passengers enter the secure concourse located on the south (air) side of the terminal building. This area is comprised of the holding areas (gates), limited concessions, restrooms, miscellaneous support spaces including small electrical, mechanical, and storage closets, and the concourse circulation. Most of the gates in the concourse area utilize boarding bridges to accommodate jets. However, since the recent changeover from narrow body aircraft to regional jets by many carriers, some of the bridges must be used in conjunction with mobile stairs to access the lower door heights of the smaller jets. A series of stairwells located on the north side of the concourse provides access to the apron level for authorized personnel, emergency egress, and additional ground boarding capabilities for the smaller aircraft.

Arriving passengers enter the secure concourse from their respective aircraft, and proceed past the security checkpoint on the deplaning side. If baggage was checked, it is retrieved at baggage claim located on the east end of the landside of the terminal. Two re-circulating sloped plate conveyor devices display baggage from inbound aircraft. Baggage is fed to the claim devices by inclined conveyors originating at the inbound baggage operations area located below baggage claim on the lower level. The baggage claim area also includes rental car agencies and baggage offices. Currently, eight rental car agencies serve TLH, six of which are on-site including Avis, Hertz, Alamo/National, Budget and Dollar. Each agency leases approximately the same square footage and service counter length. Enterprise and Thrifty also serve TLH; however, they do not maintain an on-site presence. The on-site rental car agencies are in a location that is convenient to passengers picking up luggage in baggage claim, and are adjacent to the vestibules leading to the curbside area closest to the rental car ready/return lot. **Exhibit 2-10** illustrates the key areas of the Main Level of the Terminal Building.

Outgoing and incoming bag operations areas are located on the apron (lower) level of the terminal building (56,227 s.f.), as well as the airport storage area, the delivery area, and airline operations space. The majority of the major mechanical spaces are also located on this level. Incoming bags are delivered by baggage tugs from the aircraft to the inbound operations area located directly under baggage claim on the main level. At this point it is transferred from the tug carts to conveyors that transport the baggage up to the main level baggage claim devices. Outbound baggage is transported in a similar manner from the ATO's on the main level down to the lower level outgoing baggage make-up area. From here it is delivered to its respective aircraft by tugs and carts. Deliveries to the terminal building arrive on the apron level through a covered gate entrance located on the east side of the building. A screening procedure allows certain deliveries to occur. From the gated entrance, delivery trucks proceed down a ramp to a below-grade loading dock area located under the central circulation corridor connecting the main terminal area to the concourse area. This area allows enough space to turn around and exit the dock area via the same ramp from which it was entered. Service elevators and stairs area located adjacent to the dock area to transport deliveries to the upper levels of the terminal building. **Exhibit 2-11** illustrates the key areas of the Lower Level of the Terminal Building.

The upper level of the terminal (32,654 s.f.) houses all of the airport administration, airport facilities, TSA offices, and conference areas within the terminal building. This level can be accessed via a large centrally located stair on the un-secure side of the corridor which connects the ticketing and baggage claim areas to the secure passenger holding concourse. The location of this stair creates congestion and blocks the visibility and access to restrooms and concessions located on the main level below.

Large openings in the upper level floor allow light from skylights above to reach the main terminal floor. One of these openings is located above the passenger screening checkpoint, and could pose a potential security risk. An observation area located on the upper level provides the public with a view of the commercial service apron and immediate terminal area. In addition to the main areas of the terminal building at TLH described above, there are many miscellaneous spaces including mechanical and electrical areas, restrooms, storage, circulation, and structural elements. **Exhibit 2-12** illustrates the key areas of the Upper Level of the Terminal Building.

Existing Terminal Building Construction

The existing terminal building at TLH is framed primarily with a steel structural system on concrete piles and grade beams. The exterior walls are constructed of a combination of split ribbed concrete masonry units (CMU), brick, and an exterior insulated finish system on reinforced CMU walls on the lower level, and a steel frame on the two upper levels. Sloped roofs are framed with steel beams and concrete tiles, and flat roofs are constructed of a modified bitumen system. A monumental structural glazing system creates the glass façade on the north side of the main terminal building, and aluminum storefront systems comprise the remaining glazed areas. Interior finishes include standard carpet, vinyl composition tile, ceramic tile, and exposed concrete (service areas) flooring. Ceilings are constructed of a linear metal suspended system in the ticketing and baggage claim areas and acoustical panel "lay-in" suspended ceiling throughout the majority of the terminal. Lighting throughout the terminal consists of a combination of concealed incandescent and lay-in fluorescent fixtures. The skylights on the roof provide natural lighting in the corridor connecting the ticketing and baggage claim functions to the secure concourse, and the upper level administrative area.

Reynolds, Smith, and Hills, Inc. completed a Terminal Conditions Summary in August 2001. The intent of the Conditions Summary was to provide the airport with an assessment of the terminal buildings major components. Recommendations for correcting existing deficiencies and associated cost estimates were also provided as part of the report.

Terminal Inventory Summary

Inventory information gathered and analyzed in this section provides a base for determining deficiencies with the existing terminal building and terminal area that will be discussed later in this report. The areas compiled in **Table 2-23** will be used in the Facility Requirement chapter to compare the existing capacity for each major component of the terminal building to the forecasted demand based on passenger activity forecasts over the next 20 years. Evaluations of the terminal area and terminal building facilities in this section will help determine the most appropriate methods for providing future improvements in order to satisfy future demands. Conceptual alternatives for both the terminal building and the apron are to be explored in the Airport Alternatives chapter. Considerations in the development of terminal building concepts will include deficiencies (square footage, conveyors, etc.), functionality of existing areas, location of adjacent constraints, cost effectiveness, phasing, regulatory constraints, and many more issues.

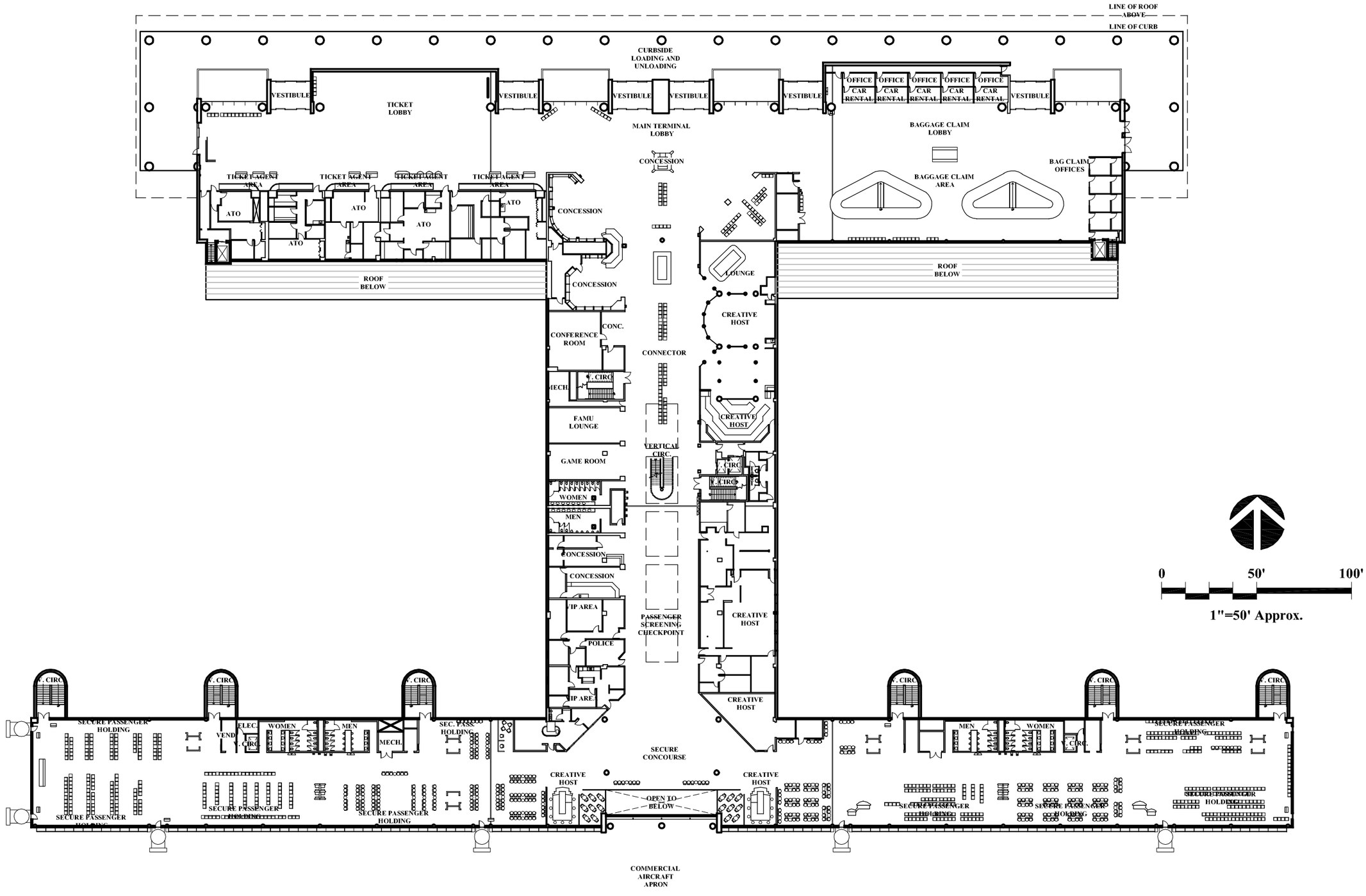
A preliminary identification of deficiencies in the existing terminal building obvious prior to the completion of the facility requirement analysis, includes congestion in the ticketing lobby (overall depth, EDS functions, etc.), congestion in the connecting corridor north of the security screening area (location of security queuing, central stairs, etc.), lack of sufficient restroom facilities on the un-secure side, and the general location of concessions.

Table 2-23
TERMINAL FACILITY CAPACITY

Terminal Area	Existing Capacity
Check-in Positions (ea)	19
Ticketing Length (lf)	178
Ticket Agent Area (sf)	1,740
Ticket Lobby w/Circ. (sf)	5,120
Airline Ticket Offices (sf)	6,650
Baggage Make-Up (sf)	10,166
Checked Baggage Screening (sf)	0
Claim Devices (ea)	2
Conveyor Frontage (lf)	260
Claim Lobby w/Circ. (sf)	11,357
Inbound Bag Ops. (sf)	4,370
Rental Car Areas (sf)	1,964
Public Waiting (sf)	5,015
Prime Concessions (sf)	10,512
Misc. Lease (sf)	8,348
Security Screening and Queue (sf)	2,626
Pass. Holding w/ Circ. (sf)	31,599
Gates (ea)	14
Airline Operations Area (sf)	1,223
AREA SUBTOTAL (sf)	101,107
Support Space (50% sf)	82,460
Administrative Space (sf)	13,711
TSA Administrative Space (sf)	6,547
TOTAL AREA (sf)	**203,408**

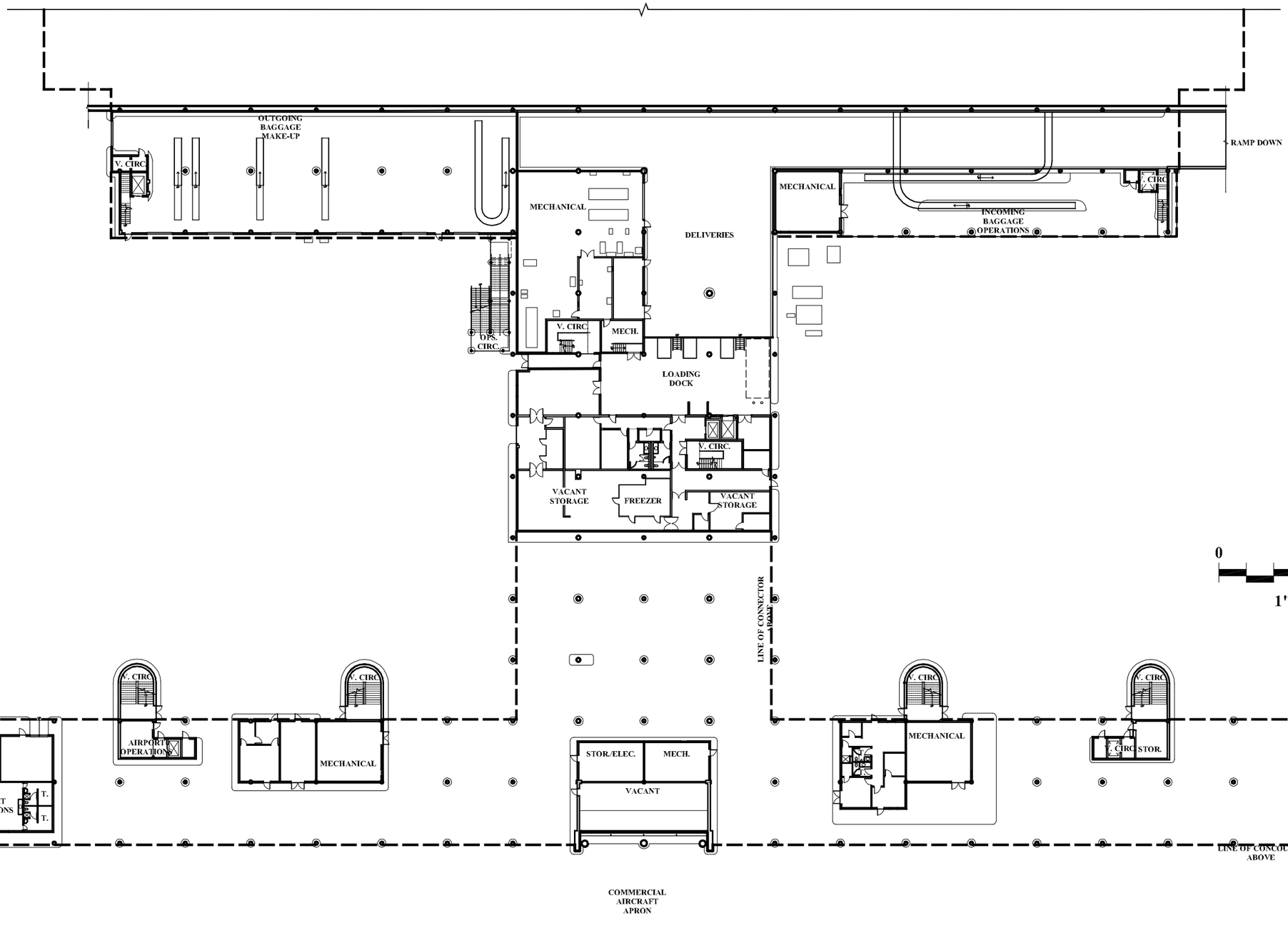
Source: THE LPA GROUP INCORPORATED

2003 TERMINAL BUILDING - MAIN LEVEL



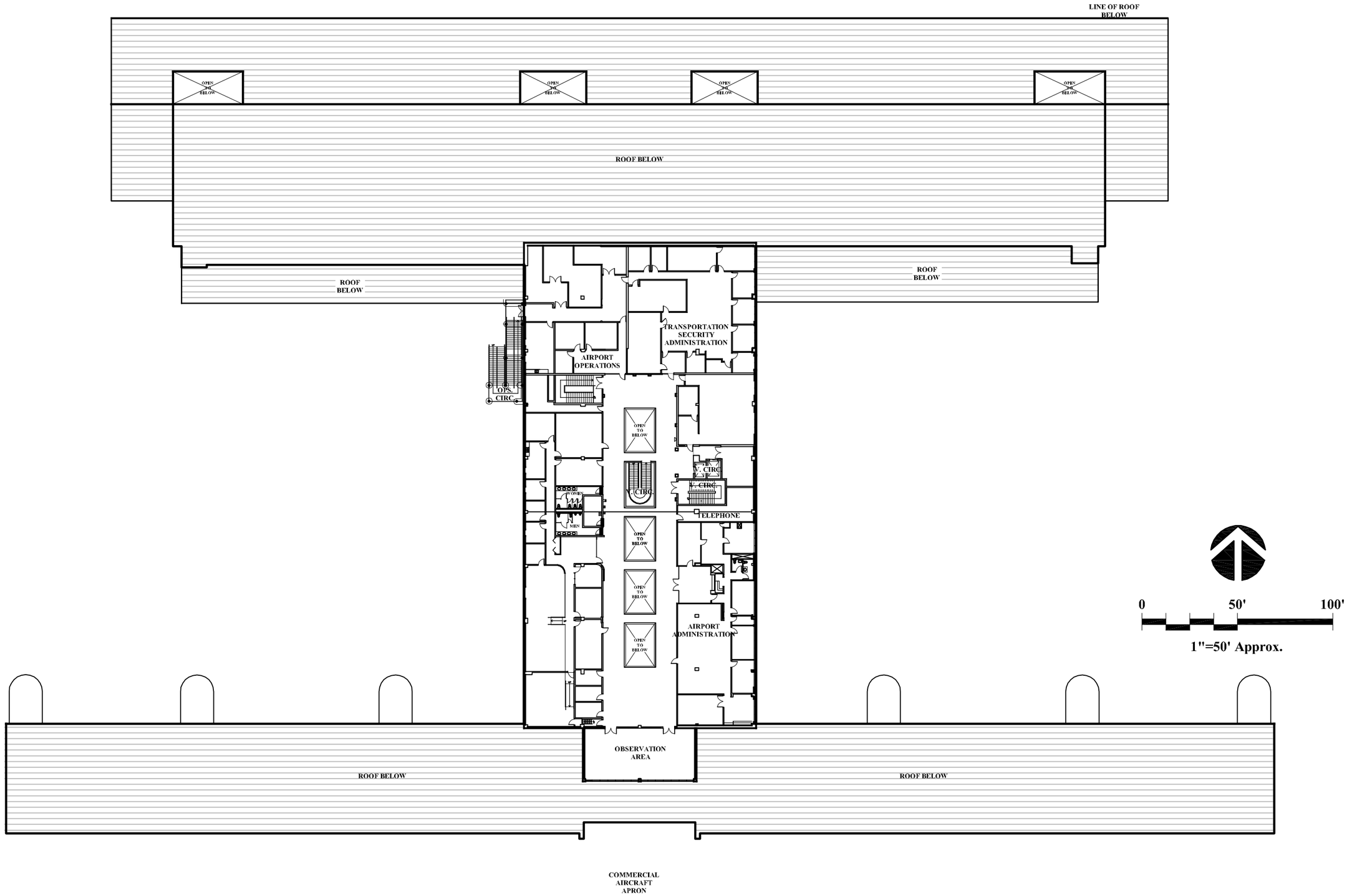
2-10

2003 TERMINAL BUILDING - LOWER LEVEL



2-11

2003 TERMINAL BUILDING - UPPER LEVEL



2-12

TALLAHASSEE REGIONAL AIRPORT

MASTER PLAN UPDATE

Miscellaneous Facilities

In 1994, a new FAA Air Traffic Control Tower (ATCT) was commissioned. The new tower is accessed off of Springhill Road and is located south of the end of Runway 9. This facility is approximately 95 feet high and houses not only the local air traffic control, but also a terminal radar control facility (TRACON). At the start of this study, 21 controllers handled air traffic from this facility. This building is in excellent physical condition and should serve the airport for more than 20 years with routine maintenance.

In support of air traffic control duties, the airport is equipped with an airport surveillance radar (ASR-8). This system is capable of detecting aircraft within approximately 60 nautical miles. It is owned, operated, and maintained by the FAA. It is utilized by the ATCT to track the location of aircraft within their designated control area. ATCT staff reported that the ASR-8 is designated for replacement with an ASR-11 sometime after 2005.

AIRPORT INFRASTRUCTURE

This section briefly identifies the sources and routes of the major utilities serving facilities at the Tallahassee Regional Airport. The major utilities, including water, sanitary sewer, gas, and electricity, are owned by the City of Tallahassee. This information will be utilized as development alternatives are considered to ensure that all proposed facilities would have access to any needed utilities.

Water

Airport facilities have access to potable water from various lines branching off of the City's water line running on the west and south sides of Capital Circle. The north and south GA areas are served by a series of six, eight and ten inch lines that branch off the main service line just south of the rental car service facilities. An eight-inch PVC line that runs along the interior of the terminal loop road serves the main terminal building. To ensure there is adequate fire protection for operations on the main terminal ramp, eight-inch lines form a loop around the ramp connecting into the line along the terminal loop road on both sides of the terminal.

Sanitary Sewer

Currently the City of Tallahassee provides sanitary sewer service to all of the facilities at TLH. A series of eight and ten-inch gravity fed lines carry all of the wastewater from airport facilities to a lift station located adjacent to the internal access road in the grassy area south of the former terminal area. The wastewater is then fed through an eight-inch force mainline that crosses and then runs along the north side of Capital Circle, SW. to a large sewage treatment facility. This facility, located on City of Tallahassee property, is directly under the approach path to Runway 27 at the southeastern corner of the Capital Circle S.W. and Springhill Road intersection. Emissions from this facility reportedly reduce visibility for aircraft upon approach from the east.

Other Utilities

As with any facility the size of an airport, several other utilities are sometimes required. These can include gas and telephone service as well as stormwater systems. Gas service is currently not provided to airport users. In discussions with representatives from the city-owned gas provider it was noted that the nearest gas line connection is at the intersection of Capital Circle and Springhill Road. Local telephone service is

provided by multiple carriers in the area such as BellSouth, Sprint and Tallahassee Telephone Exchange, but as in other localities the number of local providers continues to increase.

ENVIRONMENTAL FACTORS

The airport is surrounded on the west and south by forested areas and to the north and east by sparsely developed areas. Lakes and smaller ponds can be found within several miles of TLH on all sides. One problem, characteristic of this area in Florida, is sinkholes and shifting grounds due to the sandy soil and the Floridan aquifer. This underground river, which at places is reported to be a quarter-mile in depth, is known to be linked via sinkholes to several lakes northeast of the airport. Two sinkholes have been identified within the airfield boundaries and airport staff reported problems of airfield signs shifting in the sandy soils.

Other sensitive areas that need to be taken into consideration by the Master Plan are two cemeteries and an old landfill that reside within the airport boundaries. The largest cemetery is located along Capital Circle east of the terminal building and the smaller cemetery is located off Springhill Road along the Runway 27 approach. The former landfill area is located between the cargo area and the large cemetery along Capital Circle. Taxiway P and a dirt road form the west and south boundaries of this former landfill area. Development of these three areas is not considered an option.

Another environmentally related constraint is the designated national forest area located to the west of the airfield. This area limits the growth of the airport to the west since it is generally difficult to acquire land in federal park areas. Also, trees in this area may eventually, if they do not already, grow to heights, which may penetrate the various imaginary surfaces associated with the airport.

It has been documented that there are numerous locations on TLH property that have Gopher tortoises and Bent Golden Aster. The Gopher tortoise is listed as a Species of Special Concern by the Florida Game and Fresh Water Fish Commission. The Bent Golden Aster (*Pityopsis flexousa*) is listed as an endangered species by the Florida Department of Agriculture.

These and other environmental factors will be considered in later sections of this study, most specifically in the chapter on Airport Alternatives.

ROADWAY ACCESS

The primary road leading to the Airport is Capital Circle S.W. This two lane-road serves as a loop around the metropolitan area, as depicted in **Exhibit 2-2**. This roadway is a two-line road running parallel to the runways alignments and located east of the Airport's property. This road leads to Interstate 10 (I-10) to the north and connects to Springhill Road to the east. I-10, which goes in an east-west direction, connects Tallahassee with Jacksonville to the east, and with New Orleans, Houston, Phoenix, and Los Angeles to the west. This highway is the primary road for visitors arriving from areas outside of Tallahassee.

Capital Circle S.W. provides access to all the various tenants located within the airport property, as well as the cargo, general aviation, and passenger terminal area. This access road has a posted speed limit of 45 miles per hour outside the airport property. Currently, there is no direct access route to and from the downtown area via highway type roads. For example, to travel from Tallahassee's City Hall, a traveler would take South Adams Street to W. Pensacola Street to Stadium Drive to Lake Bradford to Springhill Road to its intersection with Capital Circle, which leads to the Airport entrance.

CONCLUSION

While the above inventory descriptions are quite detailed they do not include an exhaustive listing of every feature of TLH. The purpose of this inventory is to provide general facility data on which subsequent and more detailed analyses will be conducted.

Chapter Three – Aviation Activity Forecasts

INTRODUCTION

This chapter of the Master Plan Update presents projections of aviation activity that will be used as the basis for facility planning at Tallahassee Regional Airport (TLH). The objective of forecasting is to estimate future levels of airport activity from which the demand for facilities can be derived. By comparing the demand for future facilities with existing facilities, it is possible to identify any deficiencies.

The U.S. economy and especially the aviation industry have been subject to various fluctuations over the past years. While the U.S. and World economies prior to 2001 were placing a lot of demand on the aviation industry, the subsequent economic recession and particularly the terrorist attacks in September 2001 have thoroughly affected that demand. At Tallahassee, the downturn of the U.S. economy and the impacts of September 11 on air traffic levels have been offset by the introduction of service by AirTran, in November 2001, and more recently, AirTran Jet Connect, operated by Air Wisconsin.

The Aviation Activity Forecasts that were prepared and approved by the Federal Aviation Administration (FAA) in the summer of 2001 have been incorporated in this study. The 2001 Aviation Activity Forecasts are presented in their entirety as **Appendix B**. In fact, the projections presented in this chapter are based on the figures introduced in the 2001 forecasts. While the timeline of the approved forecasts will be adjusted, it is not the intent of this chapter to generate new forecasts. Nevertheless, an independent assessment, recognizing some of the changes in aviation since the 2001 forecasts, was conducted. As in 2001, these forecasts will replace the projections contained in the 1996 Master Plan Update and serve as the basis for future development at the airport.

This chapter will address the updates to the 2001 forecasts based on the most recent data available, while at the same time providing discussions on the impacts that changes in aviation and aviation security have had at TLH since September 2001. Because the 2001 Aviation Activity Forecasts were part of an update of the noise exposure maps for the airport, the study did not require or include forecasts for the level of based aircraft. Therefore, this chapter will address the based aircraft forecast, since these numbers have not been updated since the 1996 Master Plan.

CHANGES IN ACTIVITY SINCE 2001 FORECASTS

The unforeseen tragic events of September 11, 2001 have had some profound effects on the airline industry, which will reverberate well into the future. While these factors will ultimately serve to change certain aspects of airport operations and possibly facility requirements, it is important to understand that the forecasts contained in the previous projections were prepared prior to September 11, 2001 and, as such, do not take into consideration the potential impact that the events may have on long-term demand for aviation services.

To overcome this concern, this section addresses air traffic changes that have occurred at the airport since the 2001 forecasts. A discussion of the impact from the September 11 attacks on the activity level and changes in aviation at the airport is provided as required by the FAA Forecasting Branch in Washington. To accomplish this task, the forecasts approved in the summer of 2001 for TLH are compared to the most recent activity reports available. This comparison includes elements for passenger service, air cargo, general aviation, and military activity.

Aviation activity forecasting generally commences by analyzing the most recent data along with the historical trends obtained from previous activity. For TLH, this data has evolved from a comprehensive examination of historical airport records from airport personnel and review of the following documents:

- 1996 Tallahassee Master Plan Update
- 2001 Aviation Activity and Noise Exposure Map Update (2001 Forecasts)
- 2001 and 2002 FAA Terminal Area Forecasts
- 2002 Air Cargo Study
- 2003 FAA Aerospace Forecasts

These documents were prepared in different years, making the base year data quite variable, and emphasizing the need for establishing a set of base information from which to project future aviation activity trends. The forecasts presented in this section are based on the annual average growth rates from the 2001 forecasts, with 2000 considered the study year. However, in order to maintain a 20-year planning period, projected enplanements and operations data are presented for the years 2008, 2013, and 2023. Extrapolation of the 2001 projections was made to obtain the year 2023 data.

Passenger Activity Forecasts

The events of September 11th have had a significant impact on the air transport industry and have injected additional uncertainty into the short and medium term outlook for the national economy. In 2001, the airline industry was already experiencing declining and even negative growth rates due to an economic slowdown. Following the September 11 attacks, the industry faced a sharp decline in airline travel. It was reported that in the four days after the event, domestic U.S. bookings fell by 74 percent.

As a result of this downturn in business, airlines around the nation have cut their frequency of service and routes served. For the period of January to July 2001, U.S. major airline traffic for domestic routes was already marginally down compared to the same period in 2000. According to the Air Transport Association (ATA) domestic revenue passenger miles (RPMs) decreased by 32.5 percent in September 2001 compared to the same month in 2000. This economic downturn, in addition to the fear factor and hassle factor created by improved security requirements led to a major drop in passenger traffic.

The low cost air carriers suffered in the immediate aftermath of September 11 in the same way as the majors. However, Southwest, AirTran Airlines, and Jet Blue have rapidly been recovering as they started filling the gaps left by the major airlines. The success of the low cost carriers is a direct result of the slowing economy in which many businesses are reducing travel budgets and therefore sacrificing time and convenience for lower fares. It is also worth noting that the available seat miles (ASMs) did not decrease for regional airlines in 2001. During that year, regional/commuter carrier ASMs grew by 5.8 percent. The growth in this sector is evidence of the emerging role of regional jets in the airline industry as the lines between these and mainline jets blur. Airlines and their code sharing regional partners have been gradually phasing out older turboprop, Boeing 727, Boeing 737, and DC-9 aircraft, and replacing them with regional jets, even on longer hauls.

Even though national trends provide an accurate overview of the aviation industry and are very useful in the development of aviation activity forecasts, particular attention should be given to the local trends and changes that have a more direct influence on activity at an airport. As presented in **Table 3-1**, the number of annual enplanements at TLH decreased by 8.7 percent from 2000 to 2001 and subsequently increased by 27.1 percent from 2001 to 2002.

Table 3-1
HISTORIC PASSENGER ENPLANEMENTS

Year	Annual Enplanements
1993	436,584
1994	511,344
1995	531,308
1996	460,362
1997	480,064
1998	465,728
1999	450,403
2000	468,703
2001	427,892
2002	543,674
Overall Growth (10 years)	24.5%
Average Annual Growth Rate	2.5%

Source: 2002 Airport Records.

A closer snapshot of the passenger traffic by the individual air carriers reveals that the total number of passengers handled at the airport decreased by 34 percent in September 2001 when compared to September 2000. This activity did not recover to previous levels over the months that followed. Traffic was still down by 24.6 and 15.6 percent in October and November 2001, respectively when compared to the 2000 enplanements for the same months. However, the traffic fully recovered in December 2001 with an enplanement growth of 7.2 percent over the enplanement data for the same month of 2000. As shown in **Figure 3-1**, the airport traffic continued to rise during 2002, exceeding both 2000 and 2001 enplanements.

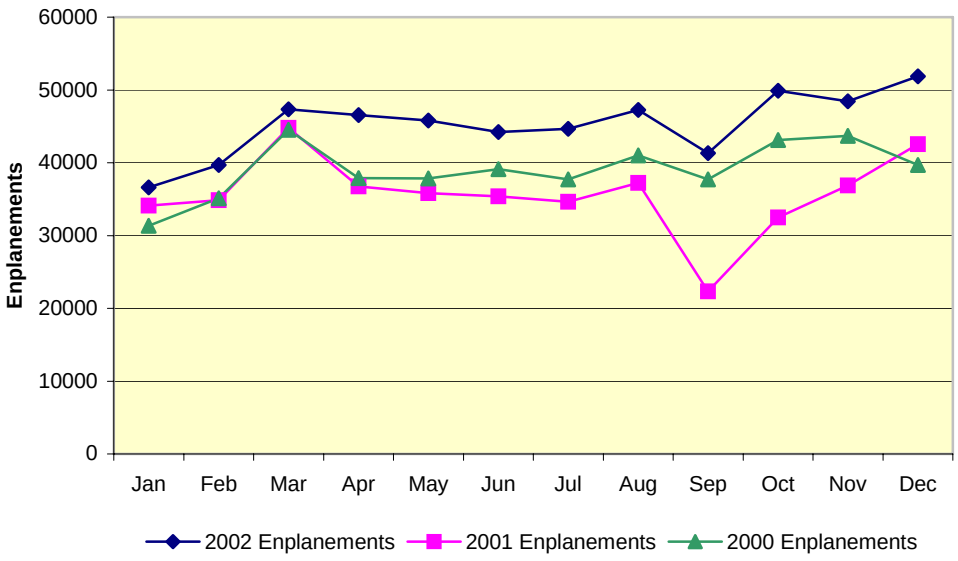


Figure 3-1: Enplanement Data Comparison

As with most every other airport in the nation, Tallahassee experienced a significant decrease in enplanements between August and September 2001. Nevertheless, passenger levels recovered very quickly, eventually surpassing 2000 levels. This quick recovery was due mainly to the introduction of new service by AirTran in November of 2001. After the airline commenced service at TLH, passenger levels grew very rapidly, making the impacts of the September 11 attacks on airport activity levels disappear. Introduction of the low cost carrier has also led to the reduction of most fares at Tallahassee Regional Airport, which has also contributed to the increase in enplanements. Even into 2003, the airport continues to be able to offer 75 percent of the travelers going through Tallahassee with low air fares. In fact, the growing sensitivity to cost by the consumer has aided in the rise of AirTran and other discount carriers in the industry.

While the 2002 enplanement level is ahead of the levels predicted in the 2001 forecast for the year 2002, air traffic growth at the airport should slow down and eventually come back to the levels forecasted in 2001. As of August 2003, Delta Air Lines, Delta Connection-Atlantic Southeast Airlines, Delta Connection-Skywest, Delta Connection-Chautauqua Airlines, and Delta Connection-Comair provide direct daily flights from Tallahassee to Atlanta, Dallas, Miami, Orlando, West Palm Beach, Cincinnati, and Fort Lauderdale. AirTran and AirTran Jet Connect-Air Wisconsin offer direct flights to Tampa and Atlanta and indirect flights to many other cities where Delta is present. By providing these flights, AirTran competes directly with Delta. When AirTran started service in late 2001, it only offered flights to Atlanta. In 2002, AirTran captured a share of the passengers in markets already served by Delta, with the largest exception being Tampa, which Delta only serves through Orlando. It appears the discount fares are drawing passengers away from the other airlines present at the airport. However, eventually the passenger traffic should balance and return to a more conservative growth rate. Passenger enplanements increased to 543,674 in 2002, an increase of 27.1 percent over 2001 and 16.0 percent over 2000 levels. Nonetheless, over the 2003 to 2023 time period, the passenger levels are anticipated to return to those projected in the 2001 forecasts.

In addition, as illustrated in **Table 2-1** of the Inventory chapter, large population growth in the immediate Tallahassee service area is not expected over the planning period. The 1.9 percent average annual growth rate for the Tallahassee Metropolitan Statistical Area (MSA) population will not support significant passenger enplanement growth at the airport. Likewise, the areas outside the Tallahassee MSA, but within the Tallahassee service area, are not expected to support any additional enplanement growth over what was forecasted in 2001. Further, in the event a new airport is built in the Panama City area, it is likely that a portion of Tallahassee's passenger traffic would decrease, as potentially less people from the Panama City area would travel to TLH and some might travel from Tallahassee to Panama City if the fares and/or destinations are attractive enough. This of course would not have any impact during the short term planning period of this study, as it is believed that the new airport in Panama City is still at least five or more years from becoming a reality.

These attributes and assumptions lead to the conclusion that the 2001 forecasts are still valid even though the predicted numbers of enplanements may look very conservative when compared to the 2002 levels. Enplanement and airline operations are expected to follow the average annual growth rate of 2.8 percent, as predicted in the 2001 forecasts. These projections as well as the extrapolations for the new planning period are reflected in **Table 3-2**. While growth is expected from the establishment of new markets utilizing regional jets, growth above the 2.8 percent annual rate is not likely.

Table 3-2
PROJECTED PASSENGER ENPLANEMENTS

Year	Annual Enplanements
Base Year	
2002	543,674
Forecast	
2008	587,127
2013	673,299
2023	891,844

Source: THE LPA GROUP INCORPORATED, 2003.

Comparison of the 2002 FAA Terminal Area Forecast (TAF) against the 2000 TAF also reveals that passenger enplanements at TLH are expected to increase over the planning period. The 2000 FAA TAF projected an average annual growth rate of 2.4 and 0.7 percent for annual passenger enplanements and operations, respectively. The 2002 TAF projected an average annual growth rate of 3.0 percent for annual passenger enplanements and 0.9 percent for annual operations for the 20-year period of 2001 through 2020. **Table 3-3** displays the 2002 FAA TAF, with data for the year 2023 extrapolated based on the FAA forecast through 2020.

Table 3-3
2002 FAA TERMINAL AREA FORECASTS

Year	Annual Enplanements	Annual Operations
Base Year		
2001	439,544	104,745
	Forecast	
2008	594,176	113,163
2013	666,069	117,376
2023	837,122	127,034

Source: 2002 FAA Terminal Area Forecast.

It should be noted that the 2002 FAA TAF incorporates the impact of the terrorists' events of September 11th; however, it does not reflect the ongoing changes occurring within the aviation industry. Similarly, the FAA numbers do not reflect the impacts of the war in Iraq on the aviation industry or the state of the national economy, as the figures were published before Operation Iraqi Freedom actually began. Nonetheless, the 2002 TAF forecasts are very similar to the 2001 forecasts developed for the airport. This reiterates the fact that the more conservative average annual growth rate should be applied rather than simply extrapolating from the most recent activity levels. While the projected annual enplanements exceed the 2002 FAA TAF, they are still within 10 percent of the 2002 TAF figures.

Projections of Passenger Service Operations

Updated projections for passenger service operations were also obtained by extrapolating the numbers calculated in the 2001 forecast. While the fleet mix has evolved, the annual number of operations is expected to follow the same basic trend identified in the previous forecast. Essentially the increase in regional jets at TLH has resulted in only a very slight change in the average number of seats per departure. For example, while the use of RJs at the airport eliminates the need for one or two flights by smaller turboprops, it also requires one or two more flights to replace the loss of narrow body aircraft. These changes have kept the level of operations generated by the passenger airlines relatively consistent with those reflected in the 2001 forecasts. Such fleet changes will be illustrated in the following chapter of this study, as terminal building and apron layout requirements will be analyzed to reflect the most recent changes.

In August 2003, RJs constituted approximately 70 percent of the passenger flights at the airport, replacing the turboprop planes such as the ATR 72, Embraer EMB-120 Brasilia, and Saab 340A. Among the remaining 30 percent, AirTran flies some of its older DC 9-30 and newer Boeing 717 aircraft to and from Miami, Tampa, and Atlanta; Delta flies primarily MD-80 series aircraft, but also some Boeing 737 models and occasionally a Boeing 757 aircraft to and from Atlanta; and US Airways Express/Piedmont Airlines flies De Havilland DHC-8 turboprop aircraft to and from Charlotte.

While always changing and somewhat unpredictable, there are a few trends that have been observed for the airlines and the aircraft operating at TLH. Delta is expected to slowly phase out most of their narrow body aircraft, replacing them with RJs. AirTran will replace its older generation of DC 9-30 aircraft with the newer Boeing 717, as well as continue to use additional RJs through their code sharing partner AirTran Jet Connect/Air Wisconsin. Additionally, there are indications that US Airways may switch to all RJs in the future. Based on this industry information, it is estimated that RJs will accommodate approximately 95 percent of the passenger air service at TLH in the future.

Most RJs composing the fleet at TLH are the 50-seat Canadair Regional Jet (CRJ) 100 and 200 series aircraft. The airport is also beginning to see the influx of the CRJ 700 series, a stretched, 70-seat variant of the 50-seat model. Atlantic Southeast Airlines also flies the 37-seat ERJ-135 and 50-seat ERJ-145. The use of an RJ aircraft cuts flying time on a route by 25-30 percent over a propeller-driven aircraft. Although the jet is more expensive to operate in comparison to a turboprop, most airlines are able to increase their passenger load factors using RJs, so overall, the economics of the operation are better. **Table 3-4** reflects the airline operations for the planning years of this study.

Table 3-4
FORECAST OF PASSENGER SERVICE OPERATIONS

Year	Annual Enplanements	Annual Departures	Annual Operations
Base Year			
2002	543,674	15,661	31,332
Forecast			
2008	587,127	20,246	40,492
2013	673,299	20,403	40,806
2023	891,844	24,103	48,206

Source: THE LPA GROUP INCORPORATED, 2003.

Cargo Activity Forecasts

Existing air cargo services are provided by the scheduled passenger airlines, Federal Express (FedEx), and some small freight forwarders, flying mostly single-engine aircraft. While there is no historic record of the freight forwarders activity, it is estimated that all-cargo traffic accounted for 3,600 operations in 2002, a 2.7 percent increase from the 2000 level. As identified in the 2002 Air Cargo Study, air cargo operations are only expected to grow slightly over the next 20 years. While the airport offers adequate infrastructure to accommodate air cargo activity, the local air cargo market is considered too limited to generate a significant increase in cargo shipments. The recent air cargo study illustrated that the airport does not have close proximity to the major clusters of economic activity that other cities in Florida have to offer, such as Miami, Jacksonville, Tampa, and Orlando. In addition, significant air cargo growth would at a minimum require major transportation infrastructure improvements to enhance landside access to the airport.

Nevertheless, air cargo activity at the airport will increase slightly over the planning period. Total domestic freight/express cargo in the U.S. is expected to increase by 4.4 percent in 2003 and 5.5 percent for the next five years. However, it should be noted that much of the nation's growth in air cargo is driven by the activity at the few major cargo hub airports in the U.S. Nonetheless, the number of all-cargo aircraft operations, by both FedEx and the freight forwarders, will increase through the 20-year planning period. As indicated in the previous forecast, a 1.5 percent growth should be sustained by the positive growth in the overall economy of the community. By the end of the planning period, air cargo departures and landings should exceed 4,900 a year. The level of all-cargo activity forecasted at TLH over the next 20 years is delineated in **Table 3-5** below.

Table 3-5
FORECAST OF ALL-CARGO OPERATIONS

Year	Additional Monthly Flights	Total Monthly Flights	Total Operations
Base Year			
2002	0	150	3,600
Forecast			
2008	14	164	3,936
2013	27	177	4,248
2023	55	205	4,920

Source: THE LPA GROUP INCORPORATED, 2003.

General Aviation Activity Forecasts

General aviation activity has suffered the most from the economic slowdown and recession of the past two years. At the airport, general aviation operations went from a high of 68,149 in 2000 to a low 61,290 in 2002, a 10.1 percent decrease. This reduction can be seen in both local and itinerant operations. Local operations decreased by 11.4 percent and itinerant operations by 9.5 percent between 2000 and 2002. Based on airport data, the operational split between local and itinerant operations averaged 32 percent local and 68 percent itinerant in 2002.

Immediately, after the terrorist attacks on the U.S., many restrictions were placed on the operation of general aviation aircraft. This along with the economic slowdown, high fuel prices, and increased insurance rates have forced many pilots to limit their flying activities. In the same way, the number of student pilots, key to

the future of all aviation, declined by 6.6 percent nationwide in 2001[1]. This decline reflects the uncertainties surrounding the restrictions imposed on flight schools and pilot training.

According to the FAA, it has been estimated that as many as 20 percent of the student pilots in the U.S. are foreign nationals now subject to increased scrutiny and lengthy background checks. At the same time, support for industry-wide programs designed to attract new pilots to general aviation "appears to be waning" among some segments of the industry. Even though uncertainties remain regarding the future of pilot training, this activity should rebound as the economy recovers.

In addition, local operations, including touch and goes, have more likely decreased as a result of the increase in military and commercial operations at the airport. Due to the interaction between general aviation and commercial and military flights, and the priority given to larger aircraft, those pilots conducting training flights are often required to prolong their time in the traffic pattern to provide the proper spacing with the commercial and/or military flights. While the air traffic controllers at TLH try to segregate the different types of traffic between the two runways, this inconvenience to the general aviation pilots still occurs, resulting in decreases in general aviation activity.

In addition, general aviation is highly vulnerable to the economic slowdown and recession. Thus as the economy recovers, this activity should pick up. General aviation operations are expected to increase by 1.0 percent annually over the planning period. The split between operations should remain constant at approximately 30 percent local and 70 percent itinerant. As indicated in the 2003 FAA Aerospace Forecasts, the business/corporate side of the industry appears to be in a much better position to take advantage of any possible economic rebound during the planning period than pleasure or sport flying. The projections for general aviation activity at the airport are shown in **Table 3-6**.

Table 3-6
FORECAST GENERAL AVIATION ACTIVITY

Year	Local Operations	Itinerant Operations	Annual General Aviation Operations
Base Year			
2002	19,953	41,337	61,290
Forecast			
2008	22,477	51,319	73,796
2013	23,623	53,937	77,560
2023	26,095	59,579	85,674

Source: THE LPA GROUP INCORPORATED, 2003.

Military Activity Forecasts

In 2000, there were 14,096 military operations reported at the airport. Using 2000 as the base year and past historical trends, the 2001 forecasts predicted a 1.0 percent annual average increase for the 20-year planning period. From 2000 to 2002 military operations increased by 31.5 percent. This unprecedented growth is a direct result of the September 11th attacks, the nation's war on terrorism, and at the time, the pending war with Iraq. After September 11th, national security increased significantly, resulting in added military flights for security and training. As mentioned in the 2001 forecast, there are numerous military bases in the proximity of Tallahassee. Increased activity by military aircraft based at these military airports induced substantial

[1] FAA Aerospace Forecast, March 2003.

growth in the number of itinerant operations at TLH. It is worth noting that the airport is particularly attractive to the military, especially as it relates to its proximity to military training routes, military navigational facilities, and available runway lengths.

Nevertheless, this increase in military operations is not likely to be sustained over the entire planning period. Annual average growth by military operations should return to a conservative 1.0 percent increase each year, through 2023. As such, the 2001 military operations forecast has not been revised and the assumptions made in the previous forecasts are still valid. **Table 3-7** delineates the military activity forecast for the planning period.

Table 3-7
FORECAST MILITARY ACTIVITY

Year	Local Operations	Itinerant Operations	Annual Military Operations
Base Year			
2002	6,286	12,257	18,543
Forecast			
2008	8,700	6,563	15,264
2013	8,984	7,059	16,043
2023	9,747	7,974	17,721

Source: THE LPA GROUP INCORPORATED, 2003.

Total Annual Operations

By combining the passenger service, all cargo, general aviation, and military figures, the total annual operations for TLH was determined. These figures are illustrated in **Table 3-8**.

Table 3-8
SUMMARY OF TOTAL ACTIVITY

Year	Annual Operations
Base Year	
2002	114,765
Forecast	
2008	133,488
2013	138,657
2023	156,521

Source: THE LPA GROUP INCORPORATED, 2003.

The growth in annual operations shown for the planning period reflects an average annual rate of 1.5 percent. When compared to the 2002 FAA TAF operations shown in **Table 3-3**, the forecasts of total operations certainly exceeds 10 percent. However, in 2002, the FAA control tower at TLH recorded 114,765 annual operations whereas the 2002 TAF only reflects 113,163 by the year 2008. Since the 2002 TAF utilizes 2001 base data, which is also below the ATCT counts for the same year, this has skewed the numbers for the rest of the FAA's forecast horizon. Therefore, given the levels recorded in 2002 and the similar forecasted average annual growth rates, the total annual operations extrapolated from the 2001 forecasts are still considered reasonable and will be utilized in this Master Plan Update.

FORECAST OF BASED AIRCRAFT

Based aircraft were not addressed as part of the 2001 forecasts, but in order to plan for the proper number and size of future aircraft facilities, it is important to forecast the number of general aviation based aircraft. Aircraft based at TLH have fluctuated over the past nine years as illustrated in **Table 3-9**. As a whole, the number of based aircraft increased at an average of 0.7 percent annually between 1993 and 2001. According to airport records, 79 percent of the based aircraft are single-engine aircraft, 13 percent multi-engine, 2 percent jet, and 6 percent helicopters, with a total of 127 aircraft in 2002.

As with most airports, the single and multi-engine categories are predominantly comprised of Beech, Cessna, Mooney, and Piper models. Likewise, most turbo-props and multi-engine aircraft tend to include the Beech King Air series; Cessna models, such as the 414 Chancellor; or the Piper Seminole or Seneca aircraft. Jet aircraft based at the airport include the Cessna 525 and 560 Citations. The helicopter fleet is primarily composed of Bell models, six of them being reported as part of the Sheriff's aviation unit.

Table 3-9
HISTORIC BASED AIRCRAFT

Year	Single-Engine	Multi-Engine	Jet	Helicopter	Total
1993	90	25	0	6	121
1994	90	25	0	6	121
1995	92	20	12	15	139
1996	92	20	12	15	139
1997	101	18	3	29	151
1998	110	12	3	21	146
1999	86	19	2	21	128
2000	86	19	2	21	128
2001	82	24	3	19	128
2002	100	16	3	8	127

Source: 2002 FAA Terminal Area Forecast

Table 3-10 depicts the forecast of based aircraft through the year 2023. It is foreseen that the growth of based aircraft would closely match national growth rates determined by the FAA to be approximately 0.3 percent per annum during the study period. As such, the 2002 FAA TAF figures were extended out to 2023.

Table 3-10
FORECAST BASED AIRCRAFT

Year	Single-Engine	Multi-Engine	Jet	Helicopter	Total
Base Year					
2002	100	16	3	8	127
Forecast					
2008	102	16	3	8	129
2013	104	16	3	8	131
2023	105	16	3	10	134

Source: THE LPA GROUP INCORPORATED, 2003.

Overall, the number of based aircraft at TLH is expected to increase by approximately 5.5 percent during the 20-year planning period. Utilizing past trends, the number of based single-engine aircraft is most likely to rise as T-hangar availability increases. By the end of the planning period, single-engine aircraft are anticipated to comprise approximately 78.4 percent of the total based aircraft at the airfield, with approximately 11.9 percent being multi-engine piston, 2.2 percent being business jet aircraft, and 7.5 percent being helicopters.

PEAK ACTIVITY PROJECTIONS

The following addresses the peaking characteristics for total airport operations, passenger enplanement and passenger activity. This data will subsequently be used to help determine whether airfield improvements are needed to handle the expected operations during peak periods.

Peaks in Total Airport Operations

Airport traffic displays peaking characteristics by the month of the year, by the day of the week, and by the hour of the day. As mentioned previously, operational traffic levels at TLH are fairly well spread out over the year, although April seems to represent the busiest with both the legislative session and spring break occurring at that time. Over the past years, the busiest month has averaged 10.3 percent of the annual operations. This percentage was applied to the forecasted annual operations through the year 2023 to estimate the peak month operations for each year. It is worth mentioning that even after September 11th, the peak months were still March, April, and May in 2002 with operations exceeding 10,000 for each of these particular months.

The average daily operations during the peak month was derived by taking the number of operations calculated for the peak month and dividing that figure by the number of days in the peak month, which for April is 30 days. As such, average daily operations were derived by taking 10.3 percent of forecast operations and then dividing by 30. Previously, no historical data was available to determine the peak hour operations at TLH and it was estimated to be 15 percent of the peak month, average day. While there is a lack of data available for the peak hour, interviews conducted with ATCT staff, airport tenants, the airlines, and airport management placed the peak hour at 10 percent. **Table 3-11** delineates this change as well as the other the peak operations calculated for the planning period.

Table 3-11
PEAKS IN TOTAL AIRPORT OPERATIONS

	Base Year	Forecast		
	2002	2008	2013	2023
Total Annual	114,765	133,488	138,657	156,521
Peak Month	11,821	13,749	14,282	16,122
Average Day of the Peak Month	394	458	476	537
Peak / Design Hour	39	46	48	54

Source: THE LPA GROUP INCORPORATED, 2003.

Peaks in Passenger Enplanements

A review of historical monthly enplanements was performed in order to identify the peak month for passenger activity. Between 1996 and 2000, March has been the busiest month for passenger enplanements in every year. It is assumed that the peaks experienced in March are related to the beginning of the regular session for the Florida Legislature as well as the spring breaks of both FSU and FAMU. Historically, peak month passenger enplanements have accounted for 9.5 percent of the total annual enplaned passengers. Because March has 31 days, this number was used to determine the number of average day of the peak month enplanements.

Hourly enplanement data was not available. To define the peak/design hour enplanement level, the number of filled seats during the peak hour of the average day were calculated based on the aircraft fleet defined in the airport schedules and the anticipated load factor. For planning purposes some consideration may be given to adjusting this number upward to address the conservative nature of using the average annual load factor in the analysis. The number of seats filled were calculated using the recorded boarding load factor and available seats during the peak hour period. This analysis showed peak/design hour departures ranging from 363 to 382 seats, for a range of 14.7 to 15.5 percent of the average day enplanements. The higher end was utilized since both load factors and the size of aircraft are expected to increase over the planning period. **Table 3-12** delineates the peak period enplanement levels calculated for the planning period.

Table 3-12
PEAKS IN PASSENGER ENPLANEMENTS

	Base Year	Forecast		
	2002	2008	2013	2023
Total Passenger Enplanements	543,674	587,127	673,299	891,844
Peak Month	51,649	55,777	63,963	84,725
Average Day of the Peak Month	1,666	1,799	2,063	2,733
Peak / Design Hour	258	279	320	424

Source: THE LPA GROUP INCORPORATED, 2003.

Peaks in Passenger Service

The same methodology employed to evaluate peaks in passenger enplanements was applied to passenger service operations. Monthly departure data was evaluated to identify trends of the peak month. For passenger service operations, the peak month has fluctuated between March and April since 1996. However, on average, April has produced a higher share of the annual passenger service operations at 8.8 percent. This percentage was utilized to calculate the peak month operations, which was then divided by 30 to estimate the number of average day operations. Based on the airport's consolidated airline schedules since 1996, the carriers serving TLH have conducted an average of 14.2 percent of their operations during the peak hour of the peak departure month. The above values were applied to establish the passenger service operational peaks shown in **Table 3-13**.

Table 3-13
PEAKS IN PASSENGER ACTIVTIY

	Base Year	Forecast		
	2002	2008	2013	2023
Passenger Aircraft Operations	31,332	40,492	40,806	48,206
Peak Month	2,757	3,563	3,591	4,242
Average Day of the Peak Month	92	119	120	141
Peak / Design Hour	13	17	17	20

Source: THE LPA GROUP INCORPORATED, 2003.

SUMMARY OF ACTIVITY FORECASTS

For ease of reference, all forecasted projections presented in the previous analyses are summarized in **Table 3-14** and **Table 3-15**. Overall, aviation activity at TLH is expected to show growth throughout the planning period. During the next 20 years, enplanements are expected to increase by 2.8 percent annually. General aviation activity is expected to recover, but only to increase at 1.0 percent a year, with most of the growth occurring in business/corporate flying. Military operations are expected to decline from the 2002 level to reach the level predicted in the previous forecast, at 1.0 percent annually.

Even though 2002 enplanements and operations are ahead of the figures predicted in 2001, these forecasts are still considered valid. While the 2001 forecasts may appear somewhat conservative, they are considered realistic based on the current state of the industry. The recent growth in passenger enplanements is primarily due to the introduction of low fare service by AirTran at the airport and the military operations resulting from increased national security measures. Despite these increases, the general aviation data reflects the economic slowdown that is currently affecting the nation and in particular, the aviation industry.

The data and the methodology used to forecast aviation demand elements for the airport are consistent with those used by the FAA and therefore, are considered to reasonably reflect current activity trends of the surrounding region and nation. The primary purpose of the Master Plan Update is to formulate a program to accommodate a reasonable projection of anticipated aviation activity demand. Although this reasonable level of demand will be used as a basis for long-term facility planning in this study, no facilities will be built until actual demand occurs.

Table 3-14
SUMMARY OF INDIVIDUAL OPERATIONS

Year	Passenger Service	All-Cargo	General Aviation	Military
Base Year				
2002	31,332	3,600	61,290	18,543
Forecast				
2008	40,492	3,936	73,796	15,264
2013	40,806	4,248	77,560	16,043
2023	48,206	4,920	85,674	17,721

Source: THE LPA GROUP INCORPORATED, 2003.

Table 3-15
SUMMARY OF TOTAL ACTIVITY

Year	Annual Enplanements	Annual Operations
Base Year		
2002	543,674	114,765
Forecast		
2008	587,127	133,488
2013	673,299	138,657
2023	891,844	156,521

Source: THE LPA GROUP INCORPORATED, 2003.

Chapter Four – Airfield Demand/Capacity Analysis

INTRODUCTION

The purpose of this Airfield Demand/Capacity Analysis is to determine the capability of the Tallahassee Regional Airport to meet the future needs of its users. The calculated capacity will be compared to the forecasted demands from the previous chapter to determine if the airfield configuration will adequately meet those demands without creating unacceptable delays for its users. The airfield analysis will be expressed in terms of the hourly capacity and the annual service volume, along with the total estimated annual aircraft delay. Specific recommendations to address any facility shortfalls will be addressed in the next chapter, Facility Requirements.

AIRFIELD CHARACTERISTIC

Methods for determining airport capacity and delay are detailed in Federal Aviation Administration (FAA) AC 150/5060-5, Change 2, "Airport Capacity and Delay." The methodology detailed in the advisory circular utilizes several key factors to determine the airfield capacity, including:

- Runway Configuration
- Aircraft Mix Index
- Taxiway Configuration
- Airfield Operational Characteristics
- Meteorological Conditions

Each of these factors has differing impacts on the capacity by setting certain limits on how aircraft can operate on the airfield system. This airfield capacity analysis addresses what is considered a typical day of operations at TLH. The following sections will evaluate each of these capacity related characteristics with respect to the airfield facilities at TLH.

Runway Configuration

The runway configuration is one of the primary factors that determine airfield capacity. The capacity of a parallel runway system is substantially higher than an airfield with one runway. With two runways it might be possible to have simultaneous arrivals and departures, which increases the maximum number of operations that can be accommodated. If runways intersect, the capacity is generally not as great as in a parallel layout because operations on the second runway are not possible until the aircraft on the first runway has cleared the intersection point.

As noted in the Inventory chapter, TLH has two paved runways oriented 90-degrees to each other, but not intersecting, as shown on **Exhibit 2-3**. The primary use runway is 9-27, and the secondary or crosswind runway is designated 18-36. Runway 9-27 is oriented east to west and Runway 18-36 is oriented north to south. This configuration is somewhat unique and has certain operational constraints, such as that Air Traffic Control Tower (ATCT) has to space landings and departures so that no incursions occur at what would be the point of intersection along the extended runway centerlines.

Although two runways are potentially available for use by any user, operations are generally split according to commercial and general aviation operations. According to FAA ATCT management, air carrier operations, which comprise the majority of larger jet operations, occur on Runway 9-27 with most occurring to/from the 27 end.

Another determining factor in the adequacy of the runway configuration is the wind coverage afforded by the particular layout. Strong wind conditions can limit operations that can occur at an airport if the crosswind component becomes too strong for the aircraft type. For example, some smaller aircraft may not be able to operate safely when the crosswind component exceeds 12 miles per hour. If a second runway is available, the crosswind component to it might be low enough for aircraft to use during higher wind conditions. If this is not an option, the pilot may have to find another airport at which to operate. To provide for the highest level of safety, it is the FAA's policy for an airport's runway configuration to accommodate 95 percent of operations under various wind categories. As **Table 2-13** shows, each runway at TLH independently meets the recommended 95 percent in most every case, and when both runways are considered, the wind coverage exceeds 99 percent for all of the wind categories.

Aircraft Mix Index

The operational fleet at an airport influences an airfield's capacity based upon differing aircraft spacing requirements, both vertically and horizontally. These separations are set by the FAA for a number of safety reasons. On approaches and departures the major concern is wake turbulence forces that trail behind a plane. The vortices associated with these forces originate at the aircraft wingtip and can best be visualized as horizontal tornados coming off the wings. If enough time is not allowed for the vortices to dissipate before a second aircraft lands or departs, the second aircraft can become unstable. This becomes more critical as small general aviation and large commercial jets operate on the same runway.

Another way the aircraft fleet influences the airfield's capacity is the time needed for the aircraft to clear the runway either on arrival or departure. As aircraft size and weight increases, so does the time needed for it to slow to a safe taxiing speed or to achieve the needed speed for take off. Therefore, a larger aircraft generally requires more runway occupancy time than a smaller aircraft would. Thus, as additional larger aircraft enter an airport's operating fleet the lower the capacity will likely be for that airfield.

There are four categories of aircraft used for capacity determinations based upon FAA criteria. The aircraft classifications, shown in **Table 4-1**, are based upon the maximum certificated takeoff weight, the number of engines, and the wake turbulence classifications. **Exhibit 4-1** shows examples of aircraft in each class.

Table 4-1
AIRCRAFT CLASSIFICATIONS

Aircraft Class	Maximum Certificated Takeoff Weight (lbs)	Number of Engines	Wake Turbulence Classifications
A	12,500 or less	Single	Small
B	12,500 or less	Multi	
C	12,500 – 300,000	Multi	Large
D	Over 300,000	Multi	Heavy

Source: FAA AC 5360-5, Change 2, "Airport Capacity and Delay."

The aircraft classifications are used to determine the mix index, which is required to calculate of the theoretical capacity of an airfield. The mix index is defined as the percent of Class C aircraft plus three times the percent of Class D aircraft, written as %(C+3D). The percent of A and B class aircraft is not considered because the wake turbulence generated by these small aircraft dissipates fairly rapidly and thus other aircraft can be spaced closer to Class A and B aircraft than to a C or D class aircraft.

At TLH, the aircraft operational fleet mix was determined in the "2001 Aviation Activity and Noise Exposure Map Update." This data was originally developed from FAA ATCT and airport records but has been updated with more recent figures. These figures are based on interviews with Airport representatives and a review of TLH air traffic data. A summary of the percent operations by aircraft classification is presented in **Table 4-2**.

Table 4-2
PERCENT OPERATIONS BY AIRCRAFT CLASSIFICATION

Year	Class A	Class B	Class C	Class D
Base Year				
2002	32%	22%	46%	0%
Forecast Years				
2008	31%	22%	47%	0%
2013	31%	22%	48%	0%
2023	30%	19%	50%	0%

Source: THE LPA GROUP INCORPORATED, 2003.

Since no Class D aircraft are in the aircraft fleet mix at TLH, nor are they forecasted to be within the planning period, the mix index for each study year is equivalent to the percent of annual operations by Class C aircraft as given in the table above. These Class C aircraft include the large general aviation business jet weighting above 12,500 pounds, air carriers, and cargo jet aircraft. Therefore, the mix index in 2002 was 46, in 2008 it will be 47, in 2013 it will be 48, and 50 in 2023.

CLASS A:
Small single-engine aircraft, gross weight
12,500 lbs or less




CLASS B:
Small multi-engine aircraft, gross weight
12,500 lbs or less




CLASS C:
Large aircraft, gross weight
12,500 to 300,000 lbs




CLASS D:
Heavy aircraft, gross weight
more than 300,000 lbs




Taxiway Configuration

The distance an aircraft has to travel to an exit taxiway after landing also sets limits on the airfield capacity. This is due to the fact that larger aircraft require more distance to slow to a safe speed before exiting the runway. Thus, they require greater runway occupancy times. If taxiways are placed at the approximate location where the aircraft would reach safe taxiing speed, the aircraft can exit and clear the runway for another user. However, if the taxiway is spaced either too close or too far from the touchdown zone, the aircraft will more than likely spend more time on the runway than if the taxiway had been in the optimum zone. Although pilot technique also contributes, the FAA has determined optimal distances to exit taxiways based upon the mix index. These are listed in **Table 4-3**. In addition some taxiways can be designed to allow for high-speed exits to reduce runway occupancy times. Unfortunately, the FAA methodology does not provide a way to quantify the benefits associated with high-speed exits.

Table 4-3
OPTIMUM TAXIWAY EXIT DISTANCE

Mix Index	Minimum Distance from Threshold	Maximum Distance from Threshold
0 to 20	2,000’	4,000’
21 to 50	3,000’	5,500’
51 to 80	3,500’	6,500’
81 to 120	5,000’	7,000’
121 to 180	5,500’	7,500’

Source: FAA AC 5360-5, Change 2, “Airport Capacity and Delay.”

As mentioned in the Inventory chapter, there are 12 taxiways serving both Runways 9-27 and 18-36. Based on FAA’s criteria, the exit factor at TLH is maximized when the runways have exit taxiways between 3,000 and 5,500 feet from the runway ends. Using this criterion, Runway 9-27 has three exits, Runway 18 three exits, and the Runway 36 two exits within the optimum range. Thus, the exit factor for the primary runway is slightly better than for the crosswind runway.

Airfield Operational Characteristics

Significant operational characteristics that can affect an airfield’s overall capacity include the percentage of aircraft arrivals and the percentage of touch and go operations.

Percentage of Aircraft Arrivals

In the capacity analysis, the percent of arrivals is a limiting factor due to the necessary separations previously discussed. This percentage refers to the peak hour of the peak day during the peak month. The percentage is used to look at times when there is a large arrival or departure push. For example, at larger commercial service airports, a peak departure time would most likely be seen in the first few hours of the day. While, peak arrival times might occur later in the evenings, the “Capacity and Delay” AC only offers a 40, 50, and 60 percent annual factor for hourly capacity calculations. The arrival percentage affects the overall airfield capacity because a runway is held for longer time periods for an arriving aircraft than for a departing one.

This arrival percentage consists of commercial and non-commercial activity in what is considered the peak hour of the peak day in the peak month of operations. The capacity limiting factor is again the larger aircraft types that generally are in the commercial or military fleets. The military have no set schedule of operations and generally would have just a few aircraft in the arrival/departure stream at a given time. After reviewing, the commercial service flight schedules, it was determined that no one hour had a predominance of arrivals or departures. Therefore, for this analysis at TLH the percentage of aircraft arrivals was set at 50 percent of all operations.

Percentage of Touch and Go Operations

A touch and go operation, while often thought of as one operation, actually consists of two operations: a landing and a takeoff. This is basically a training operation to practice landings and takeoffs. The aircraft touches down but then increases power to lift off instead of stopping on or exiting the runway. Generally, aircraft practicing these maneuvers stay in the arrival and departure stream, coordinated by the FAA ATCT when it is open, for several touch and go operations. A full touch and go operation takes less runway time than two separate arrival and departure operations would. Thus, in most instances as the percent of touch and go operations increases, the airfield capacity also increases. However, when touch-and-go operations mix with heavier or commercial operations, airfield capacity may decrease.

In discussions with FAA ATCT management, it was determined that touch and go activities make up approximately 15 percent of all operations at TLH. Generally, military operations make up the majority of this type of activity with the rest being conducted by general aviation. Touch and go operations do not occur during periods when instrument flight rules are in effect. In performing the capacity analysis for each of the study years, it was assumed that this touch and go percentage would remain constant.

Meteorological Conditions

Aircraft operating parameters are dependent upon the weather conditions, such as the cloud ceiling height and visibility range, on and near the airfield and more importantly by the fact that aircraft land and takeoff into the wind. Therefore, the wind conditions at an airfield can affect the capacity by determining the runway end that is used for takeoffs and landings. Using information provided by FAA ATCT staff and the wind data presented in the Inventory chapter, runway end utilization percentages were assigned. This determination was based upon what would be the normal arrival flow for air carrier traffic on an average day at TLH. **Table 4-4** provides the breakdown for usage of each runway end.

TABLE 4-4
RUNWAY END UTILIZATION

Runway End	Runway Use	Runway End Utilization
9	75 % of total	5 % of total
27		70 % of total
18	25 % of total	10 % of total
36		15 % of total

Source: FAA ATCT interviews.

As noted, the height of clouds and the visibility also affect aircraft operational parameters and hence airfield capacity. As weather conditions deteriorate, pilots have to rely on instruments to define their position both vertically and horizontally. Capacity is lowered during such conditions because aircraft are spaced further apart when they cannot see each other. The FAA defines three general weather categories, based upon the height of the clouds above ground level and the visibility. The categories are described below:

- Visual Flight Rule (VFR): Cloud ceiling is greater than 1,000 feet above ground level (AGL) and the visibility is at least three statute miles. All airports are able to operate under these conditions.
- Instrument Flight Rule (IFR): Cloud ceiling is at least 500 AGL but less than 1,000 feet AGL and/or the visibility is less than three statute miles but more than one statute mile. Aircraft operations are limited if the aircraft and the airport are not equipped with the proper instrument facilities.
- Poor Visibility and Ceiling (PVC): Cloud ceiling is less than 500 feet AGL and/or the visibility is less than one statute mile. Most airports, except those with special instrumentation, have very limited operations during these conditions.

Based upon data collected by the national Climatic Data Center at the airport from 1992 through 2001, TLH experiences VFR conditions 90.2 percent of the time, IFR conditions 7.3 percent of the time, and PVC conditions 2.5 percent of the time.

AIRFIELD CAPACITY ANALYSIS

The FAA methodology for capacity analysis involves a step-by-step process that addresses the factors discussed above. The analysis can become quite complicated due to the number of operational scenarios that could be studied involving various combinations of the above factors. Three components of the airfield's capacity can be determined using the method in FAA AC 5060-5, Change 2, "Airport Capacity and Delay" including the hourly capacity of the runways, the annual service volume, and the annual aircraft delay. Each of these analyses is discussed below.

Hourly Capacity of the Runways

The maximum number of operations that the airfield configuration can accommodate in one hour is measured by the hourly capacity of the runways. FAA AC 5060-5, Change 2, includes a series of graphs and tables that are chosen based upon the runway configuration and whether VFR or IFR conditions are being evaluated. It should be noted that no one runway configuration diagram from this AC describes the various operational flows at TLH, therefore the diagrams that best corresponded to the normal operational flow were utilized. For both VFR and IFR conditions, the hourly capacity for runways is calculated by multiplying the hourly capacity base, the touch and go factor, and the exit factor. This equation is:

$$\text{Hourly Capacity} = C^* \times T \times E$$

where:
C^* = hourly capacity base
T = touch and go factor
E = exit factor

The hourly capacity base (C^*) is determined from the appropriate graph based upon the aircraft mix index and the percent of aircraft arrivals expected during the peak hour. The touch and go factor (T) is determined from the percent of touch and go operations and the aircraft mix index. For IFR calculations, T is always one since these training operations are not conducted during IFR conditions. In similar fashion, the exit factor (E) is determined from a table based upon the aircraft mix index, percent of aircraft arrivals, and the number of taxiways within the specified exit range.

An airport's mix index can substantially change the value of the hourly capacity base in the FAA capacity tables. However, the mix index varies only slightly over the course of the planning period for TLH, resulting in a fairly constant VFR hourly capacity. For IFR calculations, the hourly capacity remains constant throughout the same period. These hourly capacity values calculated are summarized in **Table 4-5** and will be used to calculate the annual service volume in the next section.

Table 4-5
BASE HOURLY CAPACITIES

Year	Mix Index	VFR Hourly Capacity	IFR Hourly Capacity
Base Year			
2002	46%	121	56
Forecast			
2008	47%	119	56
2013	48%	118	56
2023	50%	117	56

Source: THE LPA GROUP INCORPORATED, 2003.

Annual Service Volume

The most indicative value of an airport's capacity is the annual service volume (ASV), which is the calculated theoretical limit of operations that an airport can support annually. The FAA equation for calculating the ASV is given below:

$$\text{Annual Service Volume} = C_w \times D \times H$$

where:
C_w = weighted hourly capacity
D = ratio of annual demand to average daily demand during the peak month
H = ratio of daily demand to average peak hour demand during the peak month

The weighted hourly capacity (C_w) for the airport is calculated by taking the hourly VFR and IFR capacities and prorating them based on the percent these conditions have been observed. TLH's weighted hourly capacity is around 78 throughout the planning period. Information from **Table 3-12** in the forecasting discussion was utilized to calculate D and H values for each of the study years.

Table 4-6 shows the results of the ASV calculations for TLH. The ASV values do not differ significantly throughout the planning period. This is mainly due to the similarity of the values of D and H throughout the planning period. Based upon FAA Order 5090.3B, "Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)," an airport should begin to address capacity related issues once the operational

demand exceeds 60 percent of the annual service volume. From **Table 4-6**, it can be seen that TLH will reach this 60 percent threshold sometime within the first half of the long term planning period. This information is also graphically depicted on **Exhibit 4-2**.

Table 4-6
AIRFIELD CAPACITY LEVELS

Year	Annual Operations	Annual Service Volume	Capacity Level
Base Year			
2002	114,765	247,186	46.4 %
Forecast			
2008	133,488	240,859	55.4 %
2013	138,657	239,761	57.8%
2023	156,321	237,376	65.9%

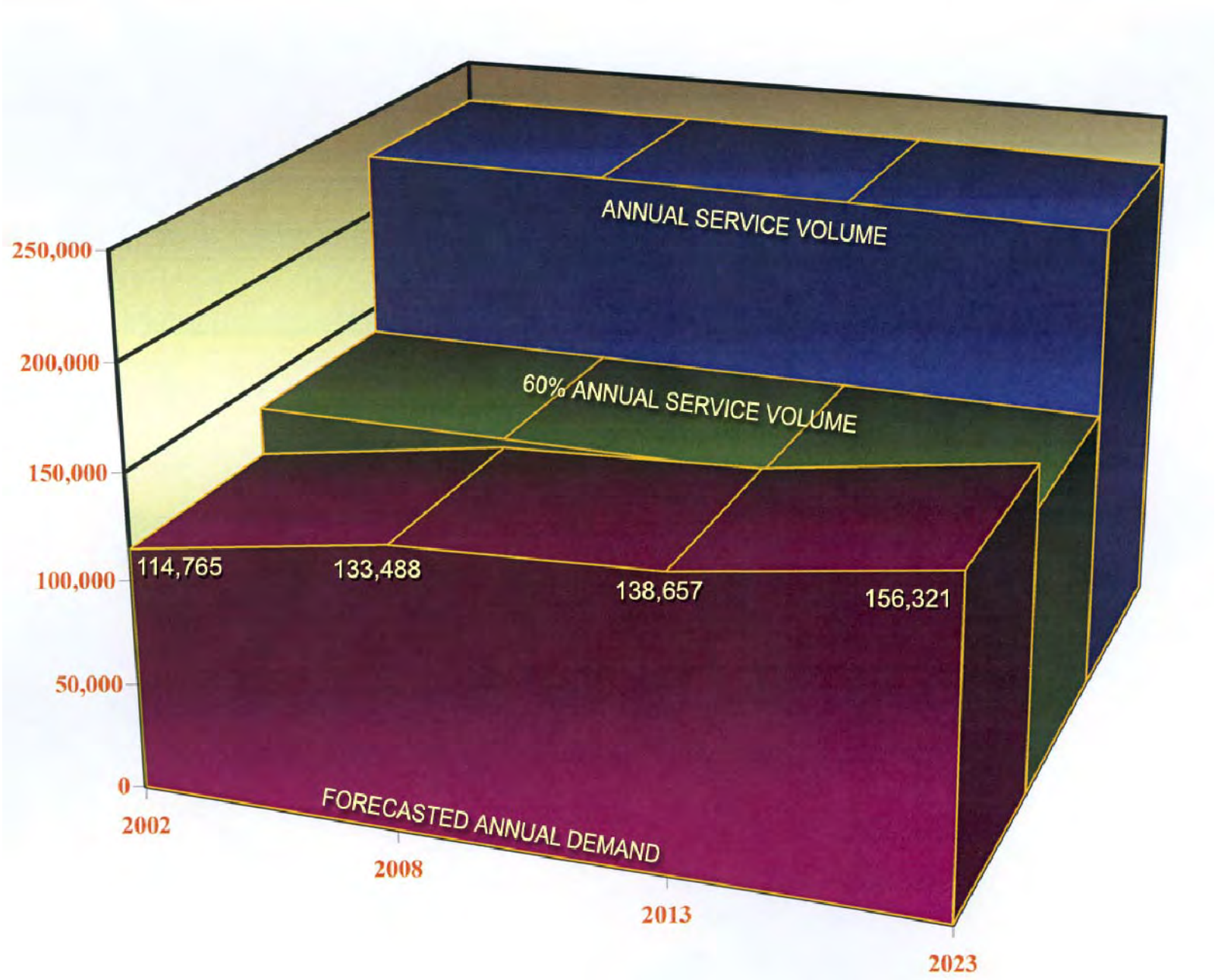
Source: THE LPA GROUP INCORPORATED, 2003.

Annual Aircraft Delay

Airport users generally experience an increase in airfield delays as an airport's operational levels increase. While delays may be experienced due to weather, mechanical problems, security issues, or for many other reasons, this section focuses solely on delays related to constraints on aircraft movements due to the airport's existing airfield configuration. The FAA has developed planning guidelines for quantifying these estimated airfield delays.

Charts with AC 150/5060-5, "Airport Capacity and Delay," allow an estimate of the average delay per aircraft to be determined based upon the ratio of annual demand to ASV. This is then used to calculate the annual delay for all operations. The annual delay amount is dependent upon the airfield layout, the mix index, and the percent of arrivals during the peak period. This method takes into account VFR and IFR operating conditions.

Table 4-7 provides the results of these calculations for TLH. The average delay values do not indicate that the airport users will experience significant delays over the planning period. It should be noted that this does not imply that capacity related delays will not occur during certain peak times.



4-2 **ANNUAL SERVICE VOLUME VS. DEMAND**

Table 4-7
ANNUAL AIRCRAFT DELAY

Year	Average Delay per Aircraft (minutes)		Total Annual Delay (hours)	
	Low	High	Low	High
Base Year				
2002	0.2	0.5	383	967
Forecast				
2008	0.2	0.8	450	1,783
2013	0.2	0.8	467	1,850
2023	0.3	1.1	783	2,867

Source: THE LPA GROUP INCORPORATED, 2003.

Conclusion

Based upon the analysis conducted, the Tallahassee Regional Airport is not expected to experience any significant delay related problems over the next 20 years. However, as previously noted, TLH's demand will surpass 60 percent of the calculated ASV within the long term of the planning period, but it is not expected to exceed 70 percent of the ASV by 2023. Surpassing this 60 percent threshold indicates that TLH should consider capacity enhancing projects for the second half of the planning period.

Chapter Five – Airport Facility Requirements

INTRODUCTION

The Airport Facility Requirements chapter serves to determine which of the array of airport facilities will become inadequate to meet the various demand levels, projected through 2023. This information will provide the basis of the next step in the planning process: the definition and evaluation of development alternatives, which is presented in the following chapter.

The identification of deficient or excess capacity in facilities provides an indication of the degree of facility expansion needed over the next 20 years, by identifying the improvements required during that timeframe. While certain facilities will be needed, at what demand level they actually are implemented is a matter of airport policy. Providing a facility before it is needed is not financially prudent while providing a facility late, causes unnecessary congestion and delay, inconveniencing both passengers and airport neighbors. Late development of facilities is also more expensive and time consuming, tying up airport funds that could be used for other capital projects.

Facility requirements were calculated for existing conditions (year 2003) and the forecast years of 2008, 2013, and 2023. However, the identified improvements are driven by the projections of future aviation activity or specific demand for a particular improvement; not merely by date. As a result, future activity and demand thresholds are more important than the actual years they are projected to occur within. It is important to note that as demand patterns, fleet mix, airlines, security measures, etc. change over time, facility expansion or improvement triggers may also change. Airport activity levels, as well as forecast of aviation demand should be periodically monitored to ensure the viability of the airport facilities. By keeping abreast of future aviation activity demand and needs at the local and national level, the airport will foresee these triggers.

The airport should focus on maintaining a state of the art facility that will not only maintain the airport activity projected, but also promote the demand for additional services. While improvements are primarily triggered by demand, on occasion activity is also propelled by the facilities, local businesses, transportation network, and incentives that may be offered to the potential airlines, tenants, flight school, etc. When these opportunities are missed, the airport loses potential revenues, tenants do not receive maximum benefit from their leases, and the users experience a lower level of service that might otherwise be obtainable.

To conduct this facility requirements analysis, the input of the airport tenants and representatives, as well as several Airport and City employees has been solicited. In addition, extensive research has been made on the requirement of the newly designed aircraft such as the latest generation of regional jets (RJ) as well as the latest Global Positioning System (GPS) technology advances which could expand the operational capabilities of the airport. Facility improvements should not be initiated unless the actual demand justifies a particular project, it is environmentally approved, and proven to be financially feasible. Finally, when planning development, the airport owner should also consider the quality of life for local residents around the airport. Meeting the growth demands of an airport in today's world is routinely balanced with the community's desire for aesthetics and environmental considerations. The planning process for TLH is no exception.

AIRPORT REFERENCE CODE AND CRITICAL AIRCRAFT

The selection of appropriate Federal Aviation Administration (FAA) design standards for the development and location of airport facilities is based primarily upon the characteristics of the most demanding aircraft which the airport is intended to serve. This aircraft is often referred to as the critical aircraft. There may be different critical aircraft for different airport components, identified, if necessary, by approach category, by wingspan, and/or by weight. To be considered a critical aircraft, there must be a minimum of 500 annual itinerant operations conducted at the airport by the aircraft. Itinerant operations are defined as flights originating at TLH and flying to a facility a minimum of 20 nautical miles away, or those operations terminating at TLH from an airport more than 20 nautical miles away.

Once the critical aircraft has been determined, an Airport Reference Code (ARC) is established based on specific characteristics of aircraft operating at the airport. The intent of the ARC is to provide a simple method for interrelating the numerous specifications concerning the characteristics of airports so as to provide a series of airport facilities that are suitable for the aircraft intended to operate at the airport. The two characteristics defining the ARC are the approach speed and wingspan. Because some aircraft may have large wingspans and relatively slow approach speeds, while others have high approach speeds and short wingspans, it is sometimes necessary to establish multiple critical aircraft for specific airport design parameters. Likewise, the aircraft defining the critical wingspan for design purposes may not be the critical aircraft defining the runway pavement strength requirement. According to FAA Advisory Circular (AC) 150/5300-13, Change 7, "Airport Design," the aircraft approach category is based upon 1.3 times its stall speed in landing configuration at aircraft's maximum certified weight.

The ARC is identified using an alphanumeric designation, a letter designation followed by a Roman numeral. The letter designator is used to identify the Approach Category and the Roman numeral designates the Design Group in terms of wingspan. **Table 5-1** and **Table 5-2** delineate the criteria used in defining Aircraft Approach Categories and Aircraft Design Groups (ADG) according to FAA AC 150/5300-13 Change 7.

Table 5-1
AIRCRAFT APPROACH CATEGORIES

Category	Approach Speed (knots)
A	< 91
B	91 – 121
C	121 – 141
D	141 – 166
E	> 166

Source: FAA AC 150/5300-13 Change 7.

Table 5-2
AIRCRAFT DESIGN GROUPS

Design Group	Wingspan (feet)
I	< 49
II	49 – 78
III	79 – 117
IV	118 – 170
V	171 – 213
VI	214 – 262

Source: FAA AC 150/5300-13 Change 7.

According to the 1996 Master Plan Update, design consideration for the Tallahassee Regional Airport's airport facilities are based on the weight requirements of the Boeing 727-200 and the size requirements of the Boeing 757 aircraft. Even though the Boeing 757 aircraft is heavier than the Boeing 727, the Boeing 757 distributes its weight over ten wheels while the Boeing 727 concentrate its weight on only six wheels, making the wheel loading higher than the Boeing 757. The Boeing 757 was selected as the critical aircraft for the sizing of the facilities because this aircraft model has a wingspan of 125 feet, which exceeds the wingspan of the Boeing 727 by approximately 17 feet. The Boeing 757 approach speed is estimated to 135 knots. As a result, the previous Airport Master Plan indicates an ARC of C-IV for the airfield.

Aircraft Approach Category Determination

Every large aircraft expected at the airport on a regular basis falls within Approach Category C. This includes the entire fleet of regional jets, narrow body aircraft such as the Boeing models 717, 727, 737, 757, Airbus models A319, A320, A321, and most large general aviation business jets with the exception of the Gulfstream aircraft, which fall within Approach Category D. The number of operations by the Gulfstream aircraft is not expected to exceed 250 departures per year and therefore does not justify a change of aircraft approach category.

Aircraft Design Group Determination

Review of the commercial aircraft fleet indicates that the Boeing 737-800 flown by Delta Airlines is currently the largest aircraft flying into and from TLH on a regular basis. This Boeing model has a wingspan of 113 feet. The Boeing 727-200, with a wingspan of 108 feet, is currently the largest aircraft used for cargo operations. Finally, the C-130 Hercules, with a wingspan of 133 feet, is the largest aircraft conducting military operations on the airfield. The Boeing 737 aircraft series along with the C-130 are considered to best represent the critical aircraft currently using the airport on a regular basis. As listed in AC 150/5300-13, Change 7, the Boeing 737 and C-130 fall within ADG III and IV, respectively. Because the C-130 conducts more than 500 operations a year, as indicated in the 2001 Aviation Activity and Noise Exposure Map report, and a number of Boeing 757 aircraft are still operated at TLH by Delta, the airport currently requires Design Group IV standards.

Determination of the future ADG was based on a review of the aircraft fleet mix expected at the airport, as presented in the Aviation Activity Forecast chapter of this report. The future air carrier design aircraft anticipated at the airport remains the Boeing 757-200, with a wingspan of 125 feet. While some larger aircraft may be expected during the planning period as a result of charter flights or

equipment scheduling, these are not anticipated to operate on a regular basis at the airport. Considering the anticipated regional jet operations increase, designing the airport facilities for larger commercial aircraft is considered unsuitable. This could ultimately result in excessive or unnecessary costs.

Future air cargo activities could initially include the Boeing 727 and potentially include MD-11 aircraft, which fall within ADG category IV. Finally, the largest business aircraft to be expected at the airport fall within ADG category III.

As a result, the design of the airport facilities including taxiway and apron areas should consider the wingspan requirements of the most demanding aircraft to operate within that specific functional area on the airport. The terminal area, runways, as well as the major taxiways, should consider ADG IV requirements to accommodate the full range of air carrier and military aircraft. Any taxiways, taxilanes, and ramps associated with the cargo facilities must at a minimum, accommodate the design standards for ADG III. General aviation areas should also provide ADG III requirements to accommodate the full range of business jet and large turboprop aircraft, and ADG II and I in those areas specifically designed to accommodate small single and twin-engine aircraft.

Thus, the appropriate ARC for TLH is C-IV based on the current and continued use of the regional jets, narrow body aircraft, military aircraft and large general aviation business jets.

Critical Aircraft for Pavement Design

Review of the existing aircraft fleet mix serving TLH on a regular basis indicates that the Boeing 727 is still the critical aircraft with regard to pavement design. This aircraft is also expected to be the critical aircraft with regard to pavement design during the planning period. Indeed, this aircraft is most likely to be retained by FedEx for its cargo operations into and from TLH. As such, the airfield pavement should be planned and designed to support a maximum aircraft ramp weight of 210,000 pounds and a maximum takeoff weight (MTOW) of 209,500 pounds.

RUNWAY REQUIREMENTS

As indicated in the Airfield Demand/Capacity chapter, TLH will not experience significant runway capacity related problems during the planning period. While the airport should address some airfield capacity issues, no major airfield improvement, such as the construction of a new runway, will be needed over the next 20 years. Nonetheless, as the primary airfield component at any airport, the runways should be designed with adequate length, width, and pavement strength to accommodate the most demanding or critical aircraft. The runways should be designed in accordance with the standards developed by the FAA, using the ARC system previously discussed. All proposed improvements to the airfield will incorporate these standards, except in cases where existing conditions make it impossible to provide fully conforming facilities. In such cases, a waiver from the FAA would be required.

The determination of runway length requirements for an airport are based on various factors including the airport elevation, mean maximum temperature of the hottest month, runway gradient, critical aircraft expected to use the airport on a regular basis, and stage length of longest nonstop trip destinations. The FAA AC 150/5325-4A, “Runway Length Requirements for Airport Design,” and the FAA Airport Design software, Version 4.2D, provide guidelines to determine the ultimate runway length required at an airport facility.

Runway width requirements for airport design are delineated in FAA AC 150/5300, Change 7. The design standards are based on the critical aircraft Approach Category, Design Group, and the airport's approach visibility minimums.

In addition to the evaluation of the appropriate runway dimensions, runway pavements are also assessed. Evaluations are needed to establish load bearing capacity for expected operations, to assess the ability of pavements to support significant changes from expected volumes or types of traffic, and to determine the condition of existing pavements for use in the planning or design of improvements that may be required. Projects to rehabilitate runway pavements are routinely conducted every 15 to 20 years. These projects, which repair damage to the runway pavements resulting from normal wear, need to be conducted even at airports with regular maintenance programs. It should be noted that routine maintenance of the airfield pavements would need to be continued to ensure the condition and longevity of the runway/taxiway system throughout the master plan time frame. As such these projects will be included in the 20-year Capital Improvement Program.

Configuration of Runways

Many factors affect the determination of the siting, orientation, and number of runways. The more important being: wind, airspace availability, environmental concerns, capacity needs, available land, topography, Air Traffic Control Tower (ATCT) visibility, and location of existing facilities. The primary runway, to the extent other factors permit, should be oriented in the direction of the prevailing wind. All runways should be oriented so that approach and departure areas are free of obstacles and preferably so that aircraft are not directed over populated areas.

Wind Coverage

TLH currently operates with two runways, the primary Runway 9-27 and the secondary Runway 18-36. Aircraft operating from an airport generally need to take off and land into the wind in order to reduce takeoff and landing ground roll length. The existing runway configuration provides excellent wind coverage. Based on the existing and future ARC of C-IV, the maximum crosswind coverage required at TLH is 20 knots. As reflected in the Inventory chapter, the current two-runway configuration at TLH provides nearly 100 percent coverage for all wind velocities. Therefore, no additional runways are required from a wind coverage standpoint.

Capacity

The conclusion of the airfield capacity analysis is that the existing system of runways is capable of handling TLH's existing and future traffic growth. Therefore, planning for additional runways or reconfiguration is not necessary. In addition, technology improvements are more likely to increase the annual capacity of the airport in the future. Enhanced GPS technology will make precision approaches available to each runway end and design improvements will reduce the formation of aircraft wingtip vortices, resulting in reduced aircraft horizontal separation, thus, increasing the annual capacity of the airport.

Runway Line of Sight

According to FAA AC 150/5300, Change 7, runways with a full-length parallel taxiway, must have a profile such that an unobstructed line of sight will exist from any point five feet above the runway centerline to any

other point five feet above the runway centerline for one-half the runway centerline. In addition, the AC sets a maximum of 1.5 percent change in longitudinal slope gradient for all parts of the runway, with the exception of the first and last quarters of the runway, which cannot exceed 0.8 percent. While the runway gradients at TLH comply with these standards, Runway 9-27 does have a line of sight issue. Runway 9 end is not visible from the Runway 27 end, and vice versa. The difference in the elevations (approximately 21 feet) between the Runway 27 end and the highest point, which occurs near Taxiway K, is too great to maintain the proper line of sight. An aircraft landing to the east and taxing down the runway would become indiscernible to aircraft conducting subsequent landing on the same runway. This could lead to a major runway incursion, especially when the ATCT is closed. Because this seriously impacts airport safety, Runway 9-27 and the main runway connecting pavements need to be reconstructed during the short term of the planning period. This project would lead to the closure of Runway 9-27 for an extended period of time, and thus require alternate runway options to continue air service at TLH.

Runway Length Analysis

Runway length is a critical component at each airport. While insufficient runway length may restrict operations by some aircraft, too long of a runway may result in unnecessary maintenance costs. As such, it is important to ensure that the airfield runway length answer the takeoff and landing needs of the aircraft expected at the airport. The determination of runway length involves consideration of a series of aviation and design aircraft operational factors that include:

- Type of aircraft
- Aircraft weight (MTOW including passengers, cargo and fuel)
- Aircraft runway takeoff and landing distance requirements
- Aircraft range (maximum and/or typical travel distance)
- Elevation (altitude) of the airport
- Mean and maximum average daily temperature
- Runway centerline elevation

As reflected in the Inventory chapter, the primary runway, Runway 9-27, has an overall length of 8,000 feet and a width of 150 feet. Currently, Runway 27 offers a CAT II precision instrument approach and Runway 9 has non-precision approach capability. Runway 18-36, the crosswind runway, provides a usable length of 6,076 feet. While, most general aviation operations are directed toward this runway, commercial takeoff and/or landings also occur on this runway. Runway 36 offers a CAT I precision instrument approach and Runway 18 has non-precision approach capability.

A detailed examination of the aviation activity forecasts at TLH and a review of manufacturer, operator, and FAA performance standards for each aircraft type under consideration was conducted to determine runway lengths required to accommodate the projected cargo, commercial, and general aviation operations. This analysis is described in the following sections.

FAA Based Runway Length Calculations

The first method of runway length analysis was accomplished using the FAA's own runway length computer program that is part of their airport design software package. In order to provide runway length recommendations for generalized groupings of aircraft, this software uses several key airport and runway elements including airport elevation, mean daily maximum temperature (of the hottest

month), maximum difference in runway centerline elevation, average length of haul (for aircraft over 60,000 pounds), and typical weather conditions.

Airfield elevation and the temperature of the hottest month are necessary to determine the density altitude, which is pressure altitude adjusted for temperature. Density altitude adversely impacts runway length because it decreases aircraft performance. As the airfield elevation and/or average temperature increases, the minimum required runway length must increase due to the lower air density. This effect is usually greatest when taking off, especially for aircraft equipped with turbojet engines. The efficiency of a turbojet engine depends in part on the difference between the outside air temperature and the maximum temperature attainable in the combustion chamber. As the outside temperature increases above a certain value depending on the altitude, engine efficiency is decreased and, therefore, the aircraft performance is reduced.

The difference in runway centerline elevation can impact runway length depending on whether the aircraft is going up or downhill during the takeoff roll. For Runway 9-27, the difference between the runway's high and low points were found to be 21.4 feet. According to the Runway 18-36 profile drawings, the maximum difference in runway centerline elevation for the crosswind runway is 23.6 feet.

Length of haul is considered to provide an indication of how heavy the larger aircraft are operating out of the airfield. This length should be the longest stage length flown on a regular basis. The airlines currently serving TLH have a destination market within a 174 to 666 nautical mile range. At 666 nautical miles from TLH, Dallas is currently the farthest city served non-stop from TLH. **Table 5-3** depicts the existing nonstop destinations from TLH.

Table 5-3
TLH DESTINATION MARKET

Destination	Distance in Miles	Distance in Nautical Miles
Atlanta	224	195
Cincinnati	596	518
Charlotte	387	336
Dallas	766	666
Fort Lauderdale	393	342
Houston	658	572
Orlando	222	193
Memphis	458	398
Miami	402	349
Tampa	200	174
West Palm Beach	364	316

Source: THE LPA GROUP INCORPORATED, 2003.

Therefore, the 700-nautical mile distance represents existing market requirements for stage length. In the future, stage lengths are not expected to increase significantly. As illustrated in **Exhibit 5-1**, within a 700-nautical mile range, the air carriers operating from TLH can capture the entire southern states passenger market, including Florida, Georgia, Alabama, Mississippi, Louisiana, Tennessee,

South Carolina, Kentucky, and part of the northern states. A distance of 1,000 nautical miles from TLH covers the potential northeast markets such as Baltimore, Washington, New York. While charter flights fly over longer distances, these are not conducted on a daily basis at TLH, and as such are not considered as the critical aircraft. In the future, TLH's destination market is not expected to encompass cities located beyond a 700-nautical mile radius. The airlines operating out and into TLH are still expected to use their main hubs, such as Atlanta for Delta and AirTran or Charlotte for U.S. Airways, to provide additional destinations to the passengers flying from TLH. Therefore, two representative distances were selected for use in this analysis: 700 and 1,000 nautical miles.

Finally, weather conditions must be factored into the equation, as takeoffs made from runways under slippery and wet conditions must consider the accumulative effects of reduced acceleration. As noted in the Inventory chapter, rainfall in this area occurs during all seasons, but is more abundant during the summer when daily showers can be common. Therefore, in the FAA model, the runway conditions were labeled as wet and slippery versus dry. The following provides a summary of the airport and runway data utilized.

Airport Elevation:	81.4 feet
Mean Daily Maximum Temperature of the Hottest Month:	90.9°F
Maximum Difference in Runway Centerline Elevation:	21.4 feet and 23.6 feet
Average Length of Haul (Airplanes more than 60,000 pounds):	700 and 1,000 nautical miles
Runway Conditions:	Wet and Slippery

Table 5-4 provides the recommended runway lengths computed using the FAA's software program with the information described above.

Table 5-4
FAA RUNWAY LENGTH RECOMMENDED FOR AIRPORT DESIGN

	Maximum Difference in Runway Centerline Elevation	
	21.4 feet (Runway 9-27)	23.6 feet (Runway 18-36)
Small airplanes with approach speeds of less than 30 knots	300 feet	300 feet
Small airplanes with approach speeds of less than 50 knots	810 feet	810 feet
Small airplanes with less than 10 passenger seats		
75 percent of these small airplanes	2,540 feet	2,540 feet
95 percent of these small airplanes	3,100 feet	3,100 feet
100 percent of these small airplanes	3,680 feet	3,680 feet
Small airplanes with 10 or more passenger seats	4,290 feet	4,290 feet
Large airplanes of 60,000 pounds or less		
75 percent of these large airplanes at 60 percent useful load	4,880 feet	4,910 feet
75 percent of these large airplanes at 90 percent useful load	6,990 feet	7,020 feet
100 percent of these large airplanes at 60 percent useful load	5,690 feet	5,720 feet
100 percent of these large airplanes at 90 percent useful load	8,670 feet	8,700 feet
Airplanes of more than 60,000 pounds	Approximately	Approximately
Average Length of Haul: 700 nautical miles (806 miles)	5,630 feet	5,630 feet
1,000 nautical miles (1,151 miles)	6,250 feet	6,250 feet

Source: Chapter 2 of AC 150/5325-4A, Runway Length Requirements for Airport Design.
THE LPA GROUP INCORPORATED, 2003.


TLH
700 Nautical
Mile Range
1000 Nautical
Mile Range
WYOMING
SOUTH DAKOTA
NEBRASKA
COLORADO
KANSAS
OKLAHOMA
TEXAS
MEXICO
IOWA
MISSOURI
ARKANSAS
LOUISIANA
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENN.
MISS.
ALABAMA
GEORGIA
FLORIDA
S.C.
N.C.
VA.
W. VA.
PA.
NEW YORK
ONTARIO
CUBA
HAITI
DOM. REP.
PUERTO RICO (U.S.)
BELIZE
GUATEMALA
Gulf of Mexico
Caribbean Sea
Atlantic Ocean
Sioux Falls
Cheyenne
Denver
Omaha
Des Moines
Chicago
Milwaukee
Detroit
Toronto
Ottawa
Boston
New York
Philadelphia
Pittsburgh
Columbus
Indianapolis
Cincinnati
Kansas City
Santa Fe
Oklahoma City
Little Rock
Memphis
Nashville
Knoxville
Charlotte
Raleigh
Clarksville
Dallas
Austin
San Antonio
Houston
Jackson
Montgomery
Tuscaloosa
Atlanta
Columbia
Savannah
Jacksonville
Tallahassee
Mobile
Baton Rouge
New Orleans
Tampa
Miami
Nassau
Monclova
Torreón
Saltillo
Monterrey
Linares
Ciudad Victoria
Aguascalientes
León
Guadalajara
Mexico City
Jalapa
Puebla
Mérida
Campeche
Villahermosa
Tuxtla Gutiérrez
San Pedro Sula
Pinar del Río
Las Tunas
Holguín
Guantánamo
Santiago de Cuba
Santiago
Port-au-Prince
Kingston
Chetumal

Using the criteria calculated above from the FAA's airport design software, and comparing it to the actual primary runway length of 8,000 feet, there is no need to extend this runway. Based on the FAA methodology, TLH's primary runway length is sufficient for all small aircraft and many large aircraft that might be expected to operate at the airport. A small airplane is defined as an aircraft with a maximum certificated weight of 12,500 or less. In addition, the length is sufficient for at least 75 percent of large airplanes (between 12,500 pounds and 60,000 pounds) with a 90 percent useful load. Using a 700 and 1,000 nautical mile average length of haul for aircraft of more than 60,000 pounds, the FAA's airport design software recommends runway lengths of 5,630 and 6,250 feet, respectively.

According to the runway length recommendations in **Table 5-4**, Runway 18-36, the crosswind runway, is sufficient to accommodate all small aircraft and 100 percent of the large airplanes at 60 percent useful load. It is estimated that less than 65 percent of the large airplanes at 90 percent useful load can operate on Runway 18-36 (assuming equal distribution of individual aircraft runway length requirements). Although, this analysis indicates that the existing crosswind runway length at 6,076 feet is adequate in wet conditions for aircraft of more than 60,000 pounds at a length of haul of 700 nautical miles, Runway 18-36's length is inadequate for aircraft of more than 60,000 pounds traveling distances over 1,000 nautical miles.

Manufacturer Based Runway Length Calculations

Runway lengths for TLH were also calculated by determining the weight of each aircraft, which is based on the amount of fuel needed to reach a particular destination and the amount of payload including passengers, baggage, and cargo. Graphs from the manufacturers' aircraft characteristics manuals were used to conduct this analysis. In addition, FAA AC 150/5325-4A, "Runway Length Requirements for Airport Design" states that: "When the maximum gross weight of airplanes forecasted to use the runway is over 60,000 pounds, the runway length is normally designed for a specific airplane. The recommended runway length for a specific airplane is a function of that airplane's landing and takeoff weights, the wing flap settings, the airport elevation, and temperature, the runway surface conditions, and the maximum difference in runway centerline elevations." This individual analysis is included in the following section.

Takeoff runway lengths were determined for a "hot" day. As mentioned before, evaluating runway length requirement for a hot day results in longer takeoff lengths than for a standard day. As mentioned in the Inventory chapter the mean daily maximum temperature of the hottest month is 90 degrees F. Thus, determination of takeoff length requirements were based on the Aircraft Characteristic Manuals figures at International Standard Air (ISA) of 59 degrees F + 27 degrees F, which corresponds to a temperature of 86 degrees F, close from the mean daily maximum temperature of the hottest month.

Table 5-5 shows the takeoff runway length requirements for air carrier aircraft with destinations of 700 and 1,000 nautical miles for hot day conditions at maximum payload (passenger and cargo), assuming zero wind, no difference in runway elevation, and 200 pounds per passenger. The aircraft takeoff distance requirements were adjusted for the airport elevation, using the methodology described in the International Civil Aviation Organization (ICAO) Aerodrome Design Manual, Part 1 entitled "Runways." The length of the runway has been increased at the rate of 7 percent per 984 feet to adjust the takeoff length requirement for the airport altitude at TLH. Because the airport elevation is 89 feet, the runway takeoff requirement has been increased by 0.63 percent to adjust for the airport elevation. Runway length charts used for this analysis did not account for wet and slippery runways.

Thus, using ICAO methodology, the runway lengths required on dry conditions were increased by 15 percent to account for wet and slippery runways. Essentially, these calculations reflect the worst-case scenario assuming a wet runway condition and hot weather.

TABLE 5-5
F.A.R. TAKEOFF RUNWAY LENGTH CALCULATIONS

Aircraft	OEW (lbs)	Full Pax Payload (lbs)	MTOW (lbs)	Runway Length Required Dry Runway		Runway Length Required Wet Runway	
				700 nm	1,000 nm	700 nm	1,000 nm
Boeing 757-200	132,280	37,200	240,000	4,227’	4,528’	4,861’	5,208’
Boeing 737-900	94,580	35,400	174,200	5,635’	5,988’	6,481’	6,886’
Boeing 737-800	91,300	32,000	172,500	4,830’	5,233’	5,555’	6,018’
Boeing 737-600	80,200	21,600	143,500	4,025’	4,227’	4,629’	4,861’
Boeing 737-200	59,800	19,400	115,500	5,283’	5,887	6,076’	6,770’
Boeing 727-200	92,500	26,800	209,500	6,642’	7,246’	7,638’	8,332’
Boeing 717	39,830	21,200	114,000	5,233	5,635’	6,018’	6,481’
Airbus A320-200	89,129	30,000	162,038	7,447’	7,447’	8,564’	8,564’
Airbus A319	86,476	26,800	141,096	4,327’	4,327’	4,976’	4,976’
MD 88	77,976	31,000	149,500	5,535’	5,786’	6,365’	6,654’
Canadair RJ 200 ER	30,500	10,000	51,000	5,434’	5,535’	6,249’	6,365’
Embraer RJ 145 ER	22,772	10,000	45,415	6,390’	6,390’	7,349’	7,349’

Assumptions: - Day Temperature of 86 degrees F
- Runway centerline elevation is not taken into consideration
- Zero wind
- 200 pounds per passenger
- No obstruction in the takeoff path

Source: Aircraft Characteristics Manuals
THE LPA GROUP INCORPORATED, 2003.

As shown in **Table 5-5** and **Figure 1**, runway length requirements at TLH vary by aircraft type and runway conditions. Runway 9-27 meets the requirements of the fleet mix expected to fly into and out of TLH under dry runway conditions. The Airbus A320-200 and Boeing 727-200 are the only aircraft that could not safely takeoff on Runway 9-27 under wet runway conditions when on a 1,000 nautical mile stage length.

Under dry runway conditions, Runway 18-36 could accommodate most aircraft, with the exception of the Embraer 145 ER, Airbus A320-200, and Boeing 727-200. To takeoff on Runway 18-36, the weight of these aircraft would have to be reduced or the aircraft would have to fly a shorter stage length. Under wet runway conditions, the Airbus A319, and the Boeing models 737-600, 737-800, and 757-200 would be the only aircraft that could safely takeoff on Runway 18-36 for a stage length of 1,000 nautical miles. It should be noted that the safety margins for takeoff on Runway 18-36 are limited for most aircraft under dry runway conditions. The Boeing models 737-200 and 737-900, for instance, would require just less than 6,000 feet of runway. Required fuel load restrictions for takeoff on Runway 18-36 are discussed in further details in subsequent sections.

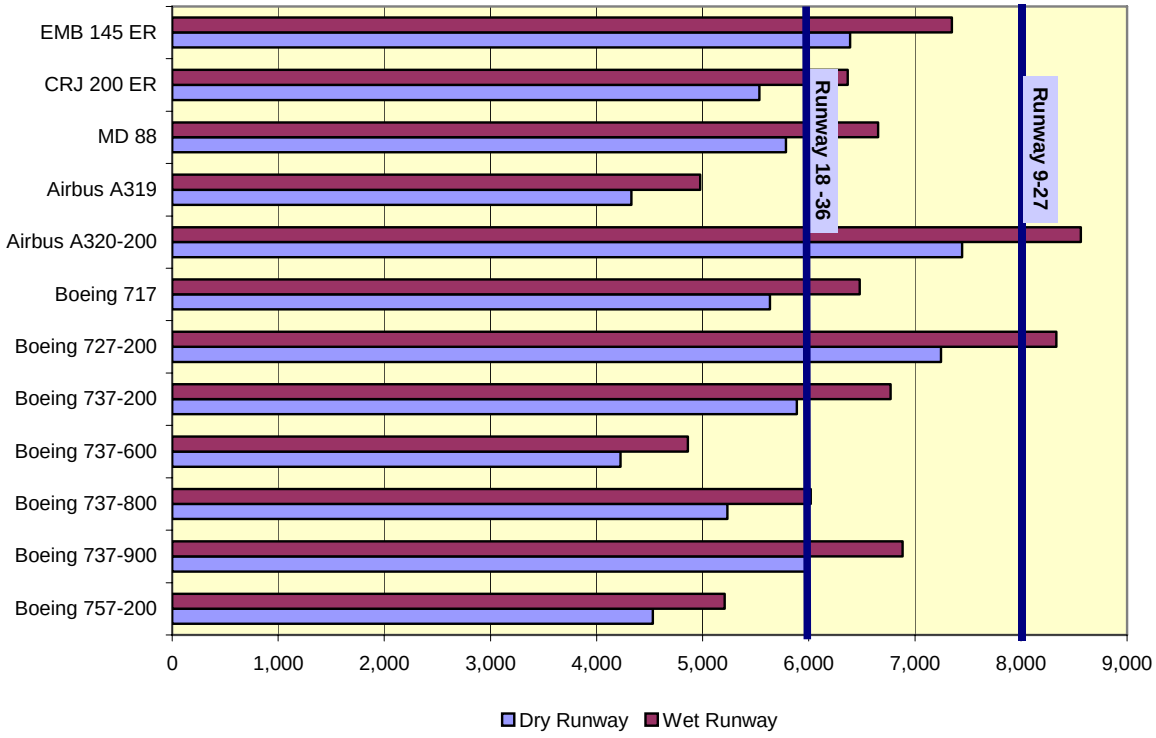


Figure 1: Air Carrier Takeoff Runway Length Requirement for 1,000 nm Stage Length

As the calculations show, the existing runway system meets the basic requirements of most aircraft, with Runway 9-27 as the critical runway for passenger airline operations. Under extreme conditions (i.e. hot temperature and wet runways), the Boeing 727-200 and Airbus A320-200 may have to operate at less than full payload. It should be noted however, that despite the basic aircraft requirements, each airline may have additional requirements when conducting flights to or from individual airports. These are typically based on specific features of the local environment.

Airline Operations on Runway 18-36

Because Runway 9-27 would have to be closed for a long period of time in order to correct the line of sight issue, an investigation was conducted to determine the extent to which air carrier aircraft could operate on Runway 18-36.

First, a review of the Florida airports offering regional jet services was conducted to provide an indication of the runway length requirement by the commuter airlines flying regional jets. Analysis reveals that all these airports have a primary runway exceeding 6,000 feet with the exception of Key West, which only offers a runway length of 4,801 feet.

As such, the use of the Embraer EMB-135 by Chautauqua Airlines Inc, a Delta code share, from Key West to Orlando and the Canadair RJ (CRJ) 700 by Atlantic Southeast from Key West to Atlanta illustrates the fact that Runway 18-36 can accommodate RJ departures.

Next an analysis was made to determine the takeoff weight penalties, if any, that would have to be applied to the air carrier aircraft operating on Runway 18-36. The analysis was performed to substantiate whether the air carrier airlines would have to report reductions in aircraft MTOW, and the potential for consequent pilot refusals to utilize TLH's Runway 18-36 for departures.

Per FAA Part 25, "Airworthiness Standards: Transport Category Airplanes," the maximum allowable takeoff weight is limited by the most restrictive of the following requirements:

- Maximum Certificated Takeoff Weight
- MTOW to meet minimum single-engine climb gradients and not exceed brake energy limits (Climb or Brake Energy Limited)
- MTOW for runway length available
- MTOW for obstacle clearance

Airline policies mandate that aircraft need to achieve a net take-off flight path that clears all obstacles in the departure path by at least 35 feet. The net take-off flight path is derived from the certified aircraft climb performance with one engine out; basic limitations placed on the aircraft design; and obstacle height, distance, and relative bearing from the point of lift-off.

For this analysis, it was assumed that the payload is maximized and the aircraft carries the maximum allowable passengers in either a single, two, or three class configuration. Imposed weight penalties to the MTOW, in order to comply with the requirements of the takeoff length distance available, can therefore be translated into a reduction of fuel. For the fleet mix considered, fuel penalties ranged from 0 to 48 percent of the aircraft's maximum full load; with no off-loaded passengers. The results of this analysis are depicted in **Table 5-6**.

The analysis found that aircraft departing TLH Runway 18 or 36 are required to have an average weight penalty of approximately 7,887 pounds to the MTOW to use the current runway length. The analysis found that, for example, the B737-200, departing Runway 36 requires a weight penalty of 14,000 pounds, which corresponds to 70 percent of the full aircraft fuel load.

It should be noted that these weight restrictions are very conservative as these calculations assume sea level altitude and the difference in runway centerline elevation is not taken into consideration.

TABLE 5-6
ESTIMATES OF FUEL LOAD PENALTIES FOR TAKEOFF ON RUNWAY 18-36 @ 6,076 feet

Aircraft	Max. Allowable Takeoff Weight	OEW (*)	Max. Allowable Payload	Payload Full Passengers	Allowable Payload for Fuel	Fuel Load Allowable (In percent of full fuel load) (**)
Boeing 757-200	233,330	132,280	101,050	37,200	63,850	85 %
Boeing 737-900	154,000	94,580	59,420	35,400	24,020	52 %
Boeing 737-800	157,500	91,300	66,200	32,000	34,200	74 %
Boeing 737-600	137,500	80,200	57,300	21,600	35,700	77 %
Boeing 737-200	101,500	59,800	41,700	19,400	22,300	70 %
Boeing 727-200	163,750	92,500	71,250	26,800	44,450	74 %
Boeing 717	113,500	39,830	74,170	21,200	52,970	71 %
Airbus A320-200	149,000	89,129	59,871	32,800	27,071	65 %
Airbus A319	141,096	86,476	54,620	26,800	27,820	67 %
MD 88	137,000	77,976	59,024	34,400	24,624	63 %
Embraer RJ 145	43,100	25,772	17,328	10,000	7,328	71 %
Embraer RJ 145 ER	43,100	25,772	17,328	10,000	7,328	80 %
Embraer RJ 145 LR	43,100	26,125	16,975	10,000	6,975	61 %
Canadair RJ 200	50,250	30,500	19,750	10,000	9,750	74 %
Canadair RJ 200 ER	50,250	30,500	19,750	10,000	9,750	68 %
Canadair RJ 200 LR	50,250	30,500	19,750	10,000	9,750	68 %
Canadair RJ 701	73,000	43,500	29,500	14,000	15,500	78 %
Canadair RJ 701 ER	75,250	43,500	31,750	14,000	17,750	78 %
Canadair RJ 900	77,500	47,500	30,000	17,200	12,800	66 %
Canadair RJ 900 ER	77,500	47,500	30,000	17,200	12,800	66 %
Canadair RJ 900 LR	77,500	47,500	30,000	17,200	12,800	66 %

Assumptions: - Sea level altitude
- ISA + 27 degrees F
- Payload was calculated assuming 200 pounds per passenger

Note: (*) OEW stands for Operational Empty Weight
(**) The fuel load shown is the difference between the aircraft maximum fuel payload and the maximum allowable fuel payload for takeoff on Runway 18-36

Source: Aircraft Characteristics Manuals
THE LPA GROUP INCORPORATED, 2003.

Delta Air Lines was also contacted to inquire about their runway takeoff length requirements. The airline could operate narrowbody aircraft on Runway 18-36 with full passenger loads except during summer periods when the temperature is above 88 degrees F. During these periods, passenger loads will be progressively reduced by about 2.4 passengers per degree F above 88 F on Runway 36. An additional 500 feet of runway on the approach end of Runway 36 would be all that is necessary to resolve this concern up to the highest probable temperature at the airport.

A review of the climatological data for the year 2002 at TLH reveals that the daily maximum temperatures exceed 88 degrees F during days in April, May, June, July, August, September, and October. In 2002, the maximum daily temperatures at the airport exceeded 88 degrees F for a period of 129 days. Nonetheless, a closer review of the daily hourly temperatures of the summer months

reveals that temperatures only exceed 88 degrees F from 11:00 a.m. to 8:00 p.m. Thus, hot temperatures would not affect the daily morning flights.

Because the information supplied in the Aircraft Characteristics Manuals for the newer regional jet aircraft only provides a general overview of runway length requirements, the regional airlines were contacted to obtain further details. In addition, data from these manuals do not take into account the obstacles located in the extended takeoff paths of the runways at TLH.

As stated by Atlantic Southeast Airlines (ASA), the Canadair RJ 700 could takeoff from Runway 18 without any weight restriction for stage lengths up to 766 miles. On the other hand, minor weight restrictions would have to apply when taking off from Runway 36 during the summer months, between noon and 8:00 p.m. for the same stage length. Indeed, given the obstructions located along the extended takeoff path of Runway 36, this runway is more restrictive than Runway 18.

The CRJ 200 would be restricted to less than full payload on either Runway 18 or 36 for stage lengths as low as 224 miles (Tallahassee-Atlanta). The weight restrictions on the shorter stage length would only apply under high ambient temperature conditions (typically during the months of June, July, and August from 1:00 p.m. to 8:00 p.m.). However, as the stage length increases, weight restrictions to less than full payload would clearly apply year around to Runway 18-36. The majority of CRJ 200 aircraft flying to Dallas would have to reduce their passenger loads when taking off on Runway 18 or Runway 36. Assuming a temperature of 89 degrees F, a stage length of 766 miles, and takeoff on Runway 36, the maximum allowable payload is 9,055 pounds, 67 percent of the maximum aircraft payload.

According to Bombardier Aerospace, the weight restriction for the CRJ models would average 4,010 pounds. The required payload and/or fuel loss for takeoff on Runway 18-36 could reach 25.7 percent of the maximum payload at MTOW for the CRJ 200 under wet runway conditions. This data assumes a temperature of 91 degrees F and no wind. As shown in **Table 5-7**, the average weight restriction was calculated based on the MTOW of CRJ models 200, 200 B, and 700. The CRJ 200 B is the "hot and high" version of the CRJ 200. This aircraft is equipped with the newest General Electric (GE) CF34 engines, offering lower fuel consumption at cruise, a faster rate of climb, and shorter hot-day/high-altitude takeoff performance. It should be noted that these restrictions reflect data from the manufacturer's airplane flying manual performance level but do not reflect corrections for wind, configuration deviations, airline minimum equipment list, and runway conditions.

TABLE 5-7
CRJ PERFORMANCE

Aircraft	Runway	Generic MTOW (lbs)	Allowable Takeoff Weight (lbs)	Difference (lbs)	Max. Payload and Usable Fuel at MTOW (*)	Percentage Loss in Payload and/or Fuel
Dry Runway						
CRJ 200	18	53,000	49,653	3,347	22,500	14.9 %
	36	53,000	48,804	4,196	22,500	18.6 %
CRJ 200 B	18	53,000	50,212	2,788	22,500	12.4 %
	36	53,000	49,346	3,654	22,500	16.2 %
CRJ 700	18	75,000	74,148	852	31,500	2.7 %
(Series 701 ER)	36	75,000	72,413	2,587	31,500	8.2 %
Wet Runway						
CRJ 200	18	53,000	48,012	4,988	22,500	22.2 %
	36	53,000	47,207	5,793	22,500	25.7 %
CRJ 200 B	18	53,000	48,714	4,286	22,500	19.0 %
	36	53,000	47,849	5,151	22,500	22.9 %
CRJ 700	18	75,000	70,202	4,798	31,500	15.2 %
(Series 701 ER)	36	75,000	69,318	5,682	31,500	18.0 %

Note: (*) The maximum payload and usable fuel at MTOW was assumed to be the difference between MTOW and OEW.
Source: Bombardier Aerospace
THE LPA GROUP INCORPORATED, 2003.

As illustrated by the above calculations, in the event Runway 9-27 is closed for a long period of time, airlines flying narrowbody aircraft would be required to reduce their load factors during the summer months to takeoff on Runway 18-36. Operations of RJs on Runway 18-36 appear more critical, notably with the older generation of RJs, such as the CRJ 200 aircraft. However, it is important to keep in mind that the large load factor reduction would only apply during the few afternoon hours of the summer months. A benefit-cost analysis should be conducted to determine if the level of passenger load reductions justify the extension of Runway 18-36.

Air Cargo Requirement

The analysis of air cargo aircraft runway length requirements involved interviews with FedEx representatives and review of the Boeing 727-200 runway length requirement. The analysis indicates that the current 8,000-foot runway length is sufficient for the forecasted all-cargo operations to be conducted at the airport. Even though, the runway length requirement for the Boeing 727-200 at MTOW exceeds the primary runway length, the integrated carrier did not express the need for further runway length. Indeed, FedEx usually flies its Boeing 727-200 from TLH with a payload not exceeding ¾ of the full aircraft payload capacity on stage lengths of 200 to 400 nautical miles. Should the aircraft be flown from TLH to FedEx's hub in Memphis, the Boeing 727-200 would require a fuel load for a stage length of 398 nautical miles. This air range is only 30 percent of the aircraft's air range at a MTOW of 184,800 pounds. Using Boeing's data, the Boeing 727-200, equipped with JT8D-9 engines, would require just under 6,100 feet of runway assuming a payload of 30,300 pounds (3/4 of maximum structural payload) and half the full fuel capacity assuming a temperature of 84 degrees F. Therefore, the runways at TLH answer the needs of the cargo carrier operator. In the future, should the demand for the shipment of cargo increase, Runway 9-27 would

still provide an adequate runway length to operate the Boeing 727 at full payload capacity on stage lengths not exceeding 1,000 nautical miles.

General Aviation Requirement

Runways 9-27 and 18-36 can safely accommodate the general aviation fleet mix anticipated at the airport. While Runway 18-36 does not provide sufficient runway length for the large general aviation jet, Runway 9-27, at 8,000 feet, is considered adequate. Should Runway 9-27 to be closed for maintenance, weight restrictions on the useful load of large jets operating from Runway 18-36 would apply.

Runway Length Requirement Summary

From a length perspective, the existing runway system at TLH is adequate. Given the primary runway length of 8,000 feet, most aircraft flying into and out of TLH can safely takeoff and land at the airport. However, should Runway 9-27 be closed for maintenance, operational restrictions would apply to air carriers, as well as large general aviation business jet operations. At 6,076 feet, Runway 18-36 would entail aircraft takeoff weight restrictions during certain weather conditions (e.g., when outside temperature exceeds 80 degrees F). Because of these weight restrictions, certain flights may be forced to limit the number of passengers and/or restrict the volume of luggage and cargo transported.

Further study shall be made to determine the extent of the necessary improvements to Runway 9-27. Notably, it would be vital to know for how long Runway 9-27 would be closed. The longer this runway is closed, the longer it will affect airline operations and, therefore, revenues. A cost benefit analysis should be conducted to determine if the closure of Runway 9-27 would generate airline and airport losses in excess of the costs associated with an alternate measure to maintain viable and sustainable air transport services at the airport.

Runway Width

FAA Advisory Circular 150/5300-13, Change 7, recommends that runways serving Design Group IV aircraft have a width of 150 feet. Both runways at TLH conform to those standards.

Runway Shoulder Width

Runway shoulders minimize aircraft blast erosion and support use by airport maintenance and emergency equipment. The runway shoulders can also support aircraft that veer off the runway. Shoulders are designed to improve safety, enhance drainage, and provide blast protection. Currently, Runway 9-27 has 25-foot shoulders, which meet Design Group IV criteria. Conversely, Runway 18-36 does not have any shoulders along the sides of the runway pavement. Because the bearing strength of the natural ground along the sides of Runway 18-36 would not support the occasional passage of an aircraft veering off the runway, shoulders should be designed and constructed symmetrically on each side of Runway 18-36 so that the overall width of the runway and its shoulders is not less than 200 feet, as required per FAA AC 150/5300-13, Change 7 for Design Group IV aircraft.

Runway Blast Pads

Blast pads are located at each end of a runway to eliminate the erosive effect of the high wind forces produced by airplanes at the beginning of their takeoff rolls. FAA Design Group IV blast pad dimensions are 200 feet by 200 feet in length and width. Runway 9-27 blast pads meet the FAA requirements. These blast pads should be maintained at their current width and length over the next 20 years. Runway 18-36 blast pads are 150 feet long and 150 wide. Because Runway 18-36 is also a C-IV runway, its blast pads need to be widened and extended by 50 feet in order to comply with FAA standard requirements.

Runway Pavement Strength

When the aircraft pavements for an airfield are designed, they are usually designed to provide sufficient strength to support a finite number of aircraft operations at a specific weight and over a finite period of time. This is more often the case with flexible aircraft pavements such as asphaltic concrete as opposed to rigid aircraft pavements such as concrete. Those aircraft that are lighter than the aircraft in which the pavement was designed for can operate continuously without affecting the design life of the pavement. However, larger aircraft operations may reduce the life of the pavement. The life of a pavement can be optimized by ensuring aircraft operations that may affect the life of a pavement are minimized and are evenly distributed throughout the pavement's life.

As identified in the Inventory chapter, Runways 9-27 and 18-36 are rated in good condition, with an existing gross weight bearing capacity of 115,000 pounds for single-wheel, 170,000 pounds for dual-wheel, and 330,000 pounds for dual tandem-wheel.

According to AC 150/5320-6D, "Airport Pavement Design and Evaluation," the FAA states that, "For design purposes the pavement should be designed for the maximum anticipated takeoff weight of the design aircraft." The pavement design aircraft for both Runways 9-27 and 18-36 is the Boeing 727-200 with a MTOW of 209,500 pounds. The Boeing 727 concentrates 95 percent of the aircraft's weight over the four wheels of its dual landing gear, resulting in a single wheel load of 49,750 pounds. TLH's load bearing capacities accommodate the existing and future critical aircraft and, therefore, are considered to be adequate. Assuming proper maintenance, the runway pavements are adequate, including infrequent use of Runway 9-27 by larger aircraft. Proper maintenance includes the necessary pavement rehabilitation or overlay projects.

The FAA indicates that the estimated life of runway pavement is 15 to 20 years. The airport regularly conducts pavement maintenance such as crack sealing when needed for each runway. Although this should be sufficient maintenance to uphold the integrity of the runways, rehabilitation will be necessary for Runways 9-27 and 18-36 within this planning period. The pavement condition index (PCI) of the runways is estimated about 60, which indicates that the pavement conditions will deteriorate rapidly over the next years. The PCI index is a numerical rating of the pavement condition that ranges from 0 to 100, with 0 being the worst possible condition and 100 being the best possible condition. However, the correlation between the pavement age and PCI values is not linear. The deterioration of the runway accelerates towards the end of the estimated life of runway pavement. Runway 9-27 would require rehabilitation during the short-term planning period to address the line of sight issues identified previously, as well as the expected rapid deterioration of the pavement. Runway 18-36 will approach its estimated life of 20 years in 2013. Therefore, this pavement will be due for a rehabilitation/reconstruction around that time.

Airfield Safety Criteria

In addition to issues associated with the physical characteristics of the runway are other safety-related criteria tied to the requirement for a Runway Safety Area, Runway Object Free Area, and Runway Protection Zone.

Runway Safety Area

The Runway Safety Area (RSA) is a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershot, overshoot, or excursion from the runway. The RSA needs to be: (1) cleared and graded with no potentially hazardous ruts, humps, depressions, or other surface variations; (2) drained by grading or storm sewers to prevent water accumulation; and (3) capable, under dry conditions of supporting the occasional passage of aircraft without causing structural damage to the aircraft. Finally, the RSA must be free of objects, except for those that need to be located in the safety area because of their function, such as navigational aids. According to C-IV ARC design criteria, the FAA requires a safety area width of 500 feet and a length of 1,000 feet beyond the runway end. Airport representatives have indicated that the ILS localizer antenna sited beyond the stop end of Runway 27 is located within the RSA (approximately 972 feet beyond Runway 27 end). Thus, it is recommended that the antenna be relocated 1,000 feet beyond Runway 27 end when Runway 9-27 is reconstructed. Runway 9, 18 and 36 RSAs fully comply with these requirements.

Runway Object Free Area

The Runway Object Free Area (ROFA) is centered on the runway centerline. Standards for the ROFA require clearing the area of all ground objects protruding above the RSA edge elevation. Except where precluded by other clearing standards, it is acceptable to place objects that need to be located in the ROFA for air navigation or aircraft ground maneuvering purposes and to taxi and hold aircraft in the ROFA. Objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the ROFA. This includes parked airplanes and agricultural operations. For Design Group IV runways, the FAA requires an OFA width of 800 feet and a length of 1,000 feet beyond the runway ends. As with the RSA, the areas beyond the four runway ends meet the required OFA standards.

Runway Protection Zone

A Runway Protection Zone (RPZ), or clear zone as it was formerly named, is a two-dimensional trapezoidal shaped area beginning 200 feet from the usable pavement end of a runway. The primary function of this area is to preserve and enhance the protection of people and property on the ground. The size or dimension of the runway protection zone is dictated by guidelines set forth in FAA AC 150/5300-13, Change 7. Airports are required to maintain control of each runway's RPZ. Such control includes keeping the area clear of incompatible objects and activities. While not required, this control is much easier to achieve and maintain through the acquisition of sufficient property interests in the RPZs.

The size of the RPZs are a function of the Approach Category and Design Group as well as the approach visibility minimums associated with the most critical approach to the runway. As a result, the criteria for the RPZ may vary for each end.

Runways 27 and 36 offer precision approach capability with lower than ¾-statute mile visibility minimums. As such, the RPZs for the runway ends have an inner width of 1,000 feet, an outer width of 1,750 feet, and extend 2,500 feet. These RPZs, which begin 200 feet from the runway ends, encompass approximately 78.9 acres. The future dimensions of these RPZs will remain the same during the planning period.

Runways 9 and 18 have non-precision approaches capability with not lower than 1-statute mile visibility minimums. The existing RPZs, beginning 200 feet from the runway ends, have an inner width of 500 feet, an outer width of 1,010 feet, and extend 1,700 feet. These RPZs encompasses approximately 29.5 acres. The four existing RPZs, located off the runway ends, are within the airport property boundaries.

In the future, as a result of enhanced GPS capabilities, Runway 18 is more likely to offer precision approach capability with not lower than ¾ statute approach visibility minimums. Runway 9 would also offer precision approach capability but the visibility minimum could be that of a CAT I ILS approach (lower than ¾ but greater than ½ statue mile). Therefore, the required RPZ dimensions for Runway 18 would increase to an inner width of 1,000 feet, an outer width of 1,510 feet, at an overall length of 1,700 feet. The RPZ dimensions for Runway 9 would be the same as the existing Runway 27's RPZ dimensions at 1,000 feet for the inner width, 1,750 feet for the outer width, and 2,500 feet for the length.

Obstacle Free Zone

The Obstacle Free Zone (OFZ) is a three-dimensional volume of airspace that supports the transition of ground to airborne operations (or vice versa). The OFZ clearing standards prohibit taxiing, parked airplanes, and other objects, except frangible NAVAIDs or fixed-function objects, from penetrating this zone. The OFZ consists of a volume of airspace centered on the runway. On precision instrument runways there is an additional requirement of inner-approach OFZs and inner-transitional OFZs.

Runway OFZ

The runway OFZ extends 200 feet beyond each end of the runway and is 400 feet wide for runways serving large airplanes, and 250 feet wide for runways serving small airplanes with approach speeds of 50 knots or more. Existing OFZs at TLH are 400 feet wide on both runways and remain free of obstacles and object penetrations.

Inner-Approach OFZ

The inner-approach OFZ only applies to runways with approach lighting systems. It begins 200 feet from the runway threshold, at the same elevation as the runway threshold, and extends 200 feet beyond the last unit in the approach lighting system. It is the same width as the Runway OFZ and rises at a slope of 40:1 away from the runway end. Both Runways 27 and 36 meet these requirements. Should an approach lighting system be installed off Runway 9 and/or Runway 18, the required inner approach OFZ associated with this equipment would need to be preserved and maintained free of obstacles.

Inner-Transitional OFZ

Inner-Transitional OFZ applies only to precision runways and slopes out from the edges of the Runway OFZ at a 3:1 ratio to a height of 150 feet above the airport elevation. Inner-Transitional OFZs of Runway 27 and 36 meet these requirements. Inner-Transitional OFZs should be preserved for the precision approaches expected to Runways 9 and 18.

TAXIWAY SYSTEM REQUIREMENTS

Taxiways and taxilanes are defined paved areas established to move aircraft from one part of the airport to another. This section evaluates the existing taxiway system at TLH and summarizes the improvements required. FAA standards were compared to the current airfield geometry in order to identify existing deficiencies. Input was also obtained from Air Traffic Control Tower (ATCT) personnel to determine future needs and necessary improvements.

As indicated in the Airfield Demand/Capacity chapter, consideration for additional airfield capacity needs to be in place when the operational demand exceeds 60 percent of the Annual Service Volume. As indicated previously, operational capacity should exceed that threshold in the next few years, as the annual number of operations exceeds 130,000. Improvements to the current taxiway system would provide a measure of increased capacity. These improvements would delay the need for any additional runway capacity by allowing aircraft to move on and off the active runway system in a more efficient and safer fashion. Such improvements are described in this section.

An efficient taxiway system is designed to provide movement to and from the runways and between aviation-related facilities, without an undue delay. This taxiway system includes entrance and exit taxiways, taxiway run-up areas, by-pass capability, apron taxiways, and taxilanes. Taxiways are one of the most important factors in determining and maintaining the operational safety of an airport. As airport activity increases (take-offs, landings, and touch and gos), easier and direct access to/from the runways is required to maintain safety. Some of the basic design principles for a taxiway system as delineated in FAA guidance include the following:

- Provide each active runway with a full parallel taxiway.
- Construct as many by-pass, multiple access, or connector taxiways as possible to each runway and runway end.
- Provide taxiway run-up areas for each runway end.
- Build all taxiway routes as direct as possible.
- Provide adequate curve and fillet radii.
- Avoid developing areas that might create ground traffic congestion.

Design Group IV taxiway standards are required in those areas of the airfield accommodating these aircraft. At TLH, this includes nearly every taxiway and taxilane, except for those serving only the facilities used by the smaller general aviation aircraft. FAA standards requirements for taxiway width and separation distances for Design Group IV are listed in **Table 5-8** thereafter. The following sections will review each individual taxiway and determine the necessary improvement to comply with the appropriate standards.

Table 5-8
TAXIWAY STANDARDS FOR DESIGN GROUP IV AIRCRAFT

Item	Design Group IV
Taxiway Width	75 feet
Taxiway Edge Safety Margin	15 feet
Taxiway Shoulder Width	25 feet
Taxiway Safety Area Width	171 feet
Taxiway Object Free Area Width	259 feet
Radius of Taxiway Turn	150 feet
Length of Lead-in to Fillet	250 feet
Fillet Radius for Tracking Centerline	85 feet
Runway Centerline to Taxiway Centerline	400 feet
Taxiway Centerline to Taxiway Centerline	215 feet
Taxiway Centerline to Fixed or Movable Object	112.5 feet

Source: FAA AC 150/5300-13 Change 7.

Those sections of the airfield specifically planned and designed to accommodate general aviation aircraft within Design Groups I and II, only require a taxiway width of 25 and 35 feet, respectively. In the future, a significant portion of the general aviation development will occur on the north side of the airport. Once the FedEx facilities are relocated east of the existing cargo apron, the airfield area running along and east of Taxiway A will accommodate only general aviation uses. As such, all taxiways, with the exception of the taxiways required for Runway 18-36, should be planned and designed based on FAA standards for Design Groups I and II. Design Group I taxiways require a 49 foot wide Taxiway Safety Area (TSA) and an 89 foot wide Taxiway Object Free Area (TOFA). These requirements are augmented for Design Group II, where the TSA is required to be 79 feet wide and the TOFA 115 feet wide. These include most of the taxiways leading to T-hangars, port-a-ports, and other tenants dedicated to provide services to small aircraft only. On the other hand, it is crucial that Taxiway A be maintained to its current width to allow for the safe taxi of ADG IV and smaller aircraft.

Parallel Taxiways

Full-length parallel taxiways are critical components of an airport system. They are the primary routes for taxiing airplanes between runways and aircraft parking areas of an airfield. Full-length parallel taxiways allow for the queuing of aircraft for departure and provide the opportunity for more runway exits. All air carrier runways require full-length parallel taxiways. In order to comply with FAA standards, the alignments of the parallel taxiways at TLH should be positioned at a minimum separation distance of 400 feet from the runway centerline. Presently, TLH has two full-length parallel taxiways, Taxiway A and Taxiway P. Runways with adequate and properly spaced runway exits allow capacity to be optimized by minimizing the runway occupancy times of arriving aircraft.

Taxiway A

The 75-foot wide Taxiway A is a full-length parallel taxiway located on the east side of Runway 18-36. The north end of Taxiway A connects to Runway 18 end, while the south end connects to the Runway 36 end, as well as to Taxiways S and Z. The Taxiway A centerline is located 400 feet from the centerline of Runway 18-36, which meets ADG IV standards. This taxiway pavement is in good

condition for its age; however, it is recommended that the pavement be overlaid some time during the early part of the long-term planning period. Should Runway 18-36 be extended, Taxiway A would need to be lengthened to maintain the full-length parallel taxiway.

In addition, FAA standards for ADG IV require a taxiway shoulder pavement of 25 feet. Paved shoulders essentially provide erosion protection from jet blast and are also required to support the occasional passage of aircraft veering from the taxiway. The outer engine span of the Boeing 757, the critical aircraft at TLH, is 51.8 feet. Therefore, the outboard engines of the Boeing 757 are approximately 11.6 feet inside the edge of Taxiway A pavement. As such, the impact of taxi related jet blast should not pose a significant issue given the number of operations of the Boeing 757. The majority of aircraft expected to taxi on Taxiway A have an outer engine span off less than 25 feet. If larger aircraft were to use Taxiway A, such as four-engine aircraft, it would be recommended that the outer engines be shut down during taxi movement on Taxiway A. Finally, the veering of aircraft beyond the edge is quite unlikely. On Taxiway A, this would mean that a Boeing 767, the most critical ADG IV aircraft with regard to main gear wheel span that could be expected at the airport on occasion, would have to veer off more than 19 feet from the taxiway centerline before reaching the edge. Results of past taxiway deviation studies indicate that the probability of deviating more than 15 feet is extremely low. Further, the proposed addition of pavement would necessitate the re-design of the taxiway and potential cessation of activity during construction. Therefore, the widening of Taxiway A along both sides is not deemed necessary.

Taxiway P

Taxiway P is a full-length parallel taxiway located north of the alignment of Runway 9-27. This taxiway runs from the approach end of Runway 27 to Taxiway M, which connects to Runway 9 end. Taxiway P is designed with a 600-foot taxiway to runway centerline separation, surpassing the Design Group IV separation criteria. It is deemed desirable to maintain the greater runway to taxiway separation to allow for the simultaneous taxi movements of ADG V aircraft while an ADG IV were operating on the runway or vice-versa. This does occur on occasion due to the use of TLH by various charter flights. Additionally, the 600-foot separation would allow the addition of high-speed exits to lower runway occupancy times. At 75 feet in width, Taxiway P meets ADG IV requirements. This taxiway is in good condition; however, a rehabilitation of this taxiway should be considered during the short-term planning period. As with Taxiway A, Taxiway P does not have any shoulders. It is not deemed necessary to add pavement along the side of this taxiway for the reasons listed under the Taxiway A section.

Runway Exits

Entrance/exit taxiways, also referred to as runway exits or connector taxiways, link runways to their parallel taxiways. These taxiways provide paths for aircraft to enter the runway for departure or leave the runway after landing. The type of runway exit and the location and number of exits depends on many factors including the type of aircraft using the runway. The time it takes an aircraft to decelerate to a slow enough speed to exit the runway varies depending on the size and performance characteristics of the individual aircraft. If exits are not placed at the points where the majority of aircraft using the runway reach their exit speed, the aircraft must continue down the runway at a relatively low rate of speed until another exit is available.

Taxiway B

Taxiway B meets Runway 18-36 at 90-degrees and connects to the parallel Taxiway A. At 60 feet wide, Taxiway B needs to be widened to a width of 75 feet in order to comply with the FAA standard requirements for Design Group IV. The shoulders along this taxiway are non-existent or in very poor condition. Taxiway B pavement improvements should be considered during the short term planning period. This taxiway, located approximately at 4,455 feet from the Runway 36 end, is more likely to be used by the airlines landing on Runway 36.

Taxiways C, D, E, and F

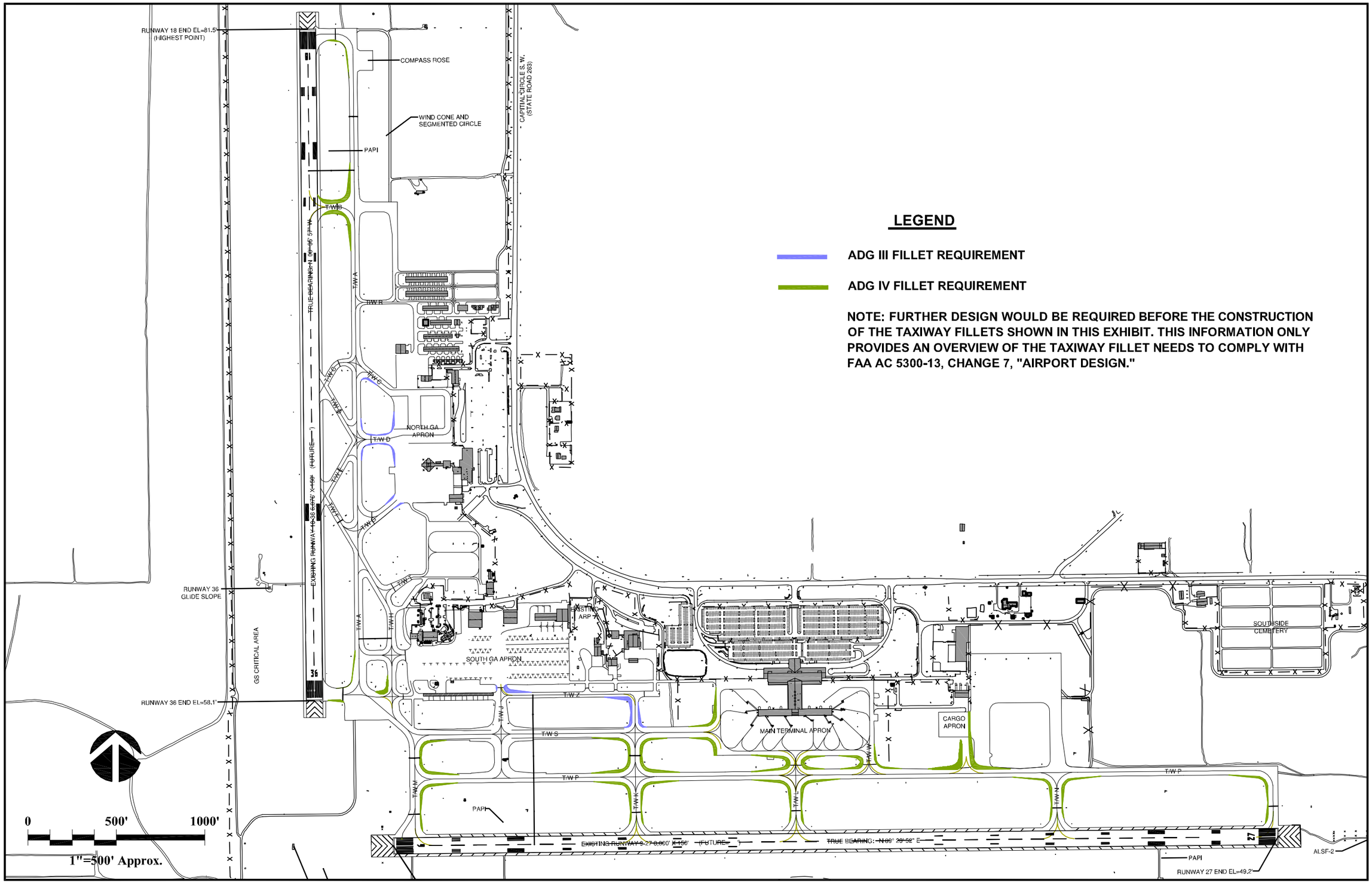
Taxiways C, D, E, and F are acute-angle exit taxiways, commonly referred to as "high speed exit" taxiways. These taxiways form a 30-degree angle with Runway 18-36 and are 60 feet wide. These taxiways allow aircraft to exit the runway without reducing taxiing speed to the amount necessary to complete a turn onto a standard right-angled exit taxiway. These taxiways provide sufficient access to the runway and the airfield, and are well designed to accommodate the general aviation aircraft fleet mix. These taxiways would need to be widened to a width of 75 feet in order to comply with FAA standard requirement for ADG IV. However, because Runway 18 is rarely used by the airlines and Taxiways C and E are too close to the Runway 36 end to be used by the air carriers, these taxiway improvements should only be considered during the long-term planning period. Taxiway C also needs to be straightened in order to serve as a true high speed exit.

Taxiways K, L, M, and N

As mentioned in the inventory section, the four exit taxiways for Runway 9-27 (K, L, M, and N) all intersect the runway at 90-degrees and are 90 feet in width. In 1992, these taxiways received a 2.5-inch asphalt overlay and based upon field inspection are generally in good condition. While the FAA only requires 75-foot wide taxiways for Design Group IV aircraft, this extra pavement on the sides of the taxiway should be maintained to provide some erosion protection from jet blast and to maintain the additional safety margin in the case that an aircraft would veer off from the centerline.

In general, the intersection of two taxiways at the airport are achieved by a simple arc. However, to meet FAA taxiway design requirement, fillets or tapers are necessary along the borders of the arcs. Along Taxiway P, several pavement areas would need to be widened to fully comply with Design Group IV requirements regarding fillet design. As illustrated in **Exhibit 5-2**, to provide a 15-foot taxiway edge safety margin between the aircraft outer wheels and the edge of the pavement additional fillet pavement would be required at the intersections as shown. It is recommended that the fillets at the intersections of Taxiway S and Taxiway M, as well as the fillets on the east side of Taxiway K, and the west side of Taxiway N be given higher priority. Indeed, these taxiway fillets are located along the preferred taxi routes of the larger aircraft.

TAXIWAY FILLET REQUIREMENTS



LEGEND

ADG III FILLET REQUIREMENT

ADG IV FILLET REQUIREMENT

NOTE: FURTHER DESIGN WOULD BE REQUIRED BEFORE THE CONSTRUCTION OF THE TAXIWAY FILLETS SHOWN IN THIS EXHIBIT. THIS INFORMATION ONLY PROVIDES AN OVERVIEW OF THE TAXIWAY FILLET NEEDS TO COMPLY WITH FAA AC 5300-13, CHANGE 7, "AIRPORT DESIGN."

Other Taxiways

Taxiway G

Taxiway G connects Taxiway A and the southwest corner of the South GA apron. This 400-foot long taxiway is 75 feet wide and is considered in good condition. A major rehabilitation will not be needed until the latter portion of the planning period.

Taxiway H

The 85-foot wide Taxiway H connects Taxiway A to the South GA apron. Taxiway H is perpendicular to Taxiway A and extends over a distance of approximately 400 feet. This taxiway is in good condition and will not need any rehabilitation until the end of the planning period.

Taxiway J

Taxiway J is 75 feet wide and connects the South GA apron to Taxiways S and P. Taxiway J was reconstructed in compliance with FAA standards in 2002. Other than regular maintenance, no major improvements to this taxiway will be needed during the planning period.

Taxiway R

Taxiway R provides access off of Taxiway A to the northern cluster of hangars. This 35-foot wide taxiway extends over a distance of approximately 500 feet and then becomes a 20-foot wide taxilane. Because this taxiway is in good condition, a major rehabilitation will not be needed until the latter portion of the planning period.

Taxiway S

Taxiway S parallels Taxiway P and extends from Taxiway M to the passenger terminal apron. This taxiway is located north of the alignment of Taxiway P with a separation distance of 400 feet. This taxiway is 75 feet wide and has a shoulder width of 25 feet, and is in good condition. While this taxiway meets FAA standard requirement for Design Group IV, the pavement will need to be rehabilitated or overlaid some time during the long-term planning period.

Taxiway T

Taxiway T is 45 feet wide and currently ends at the site of the former south t-hangar area. This taxiway is in good condition. It will eventually provide access to a new apron in front of the Capital Avionics hangar. The taxilane around the former t-hangar, providing access to Capital Avionics, is 15 feet wide and in very poor condition. These taxilanes will be removed when the new general aviation apron is constructed. Any new apron taxilanes should be planned and designed to accommodate Design Group II aircraft.

Taxiway W

This taxiway connects the apron in front of the dedicated air cargo building with Taxiway P. At 65 feet wide, this taxiway does not meet the airfield's ADG IV standard. To meet the requirement of the McDonnell Douglas MD-11, which is considered the ultimate critical aircraft (cargo operations) for this portion of the airport, Taxiway W needs to be widened. If the passenger terminal apron, as well as the taxilane, were extended to the eastern edge of the existing cargo apron, the taxiway throat width would need to be, at a minimum, 130 feet wide to accommodate the 180-degree turn of a MD-11 aircraft.

Taxiway Z

The 50-foot wide Taxiway Z parallels Taxiway S from Taxiway J to Taxiway K and serves as one of the main point of access for aircraft taxing towards the South GA apron, Sheriff's ramp, or Lively Technical Center. This taxiway is restricted to Design Group II aircraft. While this portion of Taxiway Z is in good condition, future improvements will depend on the ultimate configuration in this area. The portion of Taxiway Z between Taxiway F on the west and Taxiway J on the east has been closed and is used as a parking/storage area for helicopters. Should the helicopter parking spaces be relocated and the demand for ramp space increased, it is recommended that this portion of the taxiway be rehabilitated as a ramp that would connect to the existing South GA apron, thus serving as an apron edge taxilane.

New Taxiway and Taxilanes

The current taxiway system does provide sufficient access to all areas of the airfield; however, some improvements should be considered during the long-term planning period in order to enhance the airfield's capacity. A review of the existing runway/taxiway exits has been conducted to identify any potential deficiencies with regard to their location.

Taxiways K, L, M, N, and P are the runway exits serving Runway 9-27. The exit distances from the Runway 27 end are as follows: 1) Taxiway N is 1,950 feet, 2) Taxiway L is 4,300 feet, 3) Taxiway K is 5,730 feet, and 4) Taxiway M is 7,795 feet from the Runway 27 threshold. As mentioned in the Airfield Demand/Capacity chapter, with a fleet mix index of 46, exit taxiways are optimally located when between 3,000 and 5,500 feet from the runway end.

According to these figures, only Taxiway L is suitably located when considering air carrier landings on Runway 27. According to the FAA AC 5300-13, Change 7, an airport with peak hour traffic of less than 30 operations will be well served by taxiways with a 90-degree turn, as long as the taxiways are properly located. The peak hour operations of TLH are currently 59 and projected to increase to 81 in 2023. Therefore, future improvements should consider the construction of high-speed exit taxiways located such that aircraft would be able to clear the runway as soon as their speed allows.

Taxiways A, B, C, D, E, F, and M are the runway exits serving Runway 18-36. Runway 36 is the preferred runway for commercial aircraft operations 30 percent of the time. The distances from this end were determined to be as follows: 1) Taxiway E at 1,750 feet, 2) Taxiway C at 2,700 feet, 3) Taxiway B at 4,350 feet, and 4) Taxiway A at 6,001 feet. As mentioned earlier, the optimum taxiway location at TLH is between 3,000 and 5,500 feet from the runway threshold. Thus, only the exit at Taxiway B is within the optimum range and Taxiway C lies at 300 feet before the maximum optimized distance. Because Runway 18-36 is not

the primary runway for commercial operations, no additional exit taxiways are needed over the planning period.

Some new taxiways will be required to eventually access areas of future aviation related development. This will include various taxilanes to provide access to areas of the airfield developed during the planning period, such as the additional general aviation facilities planned for development to the east of Runway 18-36. The area south of Runway 9-27 shall also be preserved for the construction of new parallel taxiway in the event new aviation related developments emerge south of the airfield. The final configuration will be dependent upon the ultimate hangar and ramp configuration of these areas. While the primary taxiways are required to be 75 feet wide, future taxiways and taxilanes should be constructed to the width necessary for the type of operation it is intended to serve. In many of the general aviation portions of the airfield, taxiway widths will only need to be 35 feet to accommodate ADG II aircraft. These taxiways should also be constructed to the same pavement strengths as the runways they serve. The layouts of any additional taxiways and taxilanes will be depicted on the final Airport Layout Plan.

Additionally, access to the passenger terminal apron could be enhanced with the addition of a new taxiway connector at the southwest corner of the existing apron. This connector would provide easy access to Gates A-1, A-3, A-5, and A-6. While there is no pressing need for this connector, the addition of new gates along the passenger terminal building, will ultimately trigger the need for this new taxiway connector.

Finally, the connection between the taxiway systems north of Runway 9-27 and east of Runway 18-36 needs to be enhanced. Currently, the two systems are linked by one unique section of taxiway located southwest of the South GA apron. As the airport traffic increases, this section of taxiway is more likely to be congested. Route alternatives will be studied in the next chapter, Airport Alternatives.

Run-up/Holding Bays and By-pass Taxiways

Run-up/holding bays provide space for aircraft conducting pre-takeoff engine checks or awaiting air traffic control (ATC) clearance onto a runway. Holding bays also provide a place for aircraft to wait their turn for entrance onto the runway when other traffic is using the runway, thus providing operational flexibility to ATC personnel to sequence aircraft in a departing queue. By-pass taxiways can be used for the same purpose. Like the holding bays, they are located at or near the runway end, but they are usually parallel to the main entrance taxiway serving the runway.

According to FAA AC 150/5300-13, Change 7, holding bays should be provided when runway operations reach a level of 30 operations per hour. Currently, there are no holding bays at TLH and the average hourly operation is 39. Projected operations will exceed 50 operations per hour during peak period operations in the year 2023; therefore requiring holding bays or bypass taxiways. The provision of holding bays or bypass taxiways at TLH would slightly increase the airfield capacity and decrease any delays resulting from aircraft queuing for departure. By-pass taxiways should be planned and designed off Taxiway P to serve both ends of Runway 9-27. The construction of by-pass taxiways off Taxiway A to serve Runway 18-36 is more questionable. Because, the use of bypass taxiways at the ends of Runway 36 or 18 makes the takeoff runway length available shorter, run-up areas are recommended off Taxiway A. They need to be constructed to a size capable of accommodating one Design Group II aircraft or multiple Design Group I aircraft, as such areas would be primarily used by smaller aircraft.

AIRFIELD FACILITIES

The following sections address other airfield facility requirements necessary to support the various types and level of aircraft operations expected over the course of the 20-year planning period.

Navigational Aids and Instrument Approach Procedures

The newer GPS technologies described in **Appendix C** may make it possible to establish precision approaches to Runway 9 and Runway 18. As such, the installation of new ILS systems to these runway ends is quite unlikely due to the cost differential. According to the FAA, all of the current ILS facilities supporting Category II/III operations will be retained on existing runways and new systems will be added where needed to support Category II/III operations to new runways at delay-constrained airports. New ILS installations will continue until the GPS/LAAS capability can support Category II/III operations at these airports. With regard to Category I ILS, the FAA expects to reduce the number of these systems, and remove excess ILS equipment at the end of their service life, retain the approach lighting systems, and replace the ILS with GPS-based approaches augmented either by WAAS or LAAS. Far from being a delay-constrained airport and considering the FAA's goal of reducing Category I ILS systems, TLH will most likely be unable to obtain FAA funding for the installation of an ILS system at the end of Runway 9 or 18. Nonetheless, the airport should protect its airspace to these runways in order to preserve the ability for enhanced instrument approach capability.

While there are varying estimates of the time scale for the procedure development schedule of TLH RNAV approach procedures, these are more likely to be published during the first portion of the planning period. According to the FAA Aviation Standard System Division, RNAV approach procedures at TLH may possibly be published by the year 2006. The production schedule for the RNAV approach procedures is prioritized based upon risk assessment, Part 139 certification, and runway length. Whatever the timeframe is for these procedures, it is fully expected for TLH to have precision approach capabilities to each runway by the end of the planning period. Therefore, the ends of both Runway 9 and 18 ends need to be protected to avoid encroachment of the 50:1 slopes associated with precision instrument approaches. The airport also needs to consider the space required in order to obtain the proper clearance and safety criteria associated with such an approach. Additionally, the airport needs to program an Environmental Assessment for any precision approach planned, as well as any land acquisition that may be necessary for its implementation.

Airfield Lighting

Airfield lighting requirements are necessary at all airports intended to be utilized for nighttime operations as well as for operations during less than visual meteorological conditions. The following sections address the airfield lighting requirements at TLH during the planning period.

Identification Lighting

As mentioned in the Inventory chapter, an airport beacon is located southeast of Taxiway T near the site of the former ATCT and the South GA apron. This beacon is reported to be in good condition. The FAA estimates a 15 to 20 year life for airport beacons; thus, this beacon will be due for rehabilitation within this planning period. The airport rotating beacon shall conform to FAA AC 150/5345-12, "Specification for Airport and Heliport Beacons."

Runway lighting

Both of the active runways at TLH have High Intensity Runway Lights (HIRL) systems for night operations and restricted visibility. Runway 27 is also equipped with centerline and touchdown lights to facilitate landing under adverse conditions. The Runway 9-27 light system was replaced in 2003. Outside of routine maintenance, these fixtures are not anticipated to need any improvements during the planning period. The Runway 18-36 HIRL light system will be replaced in 2004 when shoulders are constructed. No further improvement to the Runway 18-36 light system will be required during the planning period.

Approach Light Systems

Currently, Runway 27 is equipped with a high-intensity approach light system with sequenced flashing lights (ALSF-2) and Runway 36 has a medium intensity approach light system with runway alignment indicator lights (MALSR). Both systems are maintained by the FAA and are considered to be in excellent condition. In addition, the Runway 9 and 18 ends are equipped with Runway End Identifier Lights (REILS), which consist of a pair of synchronized flashing lights placed on each side of the runway threshold. These approach light systems are considered appropriate and meet the needs of the airport over the planning period.

Wind data analysis reveals that Runways 9 and 18 also offer good wind coverage. In the future, should demand warrant lower visibility minimum, a MALSR system could be installed to one or both ends as part of the future GPS precision approach. Pilots would use this MALSR system during instrument landing approach to align the aircraft with the centerline of the runway. This approach light system consists of medium intensity steady burning white lights and sequenced flashing lights. This system would provide visibility minimums as low as ½ mile and further enhance the operational safety of the airport.

Taxiway and Apron Lighting

All of the major taxiways and associated connectors at TLH are equipped with Medium Intensity Taxiway Lights (MITLs). These lights emit blue light and are used to outline the edges of the taxiway system. MITLs are recommended in conjunction with any runway having medium or high intensity lights. Taxiway lights can also be pilot-controlled and wired to the same remote system as the runway lights. As mentioned in the Inventory chapter, Taxiway P does not have edge lights; instead, it has been equipped with green centerline lights. Therefore, it is recommended that Taxiway P be equipped with taxiway edge lights. Due to the conditions of the other systems, no other improvements are considered necessary.

The commercial terminal ramp and air cargo apron are fully equipped with blue edge lights. These lights are also considered to be in good condition. In the future, it is recommended that the new cargo apron be also equipped with blue edge lights. These lights would enhance operations by the cargo aircraft, such as the Boeing 727, when operating at night. These lights should also have the pilot-controlled capability for when the control tower is closed.

Finally, it is recommended that any proposed development at the airport for taxiways and aprons include the installation of the appropriate lighting system in accordance with FAA AC 150/5300, Change 7, and AC 150/5340-24, “Runway and Taxiway Edge Lighting System.”

Pavement Marking

Airport pavement markings provide information that is useful to a pilot during takeoff, landing, and taxiing. Airport pavement markings are a critical component of airfield visual aids, and it is especially important that they be properly maintained and in conformity with FAA standards. Uniformity in airport marking from one airport to another enhances safety and improves efficiency. These markings should meet FAA standard as defined under AC 150/5340-1H, "Standard for Airport Markings."

Both Runways 9-27 and 18-36 have the proper marking for a precision instrument runway. Likewise these markings comply the FAA standards and are consistent with the International Civil Aviation Organization (ICAO) standards contained in Appendix 14. Thus, no upgrade is deemed necessary.

Taxiway and apron areas also require marking to assure that aircraft remain on the pavement. All taxiways at TLH have yellow centerline stripes and runway holding position marking whenever they intersect a runway. Because both runways are identified with an instrument approach category and ARC of C-IV, the holding position markings are located 250 feet from the runway centerline as required per FAA standards. Aircraft parking position clearances are also identified on the North and South GA aprons. Several tie-downs markings are present on these aprons to help pilots identify parking spaces and still maintain the appropriate object free areas and wing-tip clearances. Pavement marking on the North GA apron would require new painting. Pavement markings on the South GA apron are considered to be in good condition.

The terminal apron markings consist of several lead-in lines indicating aircraft parking positions, taxiway centerline, and vehicle roadway marking. Should the airport acquire new passenger boarding bridges (PBBs), new lead-in lines would need to be painted. In addition, relocation of the existing lead-in-lines may be required in the future depending on the ultimate apron terminal layout. The vehicle roadway marking that encompasses the aircraft parking positions around the terminal building is used to define a pathway for vehicle operations on the terminal apron. This marking consists of a white solid line to delineate each edge of the roadway. These markings are considered to be in good condition.

While all of the markings at TLH are considered to be appropriate and in good condition, periodic re-marking will be necessary. In addition, the runway surfaces may need to have the accumulated rubber in the touchdown zones removed on occasion during the planning period.

Airfield Signage

Standard airport signs provide taxiway and runway directional and identification guidance for aircraft movement on the ground. All of the required lighted airfield signage is installed at TLH. As additional facilities are constructed on the airport, new lighted airfield signage will be imperative to ensure the efficient and safe movement of aircraft to and from the airfield environment. Installation of new airfield signage will require compliance with FAA AC 150/5340-18, "Standards for Airport Sign Systems."

Aircraft Rescue and Fire Fighting Facilities

The existing Aircraft Rescue and Fire Fighting (ARFF) facility is centrally located in the vicinity of the South GA apron, adjacent to the Flightline terminal. The facility is a 4-bay building of which 4,400 square feet is used for vehicle storage. ARFF services are dictated by the type and level of operations conducted at the airport. ARFF indexes are determined by aircraft length and the number of annual operations under Federal Aviation Regulation (FAR) Part 139, "Certification and Operations: Land Airports Serving Certain Air

Carriers." The minimum amount of fire extinguishing agent required for each certificated airport together with the minimum number of aircraft rescue and fire fighting vehicles required to transport the agent is based upon the longest commercial passenger aircraft having an average of five or more daily operations.

Presently, the longest aircraft conducting an average of five or more daily operations at the airport is the McDonald Douglas MD-80, with a length of 148 feet. Therefore, the airport is currently categorized as an ARFF Index C airport and based on the forecast fleet mix, it is expected that the airport will remain Index C throughout the planning period. Assuming more than five operations a day by Boeing 757-200 in the future would not require a change of ARFF index. Indeed, this aircraft is only eight feet longer than the MD-80.

Based on an ARFF Index C, the airport requires either of the following:

- Three vehicles: one vehicle carrying 500 pounds of sodium-based dry chemical or halon 1211; or 450 pounds of potassium-based dry chemical and water with a commensurate quantity of Aqueous Film Forming Foam (AFFF) to total 100 gallons, for simultaneous dry chemical and AFFF application; and two vehicles carrying an amount of water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by all three vehicles is at least 3,000 gallons.

- Two vehicles: 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 AFFF for foam production; and one vehicle carrying water and the commensurate quantity of AFFF so that the total quantity of water for foam production carried by both vehicles is at least 3,000 gallons.

- In addition, each ARFF truck used to comply with Index C requirement with a capacity of at least 500 gallons but less than 2,000 gallons shall be equipped with a turret. Vehicle turret discharge rate should be at least 500 gallons per minute.

As mentioned in the Inventory chapter, the Airport's ARFF department presently has four vehicles with a total capacity of 8,900 gallons water, 1,230 gallons AFFF, and 1,500 pounds of dry chemical. As such the airport meets FAA requirement with regard to quantity of fire extinguishing agents and the number of ARFF vehicle required. Given the age of the ARFF vehicle fleet, it is recommended that the vehicles be replaced during the planning period.

Minimum standards for the response time of an ARFF facility are outlined in FAA AC 150/5210-15, "Airport Rescue Firefighting Station Building Design." These include, but are not limited to:

- Immediate, straight, and safe access towards the airside.
- Unimpeded access routes with a minimum of turns to runways, taxiways, and aircraft parking areas.
- Direct access to the terminal aprons without crossing active runways, taxiways, or difficult terrain.
- Noninterference with the ATCT line of sight.
- Maximum surveillance of the air operations area.
- Shortest response times to the most probable aircraft accident areas.
- Compliance with building restriction lines (BRL).
- Future additions or expansion of the station without:
    - limiting or reducing airport surveillance

  - blocking fire traffic lanes
  - intruding on adjacent roads, buildings, aprons, runway or taxiway clearances, and air traffic control tower's line of sight
- Airport expansion, such as new runways or extensions that will not jeopardize its emergency service areas by creating emergency response runs of excessive length.
- Minimum obstructions or interference from existing facilities or uses, such as:
  - access roads
  - fueling areas
  - aircraft taxiing operations or parking areas

Based on the existing location of TLH's ARFF facility and the expected growth at TLH, it is believed that the current location is adequate to maintain the response criteria mentioned above, through the planning period.

Air Traffic Control

The existing ATCT is approximately 100 feet in height. According to air traffic controllers, the tower cab provides adequate visibility to the airfield. The area behind the Flightline buildings and facing Capital Avionics is the only area where the controllers have limited visibility. Nevertheless, these visibility constraints are not considered critical. Most sections of the runways, taxiways, and approaches remain clearly visible to the air traffic controllers on duty. Concerning the area behind the Flightline building, only general aviation aircraft are anticipated to operate within this area. It is the responsibility of the pilot in command to ensure clearance from buildings and other aircraft in that vicinity. The ATCT is properly dimensioned for the existing and projected activity for TLH. Currently, the FAA has assigned nineteen (19) controllers to the TLH ATCT and from time to time additional air traffic controllers are present, notably for training purposes. As such, the parking lot adjacent to the tower with approximately 50 parking spaces, meets the existing and anticipated demand.

According to the tower personnel, intermittent communication problems with aircraft on approach to Runway 27 or taxiing east of Taxiway W have been identified. These communication interferences are due to the location of the Remote Transmitter/Receiver (RTR) which is unsuitably located in a wooded area east of the Runway 18 end, in a wooded area. Relocation of the RTR is recommended in order to extend the communication range of the air traffic control facility.

Helipads

According to airport data, approximately ten helicopters are based on the airfield. Military helicopter fueling, law enforcement, aerial, emergency medical services, and civilian helicopter operations are routine at TLH and further operations can be expected in the future. Dedicated helicopter parking positions need to be located on a portion of the general aviation apron in order to efficiently provide appropriate clearances and to minimize debris and dust concerns to other aircraft. As stated in AC 150/5390-2A, "Heliport Design," the least dimension of an helicopter parking pad should be a minimum of 1.5 times the undercarriage length or width of the design helicopter and there should be at least 1/3 rotor, but not less than ten feet, of clearance between helicopters or to another object.

Various types of helicopters fly into and out of TLH. The State of Florida Division of Forestry and the Leon County Sheriff's Aviation Unit, for example, fly Bell 206B, Bell 209, (also called "FireSnake" helicopters, as they are demilitarized AH-1P "Cobra" attack helicopters), UH-1H (Huey), and OH58A+ (Kiowa) helicopters. In the future, larger rotary-wing aircraft, such as the Augusta/Bell AB139, which has been designed to answer

law enforcement requirements, could be expected. However, larger twin civil or military helicopters such as the Boeing Chinook or Bell/Boeing V-22 Osprey, are not expected to use the airfield on a regular basis. As such, the largest helipad spaces should be designed to accommodate helicopters with a MTOW of 15,000 pounds, a rotor diameter of 45 feet, and an overall length of 55 feet. To meet the FAA clearance requirement, the minimum blast pad dimension associated with the helipad should be 70 feet.

Based on discussion with air traffic controllers, separate facilities and approach/takeoff procedures for helicopters would enhance airport safety and security. As such, in the future, should the volume of helicopter increases significantly, separate helipads and approach/takeoff procedure would need to be designated. In that event, final approach and takeoff surfaces, taxi routes, protection zones, and safety areas would have to be defined.

Electric Vault

The existing electric vault is considered adequate. As the airport adds additional airfield lighting and electronic navigational aids, the need for a newer and larger facility dedicated to housing the airfield electrical equipment will be needed. The timeframe for a new vault will depend on the rate of airfield improvements, but should be constructed as part of one of the more significant airfield electrical improvement projects. The location of the new vault will need to be close to the existing vault and electrical homeruns for the airfield lighting.

Airport Surveillance Radar

Currently the airport is equipped with an airport surveillance radar (ASR-8), which should be replaced with an ASR-11 sometime after 2005. The new ASR-11 will provide additional weather data, reduce maintenance costs, improve performance, and provide digital data to new automation systems for presentation on air traffic controller displays. The FAA will entirely fund this new radar but adequate space for the new radar facility needs to be preserved. Indeed, in order to ensure uninterrupted air traffic control monitoring, the existing radar must continue to operate while the replacement radar is sited, constructed, and tested. Site preparation, electronic equipment installation, checkout and commissioning of the ASR-11 typically takes 12 months to complete. The new ASR location should encompass an area of approximately 2,180 square yards and a clear line of site should be maintained between the primary radar antenna and the Moving Target Indicator (MTI). The MTI is a small parabolic dish antenna and electronics used to provide a known geographic reference point on the radar display that is usually located on existing buildings, poles, towers, or runway ends.

Airport Security Fencing

A ten-foot chain-link fence encloses the airport. This fence ties into all buildings effectively separating the landside and airside portions of the airport, such as the FBO, passenger terminal, and the air cargo building. This fence, required under FAR Part 139, prevents unauthorized entry onto airport property by persons or vehicles. Signs restricting access are posted on all gates and at regular intervals around the perimeter.

Fence improvements were underway in 2003 to prevent animals from digging and reduce the chance of washouts under the fence. The fence line right-of-way must be kept free of excess vegetation and is patrolled daily, with any washouts, breaks or other holes in the fence repaired as soon as they are discovered. As the airport expands, additional vehicular and access gates will be required. The airport may also consider the installation of an inner-fence to strengthen the airfield secured area. Flightline representatives have expressed the need to relocate the fence surrounding the parking lot north of their terminal building.

Airport Video Surveillance System

To increase the airport security, it is recommended that a network of video camera be installed at strategic location on the airfield. This network of camera would be used to feed video to a central location. However, this system would require the installation of fiber optic connecting each camera to the overall surveillance system. Fiber optic transmission would lessen the limitations associated with bandwidth and distance. Because fiber optic is inherent to signal degradation and interference, it ensures that a high-resolution signal sent from the camera retains its original level of quality all the way through to video analysis applications. The unique advantage of fiber optic is that it offers full bandwidth to transmit full motion, full time.

Fuel Storage Requirements

As outlined in the Inventory chapter, the fuel farm consists of six aboveground storage tanks providing capacity for 25,000 gallons of 100LL fuel, 120,000 gallons of JetA fuel, and 10,000 gallons of unleaded fuel for vehicles. This fuel farm serves the general, military, and commercial aviation users and encompasses an area of approximately 2,420 square yards. Field inventory has revealed that the fuel storage area is in very good condition and seems to be very well maintained. The area is lighted, fenced and includes a vast space to the east which allows for the maneuvering of 18-wheel trucks to refill the tanks. The central location of this fuel storage facility is considered adequate. The closest building to the facility is the electrical vault, at a distance exceeding 100 feet. In addition, paved drives provide both airside and landside access to the fuel farm. It is recommended that the aboveground tanks be protected from the elements by a canopy or roof system that does not limit the dissipation of heat or dispersion of flammable vapors and does not restrict firefighting access and control. In addition, space around this fuel farm should be reserved for future expansion and the addition of future fuel tanks should the demand for fuel change through the planning period. Should this area be extended, conformity with National Fire Protection Agency (NFPA) 30, “Flammable and Combustible Liquid Code” and Environmental Protection Agency (EPA) requirements, should be maintained.

In addition, a 500-gallon trailer tank located at the western edge of the South GA apron end provides fuel for the Eagle Aviation aircraft. Although the number of separate fuel storage facilities should be limited, the airport should consider one additional fuel storage site in the northern portion of the airport to provide a self-service fueling facility for the small aircraft operators. This area would encompass an area of approximately 2,500 square yards and should comply with environmental and safety requirements applicable to self-serving fueling facility.

GENERAL AVIATION FACILITY REQUIREMENTS

This section will evaluate the space requirements for general aviation apron, hangar, and terminal space. In general, the aircraft parking and storage requirements at TLH are provided through the combination of all of the following facilities:

Aircraft Apron Area

Small aircraft - an outdoor parking space with tie-down capability, sized to accommodate single-engine and multi-engine aircraft.

Large aircraft - spaces on a paved apron suitable for parking larger business jets, such as the Gulfstream, Learjet, and Falcon aircraft fleets, as well as the larger multi-engine and turboprop aircraft.

Hangars

T-hangars - a fully enclosed building housing individual stalls, each capable of storing one aircraft, typically a single-engine or a light multi-engine aircraft.

Clearspan hangars - a fully enclosed building typically capable of holding between four and six aircraft each; these are often referred to as storage hangars.

Corporate hangars - similar to clearspan hangars, but typically smaller and with an attached office. These hangars are assumed to hold one large jet or turboprop aircraft each.

The general aviation apron west of the passenger terminal, referred to as the South GA apron, provides approximately 123 tie-downs spaces over an area of approximately 88,890 square yards. It should be noted that these tie-down parking positions are relatively small and specifically designed for Design Group I aircraft. Two single engine aircraft, such as the Cessna 172, adjacent to each other only maintain a ten-foot separation distance between their wingtips when parked on these tie-downs. Further, the taxilane leading to the tie-down positions have originally been designed to accommodate ADG I aircraft and only offer 79 feet of taxilane OFA width. Both transient and based aircraft use this apron area. On a daily basis, it is not unusual to see as many as 50 transient aircraft parked in this area. The transient aircraft fleet mix operating on this apron is diverse, ranging from single engine aircraft to large business jets.

The North Apron encompasses an area of approximately 72,220 square yards with the former terminal located in the east-central section. As mentioned in the Inventory chapter, this apron is in very poor condition. This apron has been constructed of concrete and then overlaid with asphalt. To maintain the ability to provide aircraft parking on this apron, rehabilitation of the pavement will be rapidly required. While there are no tie-down position markings on this apron, several general aviation aircraft, as well as the FedEx Boeing 727s, are parked on this apron. In addition, several aircraft are usually staged around the Aero Associates building, pending their maintenance completion.

Transient Aircraft Parking Apron Area Requirements

The need for general aviation apron space has different standards for those aircraft based at an airport and those that are transient. Therefore, the needs of each have been looked at separately and then combined to

provide the overall apron space requirement for the planning period. Both methodologies have been applied to provide a general guideline for general aviation ramp planning.

The requirement for transient aircraft parking can be derived by using the guidelines provided in FAA AC 150/5300-13, Change 7. Based on these FAA guidelines, the itinerant parking demands for TLH were computed. The final value is then split to represent small versus large aircraft. It is assumed that throughout the planning period, 60 percent of the transient aircraft are small aircraft and 40 percent are the larger corporate type aircraft. This split is based on the ATCT statistics for a typical day. On the day surveyed, 41 of the 160 GA transient aircraft were corporate jet such as the Gulfstream, Learjet, or Citation, and 20 were multi-engine or turboprop aircraft. As such, large aircraft are assumed to compose approximately 40 percent of the overall GA transient fleet mix. These totals are shown in **Table 5-9** below.

Table 5-9
PEAK TRANSIENT AIRCRAFT APRON DEMAND

Year	Small Aircraft	Large Aircraft	Total Peak Aircraft
Base Year			
2002	49	33	82
Forecast			
2008	61	41	102
2013	64	43	107
2023	71	48	119

Source: THE LPA GROUP INCORPORATED, 2003.

Transient aprons are intended for relatively short-term parking periods, usually less than 24 hours (could be overnight), and are primarily for transient aircraft. Such aprons should be located so as to provide easy access to the terminal, fueling, and ground transportation facilities.

When planning for an apron, provisions should be made for the aircraft parking area as well as the taxilanes leading to the parking positions. The Gulfstream G-IV, with an overall length of 88 feet and a wingspan of 78 feet, is the longest and largest ADG II aircraft expected on the general aviation apron on a regular basis. While some larger aircraft could be anticipated on the apron, it was not deemed desirable to plan for such aircraft. Considering half the width of the ADG II taxilane OFA and a 10-foot clearance between aircraft, the value of 1,420 square yards was applied for each large aircraft expected to frequent the airport. This value was considered suitable given the fleet mix of aircraft expected at the airport. **Table 5-10** illustrates the parking areas required by various business jet aircraft. The required parking area average 1,130 square yards. Thus, a value of 1,420 square yards is considered adequate for determining for the transient parking area requirement for large business jet aircraft.

Table 5-10
BUSINESS JET PARKING AREA REQUIREMENTS

Aircraft Type	Length / Wing Span (feet)	Aircraft Design Group	Required Parking Area* (square yards)
Beech / Beechjet BE-400	48 / 44	B-I	750
Bombardier Global Express	100 / 94	C-III	1,995
Canadair / Challenger	68 / 64	C-II	1,171
Cessna 402C Business Liner	36 / 44	B-I	665
Cessna Citation S-II	47 / 52	B-II	836
Cessna / Citation III	56 / 54	B-II	933
Cessna / Citation V	49 / 52	B-II	852
Cessna / Citation X	73 / 64	C-II	1,218
Dassault / Falcon 200	56 / 54	B-II	933
Dassault / Falcon 900	66 / 63	B-II	1,139
Dassault / Falcon 2000	66 / 63	B-II	1,139
Embraer 120	66 / 65	B-II	1,166
Gates / Learjet 35A	49 / 40	C-I	710
Gates / Learjet 55C	55 / 44	C-I	800
Gulfstream II	80 / 68	D-II	1,344
Gulfstream IV	88 / 78	D-II	1,584
Gulfstream V	97 / 94	D-III	1,957

*Note: Required parking area includes 10± feet of clearance from each wingtip, plus 57.5± feet in front of the aircraft to the centerline of the taxilane.

FAA AC 150/5300-13, Change 7, suggests that for planning purposes, the size of a transient apron should be based upon a minimum area of 360 square yards per transient aircraft. This 360 square yard apron requirement is very conservative and was only applied to small general aviation aircraft. **Table 5-11** reflects the transient aircraft apron demand expected at TLH.

Table 5-11
TRANSIENT AIRCRAFT APRON REQUIREMENTS

Year	Small Aircraft (square yards)	Large Aircraft (square yards)	Total Transient Aircraft Apron (square yards)
Base Year			
2002	17,640	46,860	64,500
Forecast			
2008	21,960	58,220	80,180
2013	23,040	61,060	84,100
2023	25,560	68,160	93,720

Source: THE LPA GROUP INCORPORATED, 2003.

Based Aircraft Parking Apron Area Requirements

Planning for the necessary facilities for based aircraft parking at TLH requires identifying the current needs at the airport and applying the existing data to the projected scenario set forth in the Aviation Activity Forecast chapter of this document. As documented previously, 127 aircraft were based at TLH in 2002. Of these 127 aircraft, 21 were stored using tie-down spaces. According to the FBO data, 12 of these aircraft are parked on the South GA apron, including four Piper 28 Arrows, two Piper 32 Navajos, two Cessna 172s, one Cessna 152, one Cessna 177, one Cessna 421 Golden Eagle, and one Shorts Skyvan. Of these aircraft, the Cessna 421 and Short Skyvan are the only twin engine aircraft, all the others are single-engine piston aircraft. The remaining nine aircraft belong to Eagle Air Corporation and include four Cessna 172s, one Cessna 182, one Cessna 210, and three Piper Arrows. These nine aircraft are stored at the south end of the North GA apron. According to these figures, approximately 16.5 percent of the total based aircraft at TLH require ramp space. Because the demand for apron space may increase, it was considered prudent to slightly increase the share of the projected based aircraft that will require ramp space throughout the planning period to 20 percent.

For based aircraft, AC 150/5300-13, Change 7, suggests that a minimum area of 300 square yards be used for planning purposes. This figure is lower than that used for the transient aircraft because it is assumed that a tighter spacing between based aircraft can be achieved. The actual area per aircraft on the apron will most likely vary, depending on the configuration and layout of the parking positions. Because single-engine aircraft are more likely to be stored on tie-down rather than multi-million dollar jet aircraft, this value is considered adequate to determine future based aircraft apron requirement.

Using the forecasted growth of 134-based aircraft by the end of the planning horizon, the demand for additional tie down storage will be relatively small. By the end of the planning period it is estimated that approximately 8,100 square yards of tie-down storage will be required by the end of the planning period.

Table 5-12
BASED AIRCRAFT APRON REQUIREMENTS

Year	Based Aircraft	Number Stored on Ramp	Total Based Aircraft Apron (square yards)
Base Year			
2002	127	21	6,300
Forecast			
2008	129	26	7,800
2013	131	26	7,800
2023	134	27	8,100

Source: THE LPA GROUP INCORPORATED, 2003.

Table 5-13 provides a summary of the total apron area requirements for transient and based aircraft at TLH.

Table 5-13
TOTAL GENERAL AVIATION AIRCRAFT APRON REQUIREMENTS

Year	Transient Aircraft Area (square yards)	Based Aircraft Area (square yards)	Total General Aviation Area (square yards)
Base Year			
2002	64,500	6,300	70,800
Forecast			
2008	80,180	7,800	87,980
2013	84,100	7,800	91,900
2023	93,720	8,100	101,820

Source: THE LPA GROUP INCORPORATED, 2003.

When considering the South GA apron only, the airport will have a shortage of 12,930 square yards by the end of the planning period. The lack of tie-down space for visiting aircraft could significantly affect the use of the airport by twin-engine turboprop aircraft, as well as business jets. Therefore, the rehabilitation of the North GA apron or the construction of additional ramp space needs to be conducted during the intermediate planning period. The existing apron should also be repaired and maintained to ensure that the pavement is correctly graded, free of cracks, holes, and surface variations. Finally, pavement needs to be sufficiently drained and free of depressions to prevent ponding that obscures markings or impairs safe aircraft operations.

Hangar Demand

Storage needs for general aviation aircraft reflect local climatic conditions and the size and sophistication of the airport's based aircraft fleet mix. Typically, aircraft with higher values are more likely to be stored in large, more secure facilities. The airport's based aircraft fleet mixed is mostly constituted of single- and multi-engine aircraft. Approximately 56 percent of the based aircraft are stored in t-hangars north of the airport. Conventional hangars are home of about 27.5 percent of the aircraft stored at TLH and the remaining 16.5 percent are parked on the apron. Discussions with the FBO indicate that there are currently 71 aircraft stored in t-hangars.

Because the demand for based aircraft apron area is expected to be around 20 percent, the demand for based aircraft hangar space at TLH, in turn, will be approximately 80 percent throughout the planning period. Since only a very small percentage of transient traffic (maintenance and occasional overnights) utilizes an airport's hangar facility, only based aircraft demand has been used to plan the minimum hangar space requirements. **Table 5-14** reflects the number of based aircraft that will require hangar space in the future.

TABLE 5-14
TOTAL HANGAR REQUIREMENTS

Year	Percent of Based Aircraft Stored in Hangars	Total Number of Based Aircraft	Total Number of Hangar Spaces Required
Base Year			
2002	83.5%	127	106
Forecast			
2008	80 %	129	103
2013	80 %	131	105
2023	80 %	134	107

Source: THE LPA GROUP INCORPORATED, 2003.

Using these figures, the amount of hangar storage capacity is sufficient and should remain so throughout the planning period. However, the distribution of based aircraft into the various hangars types will depend on future market demand and the availability of facilities. According to Flightline representatives, there are currently ten customers on their t-hangar wait list, the majority being single engine aircraft. Also, the five aircraft belonging to Flightline's flight school may be displaced from their current hangar to the old passenger terminal ramp, therefore releasing additional aircraft storage space. In that event, the aircraft to be displaced include: three Piper Archer IIIs, a Piper Arrow, and a Cessna 172.

Therefore, in addition to the forecasted growth of seven-based aircraft by 2023, hangar space should be planned to accommodate the waiting list of ten aircraft. In addition, hangar space should be reserved for future development. The airport could possibly attract further aircraft at the airport by providing such facilities. Flightline has reported that the unavailability of t-hangars at Thomasville Municipal Airport (TVI) and the lack of secured fencing at Cairo-Grady County Airport (70J) could possibly increase the demand for t-hangars. As a result, for planning purposes, it is recommended that at a minimum 30 t-hangars be planned at TLH.

T-hangars with electric bi-fold doors measure approximately 42 feet in length by 32 feet in width. Thus, the addition of 30 t-hangars would require a minimum of 4,590 square yards of available land just for the t-hangar structure. This area could vary depending on the type of t-hangar constructed. In addition, hangar apron will be required to allow aircraft to maneuver into and out of these facilities. Typically, the amount of hangar apron is equal to the amount of storage space inside the hangar. As a result, it is estimated that a total of 4,590 square yards of apron will be needed by 2023 to support aircraft movement from the t-hangars.

Additional space should also be reserved for the construction of conventional hangars should the demand arise. Conventional hangars may have different sizes. Rather than planning for a specific square footage, it is recommended that the north section of the airport be reserved for the development of a flexible general aviation hangar and parking area. All hangars developed on airport property that represents commercial facilities or facilities of public accommodations shall be developed in accordance with ADA regulations and Florida Building Code requirements.

General Aviation Terminal Building

The existing general aviation terminal is located on the western edge of the North GA apron, east of the ARFF building, and is currently operated by Flightline. This full service general aviation terminal is a 2-story

building measuring 4,980 square feet. The facility offers a pilot's lounge, flight-planning room, waiting room, pilot supplies, restrooms, and offices, all of which are in excellent condition.

Peak hour pilots/passengers for general aviation operations project the highest average number of pilots and passengers that use an airport during a one-hour period. To estimate the peak hour pilots/passengers for TLH, the following assumptions were made:

- Only itinerant operations would require terminal space at the airport.
- Since arriving and departing general aviation pilots/passengers could use the terminal at the same time, the number of peak hour itinerant operations was not adjusted (i.e. was not split in half).
- Peak hour itinerant operations were estimated to be 10 percent of the peak day itinerant operations.
- Each general aviation operation (arriving or departing) was estimated to have an average of two people on board (passengers and pilots).

Terminal and office area demand requirements were calculated using the following criteria:

- Public space: 20 square feet per peak-hour pilot and passenger;
- FBO employees: 10 square feet per peak-hour pilot and passenger;
- Public convenience: 10 square feet per peak-hour pilot and passenger;
- Concessions: 10 square feet per peak-hour pilot and passenger;
- FBO service (pilot training, air taxi, aircraft sales and services): 20 square feet per peak-hour pilot and passenger;
- Pilot lounge: 30 square feet per peak-hour pilot and passenger;
- Circulation, structure, and utilities: 50 square feet per peak-hour pilot and passenger.

These criteria produce a conversion factor of 150 square feet per peak-hour pilot and passenger. Based on the forecasted average enplaned pilots and passengers per peak-hour operation, total general aviation terminal area requirements were estimated. The results in **Table 5-15** show that approximately 5,000 square feet of terminal space will be required by the end of the planning period.

TABLE 5-15
GENERAL AVIATION TERMINAL SPACE

Year	Peak Day Itinerant Ops	Peak Hour Itinerant Ops	Number of Pilots/Pax	Total Terminal Space (SF)
Base Year				
2002	113	11	23	3,398
Forecast				
2008	141	14	28	4,218
2013	148	15	30	4,433
2023	163	16	33	4,897

Source: THE LPA GROUP INCORPORATED, 2003.

While the existing general aviation terminal provides the adequate space, additional space should be planned for the long-term planning period of this study. Should Flightline extend its operation and business as primary Piper Dealer for the States of Louisiana, Mississippi, Alabama, and the Western panhandle of

Florida, further expansion of this general aviation terminal would be needed or additional offices would have to be relocated. Space should be reserved for a second general aviation terminal, to preserve this potential.

General Aviation Infrastructure Requirement

This section examines the necessary ancillary facilities at TLH to support general aviation activity. Specific functional areas studied include security, landside access, and automobile parking.

Security Requirements

In the aftermath of the September 2001 events, general aviation security requirements have been re-evaluated. The main terrorist threat against general aviation is the possible theft or hijacking of aircraft for use as potential terrorist weapons. Thus, the most likely target is the aircraft itself, rather than general aviation airport facilities and infrastructure. The tragic 2001 events demonstrated how aircraft could be used as bombs or missiles against targets on the ground. While the aircraft used in the World Trade Center and Pentagon attacks were large airliners, the potential exists that general aviation aircraft, particularly larger corporate jet aircraft, could be used for similar or other terrorist purposes.

To ensure an appropriate level of security, the airport should maintain compliance with FAA 14 CFR Part 139. This regulation requires the airport, for instance, to maintain security fencing around the general aviation areas to help prevent unauthorized access to the aircraft operations area, fuel facilities and other sensitive areas. In addition, the airport should install adequate outdoor area lighting to help improve the security of aircraft parking and hangar areas; fuel storage areas, and access points to the aircraft operations area. TLH, like many similar industrial facilities, can increase security around the airport property and buildings by installing bright area lighting in critical areas of the airport.

Finally, the airport should maintain its vehicle access control procedures and gate control systems to ensure that only authorized vehicles gain access to the aircraft operations area, fuel facilities, and other sensitive areas. Vehicular access to the airport shall be granted only to authorized personnel or approved tenants.

Wash Rack

It is recommended that land for one or two aircraft wash racks be reserved in the area of the North and South general aviation apron. These wash racks would be used by general aviation users to clean their aircraft and equipment. Each wash rack pad would measure approximately 80 feet by 80 feet and would accommodate ADG I and II aircraft.

The wash racks should be constructed to drain to the center of the pad. During non-wash rack operations, the storm water will be collected in an inlet in the center of the pad and carried by a pipe into a storm water ditch. The wash rack begins operation when the payment system is activated. At this point, an automated valve will divert the effluent to an oil-water separator and out to the City's sanitary sewer system by way of a sanitary sewer. Cold water and power supply, as well as telephone cabling would be required for the wash rack equipment. Finally, the wash rack apron should be marked in accordance with FAA Advisory Circular 140/5340-1H, "Standards for Airport Markings."

Landside Access

The general aviation area is accessed via four different road entries located along Capital Circle S.W. The existing road network that leads to the t-hangars, the old passenger terminal, and the various airport tenants situated beside the North and South GA apron is complex and highly inefficient. For instance, this road network is not connected to the half loop serving the passenger terminal building. Therefore, it is recommended that the road network leading from/to the general aviation complex be reconfigured from an efficiency and safety standpoint.

Also, it is recommended that each of the proposed intersections leading to the general aviation area be reconfigured to include a separate right turn lane leading to the turning roadway for the accommodation of right-turn traffic. This would avoid further congestion on Capital Circle S.W. Finally, given the peak hour volume on Capital Circle S.W. and the substantial turning movements generated by general aviation users, divisional islands with separate left-turn storage lanes are recommended on Capital Circle S.W. Such divisional islands would convert the existing two-lane roadway to a divided roadway through the intersection. These divisional islands, coupled with right-turning roadways would accommodate all movements through the intersections on separate lanes and serve higher turning volumes. These measures would significantly decrease congestion on the portion of Capital Circle S.W. that borders the airport. This arrangement will be particularly efficient and safe when Capital Circle S.W. is converted into a four-lane road. Further discussion on Capital Circle S.W. capacity is provided in a later section of this chapter.

Automobile Parking

This section examines the future demand for automobile parking at TLH. All parking areas should provide safe and efficient vehicle and pedestrian circulation. When planning for additional parking lots, careful consideration should be given to the flow of vehicular movement, the capacity required, and pedestrian circulation. The general aviation automobile parking area at TLH is made of a large parking lot that used to be the passenger terminal parking and several other small parking lots located beside the different tenant buildings. The former passenger terminal parking provides excess capacity to the north area of the airport. Because the old terminal concourse is just about empty, this parking is barely used. On the other hand, the small parking lots associated with the various airport tenants are, for the most part, filled to capacity during the day. Further automobile parking in those areas will be required over the long-term planning period.

The parking lot located east of Aero Associates building offers approximately 50 spaces which is used by the seven employees and customers of Aero. Pilots with aircraft stored in the t-hangars north of the Aero and FedEx facilities use either this 50-space parking lot or the parking lot east of the t-hangars, which offer approximately 1,750 square yards of space. There is no need for additional parking in these areas.

The paved parking lot located across and east of the North GA apron measures approximately 37,000 square yards. This lot exceeds and will exceed the demand for parking spaces in the north general aviation area in the future. The parking area located southeast of the U.S. Forestry building (at the southwest corner of the North GA apron) offers approximately 40 spaces. There is no requirement for further space in that area.

There are approximately 65 automobile parking spaces along the service road that leads to Flightline's buildings. These spaces are used by the different tenants located on the sides of the service road. Should further businesses locate along the side of the new general aviation ramp to be constructed in 2004, additional parking spaces may be needed during the planning period.

The parking lot serving the ARFF and maintenance buildings offers 25 automobile parking spaces and a large open space in front of the buildings. This parking lot meets the future demand for these facilities. The parking in front of the main general aviation terminal, the Flightline building, can accommodate up to 60 vehicles. During past site visits it was noted that automobile parking of Flightline exceeded the capacity of designated parking areas. In addition, Flightline representatives indicated a need for approximately 60 additional spaces. It is recommended that over the long-term planning period, the entire parking area be redeveloped to accommodate the needs of various tenants. The area east of the fuel tanks, for example, could be redesigned to provide additional automobile parking spaces.

Finally, should new tenants start business at the airport in the future, increases in the automobile parking demand could result. Due to the uncertainty and speculative nature of the types of tenants and their relative parking demand, estimation of parking requirement is erratic. Nonetheless, compliance with the Leon County Zoning guidelines would be required for every new building constructed at the airport. Leon County Zoning Ordinance, Section 10-358, "Schedule of required parking spaces," requires one space for every 250 square feet of floor space devoted to public/commercial use.

Also, for the new parking lot to be built, it is recommended that the employee parking lots be located at the rear of structures rather than between the front building façade and the street, the number of parking area entrances and exits be minimized to reduce vehicle conflicts at intersections, and parking areas be divided into multiple small lots, as opposed to one large lot through the application of internal circulation corridors.

AIR CARGO FACILITY REQUIREMENTS

A separate and full air cargo analysis for TLH was completed in 2003. Portions of the facility requirements outlined in this report have been included in **Appendix D**. These sections summarize the conclusion and recommendations listed in the 2003 Air Cargo study.

ADDITIONAL AIRPORT FACILITIES

The following sections summarize the facility needs of the different tenants located on the airfield. It should be noted that the timeframe for the facility improvements listed thereafter depends upon the ability of the tenants to secure funds. The goal of this section is to identify the needs of those tenants and reserve the appropriate space. However, the airport will have to consider the availability of funds, the economic outcome, and the airfield impacts of such additional facilities before the deliverance of new leases.

Aero Associates

Located in the northern portion of the North GA apron, Aero Associates' facility consists of one 4,500 square feet hangar. Aero provides a variety of services, including commercial and general aviation aircraft

maintenance, ground support equipment maintenance, and facility (such as passenger boarding bridges) maintenance.

Aero's building will require some improvements over the planning period, as the facility may possibly not meet future NFPA, airlines, and FAA requirements. Discussions with representatives from Aero indicated that an expansion of approximately 5,400 square feet to the existing hangar would be desired, which would approximately double its size at 9,900 square feet. This size hangar would not require a sprinkler system, which otherwise would significantly increase the costs of the building expansion.

Capital Avionics

The Capital Avionics hangar is located north of the Flightline hangars. Their representatives have expressed the need for better airside access in order to facilitate the movement of aircraft visiting the maintenance facility. A new apron, slightly northwest of the Capital Avionics building, is planned for construction for the fall of 2004. This apron would encompass an area of approximately 23,300 square yards and will be designed to accommodate up to ADG II aircraft. This apron will provide Capital Avionics adequate airfield access. Capital Avionics representatives also plan on expanding their facility, should land with airside and landside access be available for development. The envisioned facility would include a new hangar providing 10,000 square feet of space. It is recommended that this future building be located along either the south or east side edges of the new apron. This would allow Capital Avionics to maintain its overall activity in the area.

Civil Air Patrol

The Civil Air Patrol (CAP) Tallahassee Composite Squadron maintains a small building of approximately 2,100 square feet north of the Capital Avionics building. This building serves as the headquarters of the CAP unit, where meetings and training are handled. The Cessna aircraft owned by the CAP is currently parked in one of the t-hangars. During an emergency search and rescue or disaster relief mission, the CAP may have as many as 14 single- or multi- engine aircraft working the Tallahassee area for up to six days. Civil Air Patrol representatives indicated that additional donated space would be needed in the next five years to be able to hangar an Australian Gippsland GA-8 Airvan aircraft. In the long-term, the CAP would like to acquire a hurricane-proof multipurpose building. This building would require ten offices, a communications center, four classrooms, four locker rooms, a medium sized hangar, and two vehicle bays. It would be necessary that this building be located within its own fenced compound and have taxiway access. The building would also be used as a safety center for general aviation safety briefings conducted by the FAA and the Aircraft Owners and Pilots Association (AOPA). The building could also serve as a backup logistics center for the American Red Cross, linking the disaster volunteer agencies to the airport. Because no funding source has been identified for this facility at this point, the construction of such facility is not expected before the year 2013. Nonetheless, space for such a facility will be reserved in the GA area.

The unit members meet at least once a week. At the completion of the new apron, the area encompassed by the Civil Air Patrol building will be prime, providing direct access to the airfield. Because the current Civil Air Patrol does not require direct airfield access, it is recommended that the unit activities be relocated to another building at the airport.

Flightline's Hangars

As mentioned in the Inventory chapter, Flightline leases two hangars on the north side of the South GA ramp. Aircraft maintenance, general aviation only, is performed in the westernmost hangar. This building offers

approximately 16,000 square feet of space and can accommodate up to six light jet aircraft. This hangar is in fair condition. According to Flightline representatives, the building will only require minor maintenance in the future.

The second hangar, the Ivan Monroe hangar, is home of several aircraft operated by Flightline flight school and pilot shop. This hangar provides approximately 15,000 square feet of space and is in poor condition. This hangar does not meet the building codes, the open-bay doors need to be changed, and several electrical problems have been identified. This building would require either major refurbishment or demolition in the future. Flightline also identified the need for a new hangar to accommodate aircraft maintenance services. Because these operations are conducted simultaneously with Capital Avionics, a joint use hangar will be considered in the layout of future GA facilities.

Former Commercial Terminal Building

Located on the east side of the North GA apron, the former commercial terminal building is leased by Eagle Aviation from Flightline. Eagle Aviation operates as a flight school, pilot shop, aircraft rental, and charter service. As indicated in the Inventory chapter, Flightline plans to relocate some of their support service offices to this building. While additional refurbishing may be required, the old terminal building could accommodate other aviation-related businesses during the planning period. The current usable area was refurbished in 1998. At the present time, approximately 34,000 square feet of space is available and usable inside this building. The old concourse area, which extends into the north apron, is in very poor condition and should be demolished to free apron space for other uses.

Lively Technical Center

Lively Technical Center consists of several buildings considered to be in good condition. Based on discussion with Lively representatives, the apron needs to be expanded in order to increase the space available for the parking of aircraft and engine run-ups. Currently, the apron facing Lively's largest building measures approximately 2,775 square yards. In addition, several issues were noted relative to the taxiway leading to Lively's apron. First, only ADG I aircraft can taxi on this 28-foot wide taxiway. Because Lively Technical Center expects larger aircraft to taxi to its apron, it is recommended that this taxiway be widened. On a larger scale, temporary measures should be considered to accommodate a one-time move of a Boeing 727 on this taxiway. Lively representatives have stated the possibility of acquiring a surplus Boeing 727 from UPS that would be used for static training purposes and require parking space on Lively's apron. Second, this taxiway is in very poor condition with numerous cracks and encroachment of vegetation onto the pavement. And finally, the airport fence and bushes running along the taxiway on its east side are located within the taxilane/taxiway object free area. Therefore, it is suggested that the fence be relocated, the taxiway be rehabilitated, and the apron extended.

State of Florida Bureau of Aircraft

The Bureau of Aircraft is responsible for the management and maintenance of state-owned/-operated aircraft. The Bureau of Aircraft hangar is located east of the Ivan Monroe hangar, on the South GA apron, and provides approximately 28,420 square feet of space. This building is suitable for existing use and provides sufficient space capacity to the State of Florida Bureau of Aircraft for the next 20 years.

State of Florida Forestry Service

The State of Florida Forestry Service facilities are located north of Taxiway Z and east of the South GA apron. The main hangar provides approximately 6,420 square feet of space. In 2003, two light twin aircraft and one light helicopter were housed in this hangar. The apron serving the Division of Forestry measures approximately 2,730 square yards. Two helicopters are regularly parked on this apron. In addition, the Division of Forestry parks three single-engine aircraft in the t-hangars at the airport. The Division of Forestry conducts fixed and rotary wing maintenance operations in its hangar. Representatives of the State of Florida Forestry Service indicated that the Division's hangar would need to be expanded by an additional 12,000 square feet for both housing the helicopters currently parked on the apron and providing additional maintenance space. The Division of Forestry also expressed the need for additional apron space.

U.S. Forest Service

The 10,000 square foot hangar located at the southern portion of this north apron area serves as the operational base for the U.S. Forest Service. This building, which is approximately 15 years old, is managed by Flightline and upon inspection appears to be in good condition. This building will meet the needs of the U.S. Forest Service over the planning horizon.

Vehicle Maintenance Building

This building, located south of the electrical vault on the northwest corner of the South GA ramp is the former ARFF station. This facility provides 2,980 square feet of space and four open bays for the maintenance of vehicle and ground support equipment owned by Flightline. This facility is in very good condition and, according to Flightline, meets their needs.

National Weather Services Building

The National Weather Services (NWS) currently leases the offices located on the east side of the former ARFF building. This building may require some remodeling over the planning period.

AIRPORT ACCESS AND UTILITY INFRASTRUCTURE

The problem of getting to the airport is not chiefly the domain of the urban or regional transportation planner. Congestion and difficulties in accessing airports have very strong implications on their operations. Therefore, the airport has a vital interest in the whole area of access and accessibility. This section evaluates the adequacy of the airport access, including local street access and airport circulation roads. Likewise, the airside components addressed previously are dependent upon the availability of the proper landside features. In the case of standard airport access road projects, the justification for new or enlarged roads can usually be made by a straightforward traffic study. Also, typically, the need for new road capacity is evident to all users of an airport and can be clearly demonstrated based on these studies.

Airport Access

The main access road into the airport is Capital Circle S.W., also identified as SR 263. The portion accessing the airport is a two-lane L-shaped road on the northeast side of the airport's property. This road leads to Interstate 10 to the north and connects to Springhill Road to the east. Capital Circle S.W. provides access to

all the various tenants located within the airport property, as well as the cargo, general aviation, and passenger terminal area. This access road has a posted speed limit of 45 miles per hour outside the airport property. From downtown, the airport is accessible via Springhill Hill Road, Orange Avenue, and Lake Bradford Road.

Capital Circle S.W.

As stated in the 1998 Development Order (DO), the airport has a reserved capacity of 1,253 PM[1] peak hour trips on Capital Circle S.W. Should the airport contribute, through a combination of increased passenger enplanements and new developments, to more than 1,253 PM peak hour trip, potential mitigation, as well as a Notice of Proposed Change (NOPC) to the existing Development of Regional Impact (DRI), would be required.

According to the 2000 DRI NOPC, the afternoon peak hour movements on Capital Circle S.W. averaged 744. These traffic counts were based on data collected in August and December 1999, and January 2000. This peak hour movement average on Capital Circle S.W. was calculated taking into consideration the seasonal traffic patterns observed at the airport. This adjustment derived from the number of enplaned passengers at the airport for the year 1999. Utilizing information from the 2000 Street Concurrency Inventory, the DRI NOPC study revealed that peak generation produced by the airport was only 61.8 percent of Capital Circle S.W. capacity. This data was based on an enplanement level of 450,000. Assuming an average annual growth rate of 2.8 percent annually for enplanements and various airport-related improvements, the study concluded that peak hour movements on Capital Circle S.W. would not exceed the vested traffic capacity by the year 2010.

Today, Capital Circle S.W. has a twofold function. The road serves as a downtown by-pass and is the main access to the airport. Thus, increase passenger traffic and/or businesses/enterprises on the airfield may not be the only factors contributing to the vehicle traffic on Capital Circle S.W. If the congestion problems in the downtown area are not solved during the planning period, it is more likely that traffic on Capital Circle S.W. will further amplify its role as a downtown bypass amplify.

Using the methodology applied in the 2000 DRI NOPC and the updated annual enplanement data as reflected in the Aviation Activity Forecast chapter of this report, the afternoon peak hour trip generation on Capital Circle S.W. was calculated for the years 2008, 2013, and 2023. The results of these calculations are incorporated in **Table 5-16**. This calculation only takes into consideration the trips generated by airline passengers. Traffic generated by the general aviation users and the various airport tenants is not included as part of this calculation. As illustrated in **Table 5-16**, passenger traffic, alone, should not exceed the allotted capacity of Capital Circle S.W. during the planning period.

[1] The PM peak hour was determined based on the highest four consecutive 15-minute counts between 4:00 p.m. and 6:00 p.m. taken at each location. The peak-hour counts for each day were then averaged to determine the weekday average PM peak-hour volume.

Table 5-16
FORECAST OF PASSENGERS PEAK HOUR MOVEMENTS ON CAPITAL CIRCLE

Year	Annual Enplanements	Passengers P.M. Peak Hour Trip Generation
Base Year		
2002	543,674	594
Forecast		
2008	587,127	642
2013	673,299	736
2023	891,844	975

Note: This assumes 109.33-trip generation on Capital Circle S.W. per 100,000 enplanements as calculated in the 2000 DRI Notice of Proposed Change conducted by RS&H.
Source: THE LPA GROUP INCORPORATED, 2003.

Assuming the construction of all the projects described previously, including: 30 additional t-hangars; 17,228 square feet of additional building dedicated to cargo; a 18,000 square feet MRO facility; a FTZ; the expansion of the various airport tenants, and the level of enplanements predicated for the year 2023, it was estimated that the afternoon peak hour trip generation would reach 1,960 by the year 2023. This calculation is based on the traffic projection methodology used by RS&H in the 2000 DRI NOPC.

A comparison of this result with the road capacity, as published in the Concurrency Street Inventory, for those segments of Capital Circle S.W. that border the airport's property, reveals that Capital Circle would need to be widened during the planning period, should the airport expansion outlined in this report occur. Indeed, the maximum capacity of Capital Circle S.W. between Orange Avenue and Springhill Road average 1,337 trips per hour, well under the afternoon (PM) peak hour calculated for the year 2023. The calculated passenger afternoon peak hour trip generation for the year 2023 also exceeds the 1998 DO value of 1,253.

The maximum service flow data for the road system around the airport is listed in **Table 5-17** This data is based on the Concurrency Street Inventory report published by the City of Tallahassee. This report is a tabulation of the available capacity of each segment based on the adopted Level of Service (LOS) standard for each segment. The LOS characterizes operating conditions on the facility in terms of traffic performance measures related to speed and travel time, freedom to maneuver, traffic interruption, and comfort and convenience. The traffic counts are for the afternoon peak hour and incorporate a seasonal adjustment factor. The committed demand is the sum of the vested demand and the permitted demand. The total demand is equal to the existing demand plus committed demand.

As of January 2002, the sections of Capital Circle S.W., from Interstate 10 to the airport and vice versa, have an average available capacity of 313 and 24 trips per hour, respectively. The average peak hour volumes are 1,160 trips per hour going northbound towards Interstate 10 and 860 going southbound towards the airport. For that portion of Capital Circle S.W. running from Orange Avenue to Springhill Road, the peak hour volume for each direction average 572 trips per hour and the available capacity averages 606 trips per hour in each direction.

These figures show that Capital Circle S.W., between the airport and Interstate 10, is most likely to be over capacity in the short-term planning period. Congestion issues are more likely between the Orange Avenue/Capital Circle S.W. intersection and Interstate 10. The available capacity between the airport and the Orange Avenue/Capital Circle S.W intersection averaged 543 in 2002, thus, congestion on that section of Capital Circle S.W. should also occur sometimes during the long term planning period.

These figures lead to the conclusion that those portions of Capital Circle S.W. between the airport and Interstate 10 need to be widened during the planning period. Widening from two lanes to four lanes would significantly increase the road capacity, which in turn could foster the airport's growth. This portion of Capital Circle S.W. consists of a series of segmented, often congested two-lane roads. airport users arriving from out of town frequently use Interstate 10 to access Capital Circle S.W. Thus, this road should be widened to ensure the flow of traffic and avoid congestion.

Those portions of Capital Circle S.W. east of the airport's property will be over capacity sometime during the planning period, thus, major improvements along this road appear inevitable. However, vehicle traffic on Capital Circle S.W. is not expected to exceed the maximum traffic level in the short term. According to the Tallahassee Planning Department, Capital Circle S.W. is more likely to be realigned further north in the future, so that it runs closer to Lake Bradford Road. Thus, that portion of Capital Circle S.W. that currently goes along the airport's property may become dedicated to airport access only. This would reduce the peak hour traffic through this stretch of roadway by shifting non-airport related traffic to the realigned road. Therefore, the afternoon peak hour trip generation is not expected to exceed the vested capacity for those portions of Capital Circle S.W. east of the airport's property for years to come. The widening of the Capital Circle S.W. road, as presently aligned, will need to take into consideration how facilities develop on the airport's property and address any environmental considerations that may arise.

Table 5-17
CONCURRENCY STREET INVENTORY

Road	Segment	Maximum Service Flow (capacity)	2001 P.M. Peak Hour	Committed Demand	Total Demand	Available Capacity
Interstate-10 to Airport						
Capital Circle S.W.	I-10 to Commonwealth Blvd.	1,297	953	175	1,128	169
Capital Circle S.W.	Commonwealth Blvd. To Hartsfield	1,327	908	180	1,088	239
Capital Circle S.W.	Hartsfield to Tharpe	1,424	908	431	1,339	85
Capital Circle S.W.	Tharpe to Tennessee St.	1,442	1,009	454	1,463	-21
Capital Circle S.W.	Tennessee St. Blountstown	1,226	715	407	1,122	104
Capital Circle S.W.	Blountstown to Orange	1,780	820	258	1,078	702
Capital Circle S.W.	Orange to Airport	1,797	706	179	885	912
Airport to Interstate -10						
Capital Circle S.W.	Airport to Orange	703	452	76	528	175
Capital Circle S.W.	Orange to Blountstown	1,827	857	688	1,545	282
Capital Circle S.W.	Blountstown to Tennessee St.	849	713	155	868	-19
Capital Circle S.W.	Tennessee St. to Tharpe	1,421	1,058	195	1,253	168
Capital Circle S.W.	Tharpe to Hartsfield	1,579	1,436	417	1,853	-274
Capital Circle S.W.	Hartsfield to Commonwealth Blvd.	1,863	1,436	525	1,961	-98
Capital Circle S.W.	Commonwealth Blvd. To I-10	2,274	1,809	534	2,343	9
East Airport Access						
Capital Circle S.W.	Springhill to Airport	1,790	385	89	474	1,316
Capital Circle S.W.	Airport to Springhill	1,058	743	294	1,037	21
Northeast Airport Access						
Lake Bradford	Capital Circle S.W. to Orange	597	54	24	78	519
Lake Bradford	Orange to Capital Circle S.W.	412	150	27	177	235
Orange Avenue	Lake Bradford to Springhill	769	427	299	726	43
Orange Avenue	Springhill to Lake Bradford	1,795	519	280	799	996

Source: City of Tallahassee Growth Management Division as of January 2002.

Orange Avenue

In the future, Orange Avenue is planned for widening from two lanes to four lanes. Regarding the State portion of Orange Avenue, which extends from Capital Circle, S.W. to Wahnish Way, there is currently no funding allocated for the design, right-of-way, or construction phases of this project. The widening project of the County segment, from Blairstone Road to South Monroe Street, is approved as a four lane divided roadway with a roundabout at the intersection of Jim Lee Road and Orange Avenue. Finally, the City portion, from the intersection of Orange Avenue, Blairstone Road, and Paul Russell Road easterly to Capital Circle, S.E. is planned for construction in 2004. The widening of Orange Avenue should further enhance vehicle traffic from the Tallahassee downtown to the airport and vice versa. In addition, this widening will lessen the use of Capital Circle S.W. as a by-pass to downtown, and thus reduce its traffic.

Perimeter and Service Roads

Multiple service roads provide vehicular access between various airside and landside faculties. A perimeter road, located within the airport perimeter fence, forms a loop around the entire airfield and provides access for ARFF and maintenance equipment. The perimeter roads also connect to various points along the security fencing and to the various NAVAIDS. The construction of a new service road was underway in 2004. This road shall be 100 percent paved by the end of the year and should meet the airport requirements for the planning period of this Master Plan Update.

The service roads linking the cargo, terminal, South GA, and North GA aprons are in good condition. These roads are 24-foot wide asphalt, which enables direct access for security vehicles, rescue vehicles, and cargo handling equipment.

Utility Infrastructure

As described in the Inventory chapter, the airport currently has the appropriate utilities to serve the existing users of the airport. No problems were identified with respect to the availability of water, sanitary sewer, electrical power, telephone, or stormwater services during interviews with airport management, air traffic controller management, and airport tenants.

Most any development in the northern and eastern portions of the airport necessary to support an expansion of the air cargo and general aviation facilities will require a full complement of utility services. However, the existing utility infrastructure is expected to meet the needs of the airport and its associated development during the planning period. It is anticipated that there will be sufficient water supply for the next 20 years and the proposed projects are not expected to be large liquid or solid waste generator. Thus, the existing water, sewer, and solid waste disposal systems are considered adequate. However, any additional development on the south or even west side of the airfield would require significant utility extensions to support the proposed development.

To facilitate the management of the airport utilities, it is recommended that a Geographic Information System (GIS) be acquired. This system would allow for the mapping of all the airport utilities, and help improving management of existing facilities such as pipes, appurtenances, and pumping and treatment equipment. It would also improve management of labor resources, through more efficient deployment of field crews.

The development of a stormwater plan would also be needed over the planning period. Given the nature of the airport terrain, which is sandy, the management of stormwater runoff shall be of primary worry at the airport. Indeed, the acidity of rainwater tends to dissolve limestone, which, overtime, leads to the formation of terrain on highly soluble rocks. The proximity of Floridian aquifer is also a concern. That plan would address water quality issues associated with existing stormwater runoff areas, existing development, and future development areas. The ultimate objective of the plan would be to ensure that any existing structures as well as future developments and improvements comply with the Leon County Stormwater Ordnance.

A stormwater master plan usually assess the adequacy of primary stormwater conveyance systems, estimate the cost for stormwater improvements, prioritize stormwater management needs, and identify options available to the on how to finance the cost of construction, operation, and maintenance of stormwater management facilities.

ECONOMIC DEVELOPMENT CONSIDERATIONS

Because the airport is increasingly being viewed as a catalyst for local economic development, the vacant properties on the airfield for business/industries should be maintained and reserved. During the planning period, the airport could possibly attract a regional jet aircraft maintenance facility and develop a Foreign Trade Zone (FTZ). The following describes the sections of land that should be reserved for development, the benefits of a FTZ, and the functions and requirement of a regional jet maintenance facility.

Vacant Properties Available on the Airfield for Business/Industries Implementation

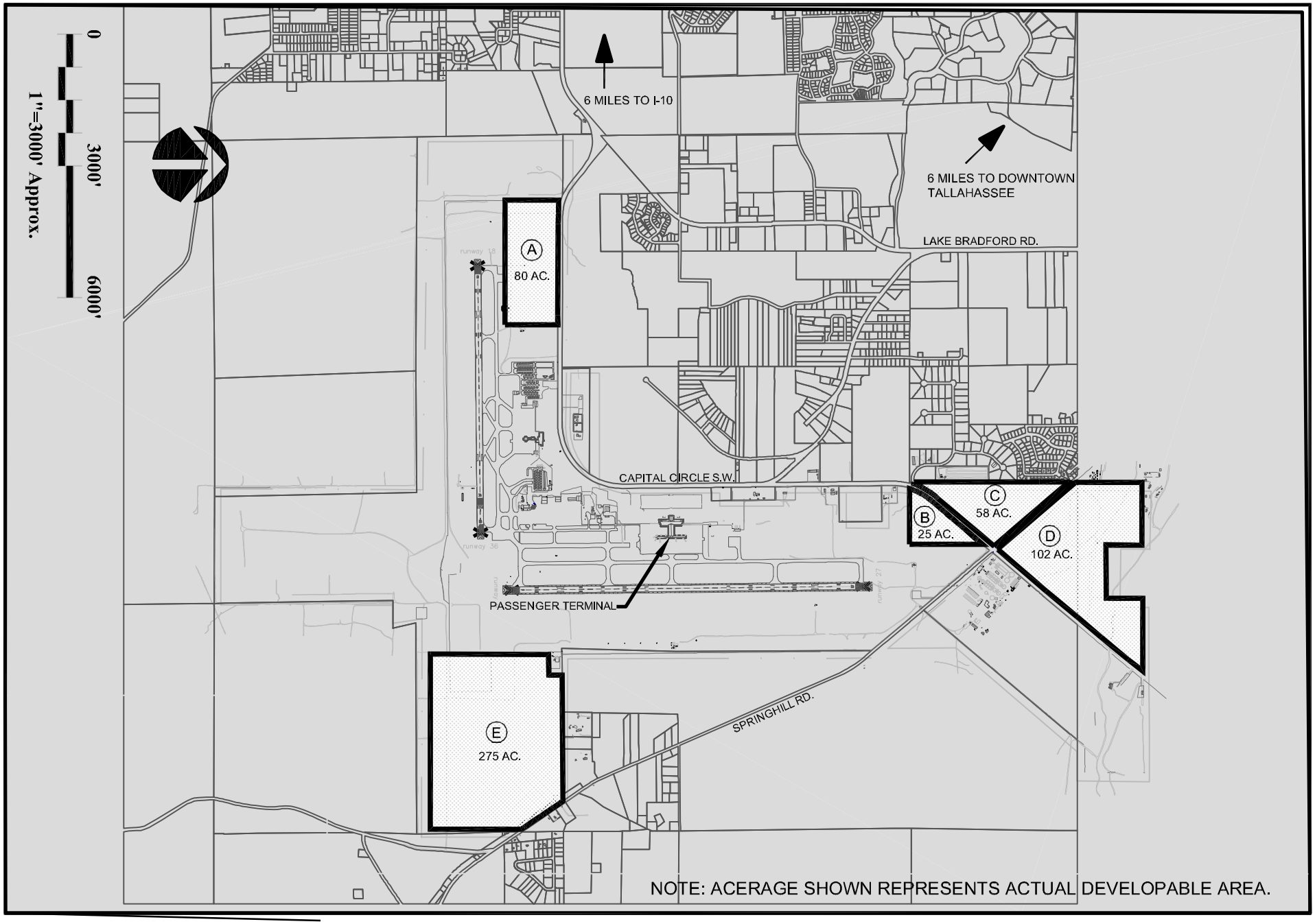
Several areas varying from a single hangar site to 275 acres are immediately available to lease for aviation or non-aviation related development at TLH. The locations for these areas are depicted on **Exhibit 5-3**. The amount of space available for development within these areas includes:

- Area A: 80 Acres
- Area B: 25 Acres
- Area C: 58 Acres
- Area D: 102 Acres
- Area E: 275 Acres

Area A is ideal for aviation related activity with significant frontage along both the north Flightline and Capital Circle S.W. Areas B, C, and D provide space ideally situated for a variety of commercial uses. All of C lies along Capital Circle S.W. while both Areas C and D have frontage along both sides of the Capital Circle S.W. and Springhill Road intersection. Area E, which is located south of Runway 9-27, provides the largest contiguous area for development with both airside and street frontage.

All of the areas are within the City of Tallahassee's Southern Strategy Area, which provides a concurrency exemption for any new business park developed on airport property. In addition, all of the areas are included in the Tallahassee Regional Airport DRI. As such, a number of distinct advantages exist associated with the development of these areas, including:

- City manages Zoning and Land Use.
- City will expedite Permitting.
- City will accommodate Traffic Concurrency.



5-3 AVAILABLE AVIATION AND/OR NON-AVIATION PROPERTIES

- All Stormwater is handled On-Airport.
- Flexibility in Marketing and Development.

It should be noted that any major development at the airport outside these areas may potentially trigger another NOPC to the existing DRI.

Foreign Trade Zone

One of the major advantages the airport could offer manufacturers in the Tallahassee area is a duty-free international trade zone. Foreign or "free" trade zones are secured areas legally outside a nation's customs territory. Their purpose is to attract and promote international trade and commerce by providing a special exemption to the normal customs procedures. Zone status allows businesses to use foreign products to create or enhance other products, then ship these products out of the zone to U.S. markets (customs duties are then applied) or back overseas (no duties applied to parts used). Customs duty and excise taxes are due only at the time of transfer from the trade zone and formal entry in the U.S. The duty paid is the lower of that applicable to the product itself or counterparts. Thus, these zones provide opportunities to realize customs duty savings by zone users. The implementation of such a zone at the airport would possibly attract new businesses, thus creating new jobs and fostering the economy. However, applications should not be submitted until there is convincing evidence of a need for zone services. Though a zone will normally help attract some types of new business activity, an application cannot be based on mere expectations. Letters of intent from firms that are expected to be the first zone users should be included in the application. The other factors that would affect FTZ status are the requirements for a full-time Customs office, Customs acceptable security, and a Customs approved automated inventory system. All three are the financial responsibility of the zone grantee.

Regional Jet Aircraft Maintenance Facility

With the future pattern of commercial passenger aircraft servicing TLH increasingly shifting to regional jet aircraft, the potential may exist for a maintenance, repair, and overhaul (MRO) facility to be established for such aircraft in TLH. This type of center in Tallahassee is potentially attractive to regional airlines able to coordinate maintenance requirements with existing scheduling, rather than having to make special flights to a more distant facility.

RJs operations have increased nationwide, replacing many turboprop and mainline jets. Most aviation analysts and the FAA agree that the size of the regional fleet, the number of regional jet operations, and the number of airports they serve will continue to grow. As mentioned in the Forecast chapter, regional jets currently constitute approximately 95 percent of the commercial aircraft serving TLH. With the rapid regional jet fleet expansion comes similar growth in support needs. Currently, 16 airlines operate regional jets and the total number of North American airports served by U.S. carriers with RJ aircraft is 245. In Florida only, 15 airports are served by RJs. While a business plan would need to be developed to precisely assess the future viability of an MRO facility, aircraft fleet statistics demonstrate a potential for such fleet services at TLH.

TLH has the ability to provide maintenance services to many different types of aircraft operators. Not only are the airport facilities attractive, there is also a relatively large amount of land available for further development at the airport. The current runway lengths (8,000 and 6,076 feet), as well as the precision approach capabilities of the airfield could attract more regional jet aircraft maintenance operations to TLH. In addition, the facility would benefit from a location that is central to the routes and operations of the target operators. Finally, the area would be able to provide the number and type of skilled labor for the aircraft

maintenance industry. Both the Lively Technical Center and Capital Avionics alone could provide the needed workforce for an MRO facility at TLH. Nonetheless, while the airport offers these features and could appear quite attractive to an MRO operator, some facility improvements would still be required, such as taxiway access, and infrastructure improvements.

Specifically, the MRO facility would require, at a minimum, a new hangar equipped with three separate bays, each bay being 100 feet wide and approximately 28 feet high, large apron space with the proper weight bearing capability, and appropriate landside and airside access. This hangar should provide over 18,000 square feet of aircraft and component working space. The longest RJ currently being designed is the Canadair RJ-900, with a length approaching 120 feet. As such, the building should provide a minimum space of 145 feet by 125 feet. Embraer is currently designing the largest RJ, the EMB-190, with a wingspan of 94.25 feet, which falls within the ADG III category. Therefore, the taxilane/taxiway and the apron serving the MRO facility should be designed to accommodate ADG III aircraft. The ramp should be capable of supporting aircraft with a weight of 85,000 pounds using a dual landing wheel configuration. This value corresponds to the maximum ramp weight of the CRJ-900, the heaviest aircraft being designed at the moment.

SUMMARY OF FACILITY REQUIREMENTS

The facility requirements addressed in this chapter were determined necessary to satisfy the demand of activity projected for the TLH over the next 20 years. These proposed facilities do not include any additional facilities that may also be planned to enhance the airfield nor do they reflect any sort of priority. Alternatives to meet the various facility needs are addressed in the next chapter. **Table 5-18** lists the facilities for which the City of Tallahassee's Aviation Department will be responsible.

Table 5-18
SUMMARY OF FACILITY REQUIREMENTS

Runways	- Routine pavement maintenance for all runways - Widen and extend Runway 18-36 blast pads - Reconstruct Runway 9-27 - Conduct Benefit-Cost Analysis for potential Runway 18-36 extension - Potential Runway 18-36 extension - Maintain all imaginary and safety related surfaces - Maintain RPZ clear of obstacles
Taxiways	- Widen Taxiways C, D, E, and F to 75 feet - Straighten Taxiway C - Add fillet pavement where appropriate - Widen Taxiway W - Rehabilitate Taxiway Z as a ramp - Construct high-speed exit taxiways along Runway 9-27 - Construct new taxiway connector at the southwest corner of the existing apron - Enhance connections between the taxiway system north of Runway 9-27 and east of Runway 18-36 - Rehabilitate taxiway pavements throughout planning period - Construct run-up areas for Runway 18 - Construct by-pass taxiway for Runway 9 and 27 - Rehabilitate Lively taxiway
Additional Airfield Facilities	**Navigational** - Conduct Environmental Assessment for precision approach - Establish RNAV precision approach to Runway 9 and 18 ends - Relocate Remote Transmitter/Receiver (RTR) - Replace ASR-8 with ASR-11 **Lighting** - Rehabilitate beacon - Refurbish all runway and taxiway lighting - Install MIRL along Taxiway P - Install MALSR off Runway 9 and 18 ends when RNAV precision approach capability is made available - Equip new cargo apron with blue edge lights

Table 5-18 (CONT'D)
SUMMARY OF FACILITY REQUIREMENTS

	Signs - Add and replace signage as necessary **Pavement Markings** - Periodic remarking of all pavement surfaces - Upgrade north GA apron marking - Relocate lead-in-lines **Security** - Upgrade video surveillance camera systems
Air Cargo Facilities	- Construct cargo apron space to accommodate four B727 - 4,400 square feet of storage space for FedEx. - 13,500 square feet of office/storage space - 60 automobile parking spaces. - Provide 23,400 square feet of tractor-trailer parking and storage - Construct access road to cargo area
Helicopter Facilities	- Construct helicopter blast pads - Create approach/takeoff procedures for helicopters
GA Facilities	- Rehabilitate or Construct 12,930 square yards of aircraft apron space - Construct new FBO - Construct self-fueling facility - Reconfigure landside access - Redevelopment of the old concourse
	- Refurbish or demolish Ivan Monroe hangar (Flightline) - Relocate fence along Lively Technical Center taxiway - Extend Lively apron - Extend State of Florida Forestry Service apron
Utility	- Construct canopy or roof system on top of existing fuel storage facility - Construct new electrical vault - Conduct a stormwater master plan - Develop a centralized GIS system that would identify airport utility
Access and Infrastructure	- Widen Capital Circle S.W. - Construct divisional islands on Capital Circle S.W. - Install inner-fence

Source: THE LPA GROUP INCORPORATED, 2003

Table 5-19 thereafter summarizes the needs of the airport tenants. As mentioned before, the timeframe for the improvements listed in that table depends upon the ability of the tenants to secure funds. The need for these facilities was identified as part of the Master Plan in order to reserve the appropriate space. The City of Tallahassee's Aviation Department will only be responsible for the deliverance of the leases that relate to these facilities. The design and construction of those additional facilities are the responsibilities of the airport's tenants.

Table 5-19
SUMMARY OF AIRPORT TENANTS NEEDS

Tenant Facilities	- Construct 30 T-hangars units - Construct one wash rack - Construct 5,400 square feet of building space for Aero Associates - Construct 10,000 square feet of building space for Capital Avionics - Construct new CAP building - Extend State of Florida Forestry Service by 12,000 square feet

Source: THE LPA GROUP INCORPORATED, 2003

Chapter Six – Airport Alternatives

INTRODUCTION

The analysis of existing facilities, as presented in Chapter Five, indicated that the airport would need airside and landside facility improvements to accommodate the demand projected for the 20-year planning period. The possible combinations of alternatives are countless, so some intuitive judgment must be used to identify those alternatives, which have the greatest potential for implementation. Five major elements must be considered in the development alternatives at Tallahassee Regional Airport. These include alternatives for the airfield, terminal building and apron, air cargo facilities, general aviation facilities, and navigational aids. In addition, the utilization of the remaining airport property to provide revenue support for the airport and benefit the economic development and well-being of the Tallahassee area must be considered after the development alternatives are defined.

The selection of the preferred alternatives for the airfield, terminal building and apron, air cargo facilities, general aviation facilities, and navigational aids, discussed hereafter, is based on comments and directions received by the City of Tallahassee's Aviation Department, Federal Aviation Administration (FAA), and Florida Department of Transportation (FDOT) during the review of the various alternatives.

Runway 18-36 Extension Discussion

As mentioned in Chapter 5, FAA AC 150/5300-13, requires runways with a full-length parallel taxiway have a profile such that an unobstructed line of sight will exist from any point five feet above the runway centerline to any other point five feet above the runway centerline for one-half the runway length. Presently, the Runway 9 end is not visible from the Runway 27 end and vice versa. During their normal round of inspections, the FAA realized this deficiency and subsequently sent a letter to Tallahassee Regional Airport recommending resolution to the line of sight issue. Because this issue seriously impacts airport safety, it is recommended that Runway 9-27 and the associated connecting pavements be completely reconstructed during the short-term planning period. This reconstruction will require Runway 9-27 to be closed for an extended period of time that could last between 8 months to over a year. During this period, commercial and general aviation traffic will be required to operate on the shorter Runway 18-36. As a result, commercial operators will be forced to sacrifice cargo, fuel, or passengers in order to safely operate on the shorter runway. Other commercial operators may have to discontinue their operations altogether until Runway 9-27 is reopened. For these reasons, the possibility of extending Runway 18 was researched in order to create a similarly sized runway to preserve service levels. Furthermore, an extension to Runway 18-36 would create an alternate landing area for all types of traffic during favorable wind conditions, airport inspections, or during other times when the main runway requires closure, thereby increasing the overall capacity of the airfield.

General

The primary outcome of the Master Plan study will be the development of the future configuration of TLH as presented on the Airport Layout Plan (ALP). The ALP is the key, funding document to which the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT) refer for project eligibility determinations, in addition to being an essential guide for orderly development.

Aside from considering those options that would supplement or enhance the operational capacity of TLH airport, the consequences of a "do-nothing" or a "no-built" alternative were reviewed. The "do-nothing" alternative essentially considers keeping the airport in its present condition without any further improvements to the existing facilities. While any evaluation of alternatives can include a "no action" alternative, this would effectively reduce the quality of services being provided to the general public, and potentially affect the airport's ability to attract new passengers and airlines, as well as local economy.

The primary result of this alternative would be the inability of the airport to safely accommodate the projected demand. For example, the Facility Requirements discussion indicated the need for various airfield improvements, including regular pavement rehabilitation. Without these improvements and rehabilitation, areas would fall into disrepair. This would seriously affect the capability of the airfield to continue serving users and the community. Considering that TLH is the only commercial service airport in the Tallahassee area, serving a large population, the "do-nothing" scenario is not recommended if feasible and implemental solutions exist.

Expanding facilities at the airport is also necessary over the next 20 years. To ignore this would restrict the growth of aviation in the local area and region, which in turn, would reflect on commerce and economic growth in the region. In addition, the airport has made assurances to the FAA in accepting past federal grants for airport improvement projects that the facility would be operated at all times in a safe and serviceable condition. Therefore, the "do-nothing" alternative is not considered prudent or feasible, nor is it consistent with the long-term goals of the City of Tallahassee.

It should be pointed out that any development proposed in the Master Plan evolves from an analysis of projected needs over a set timeframe. Even though the needs were determined by reliable methods, it cannot be assumed that future events will not change these needs. The Master Plan attempts to develop a viable scheme for meeting the needs brought about by projected demands for the next 20 years. No scheme should be adopted that requires expensive commitments prior to the certainty of need. However, the plan should allow for flexibility to expand beyond the plan, should the need arise.

AIRFIELD ALTERNATIVES

The Facility Requirements analysis identified several areas where airfield improvements and enhancements were considered to be either necessary or of benefit to the overall operational efficiency of the airfield. As discussed before, the rectification of Runway 9-27 grading remains the main issue. The airfield alternatives described thereafter assume that the use of Runway 18-36 as the primary runway, during Runway 9-27 reconstruction, will generate airline and airport losses in excess of the costs associated with an alternate measure to maintain viable and sustainable air transport services a the airport. Thus, the following airfield alternatives examine what are the options available in order to continue commercial, cargo, and general aviation operations at the airport during the reconstruction of Runway 9-27.

Once the runway alternatives are evaluated, the design of alternatives intended to address airfield access issues at TLH are examined. Primarily, these alternatives address the need to improve aircraft movements on and off the runways through the provision of high-speed taxiways and by-pass taxiways along Runway 9-27, as well as run-up areas of Runway 18-36.

Runway Alternatives

As discussed in prior chapters, TLH has two active runways oriented at 90-degrees to each other, yet not intersecting. Runway 9-27 has published dimensions of 8,000 feet by 150 feet, and Runway 18-36 has a length of 6,076 feet and width of 150 feet.

If the cost of runway extension, improvements, and maintenance were not being taken into consideration, the development of runway alternatives at TLH could be endless. Away from this candid scenario and considering the present and future needs of the airport, the runway alternatives presented thereafter rely solely on the extension and/or upgrade of the existing runway systems. As discussed before, the capacity estimates for the existing airfield at TLH have shown that there is no need for an additional runway. Thus, the construction of a new runway construction was not considered any further.

From a length perspective, the existing runway system at TLH is adequate. However, runway length discussions have revealed that the closure of Runway 9-27 would impose weight restrictions to a majority of commercial, cargo, and business jet aircraft operations required to use Runway 18-36, and therefore supported the fact that additional runway length should be provided or an alternate measure be provided in order to continue profitable and safe air transport services.

In addition, beyond the weight restriction considerations, Runway 18-36 at 6,076 feet presents some safety issues. This runway length provides very little safety margins for those aircraft experiencing takeoff or landing problems. ASA pilots, for example, have indicated that the airline policy requires 7,500 feet of runway in the event of flap malfunctions. These pilots have also indicated that such a flight problem is not an infrequent event. Technical difficulties on takeoff would be even more critical with very limited margin for errors. Besides, the use of a short single runway at TLH could present some capacity issues. Based on FAA calculations, the single runway could handle the peak hour aircraft operations. However, inherent to these calculations is the understanding that there is an acceptable level of delay per operation. The diversity of aircraft traffic flying into and out of TLH would make the sole use of Runway 18-36 at 6,076 feet quite cumbersome to both users and air traffic controllers.

Relocation of services to another airport, during Runway 9-27 reconstruction, is not considered as a potential alternative. As indicated in **Table 6-1**, Dothan Regional Airport is the nearest airport with a runway length exceeding 7,000 feet with precision approach capabilities, 79.3 miles away from TLH. Additionally, it would be difficult to duplicate the services provided by the airport at an existing facility. Thus, the relocation of current air transportation services from TLH to another airport is not viable and unrealistic.

Table 6-1
NEIGHBORING PUBLIC AIRPORTS WITH RUNWAY LENGTH EXCEEDING 6,000' AND PRECISION APPROACH CAPABILITIES

Airport	Paved Runway Length and width	Approach Type	Distance from TLH (in nautical miles)
Valdosta Regional Airport, GA	6,302'x 150' 5,598' x 100' 3,636' x 75'	Precision Non-Precision Visual	60.1
Southwest Georgia Regional Airport, GA	6,601' x 150' 5,200' x 150'	Precision Non-Precision	68.8
Panama City-Bay Co International Airport, FL	6,308' x 150' 4,884' x 150'	Precision Visual	69.9
Dothan Regional Airport, AL	8,498' x 150' 5,000' x 150'	Precision Non-Precision	79.3
Lake City Municipal Airport, FL	8,003' x 150' 4,001' x 75'	Non-Precision Visual	92.8

Source: AirNav.com

Similarly, consideration for the construction of a third runway that would meet the airline and cargo operators' runway length requirements was rejected. Indeed, the economic and environmental costs of new runway development are generally far greater than the cost of extending an existing runway. Thus, the extension of Runway 18-36 is considered the best option available in order to fulfill the need of the airport's users during and beyond the reconstruction of Runway 9-27.

One of the factors considered for the Runway 18-36 extension alternatives was the overlapping of the runway's safety areas. Because such an overlap poses some major safety issues, it is not recommended. As illustrated in **Exhibit 6-1**, the edges of the runways' safety areas are currently 68 feet apart. Thus, if the overlap of the runways' safety areas is not envisioned, the extension of Runway 18-36 to the south is basically precluded.

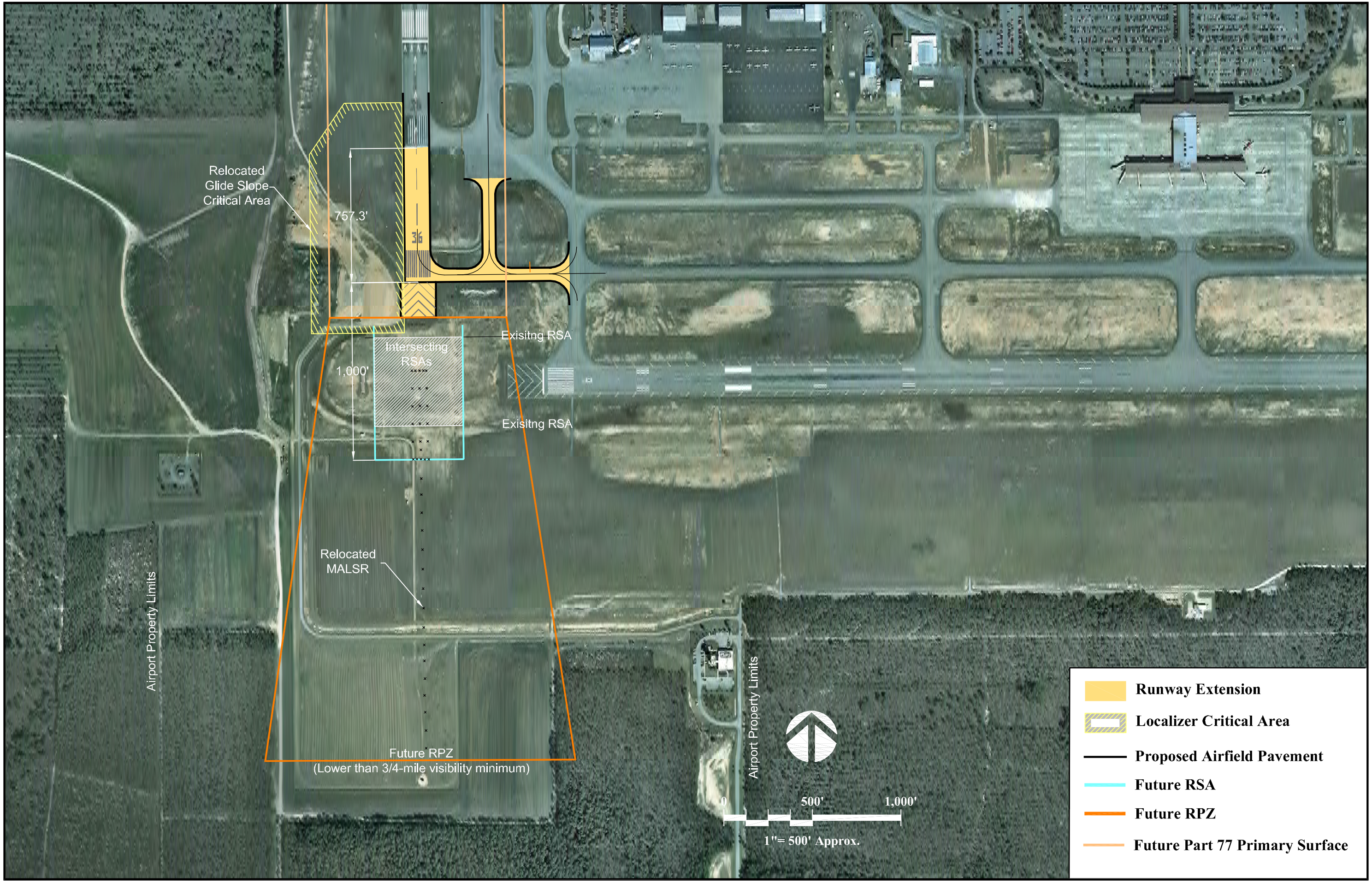
Alternative A – Extend Runway 18-36 to the South

Exhibit 6-2 shows the extension of Runway 18-36 to the south by 757 feet. In this alternative, the Runway 36 end lines up with Taxiway P extended centerline. Associated with the runway extension would be an extension of Taxiway P to the new runway threshold and reconfiguration of the runway lighting system and signage. In addition, this runway extension would require the relocation of the existing Precision Approach Path Indicator (PAPI) system, Runway Ends Identification Lights (REILs), glide slope antenna, and approach lighting system associated with the ILS. During these relocations, the approach category would have to be temporarily reduced from a precision to a visual approach.

Finally, the most negative, yet unavoidable, aspect related to this alternative is the overlapping of the runways' safety areas. While this issue should not pose a major problem on a daily basis, airport design requires consideration of the worst-case scenario. The overlapping of the safety areas could be critical in the event of aircraft overruns on Runways 9 or 36.

RUNWAY SAFETY AREAS

RUNWAY 18-36 SOUTH EXTENSION (6,833')



6-2

Alternative B – Extend Runway 18-36 to the North by 924 feet

The second alternative involves the extension of Runway 18-36 to the north to provide a 7,000-foot runway. This alternative is displayed in **Exhibit 6-3**. This runway length is considered suitable for the needs of the air carriers, cargo operators, and general aviation users expected to use it. As illustrated in **Figure 1** of the Facility Requirement chapter (Chapter 5), the Boeing 727-200 and Airbus A320-200 are the only aircraft for which weight restrictions would be required in order to fly a 1,000 nautical miles stage length under dry runway conditions.

The existing parallel taxiway (Taxiway A) would be extended to serve the new Runway 36 end. Additionally, the northern extension of the runway would require the relocation of the PAPI system, REIL system, fence, service road and ILS localizer antenna. This alternative would also require the grading and clearing of the RSA, ROFA, and RPZ.

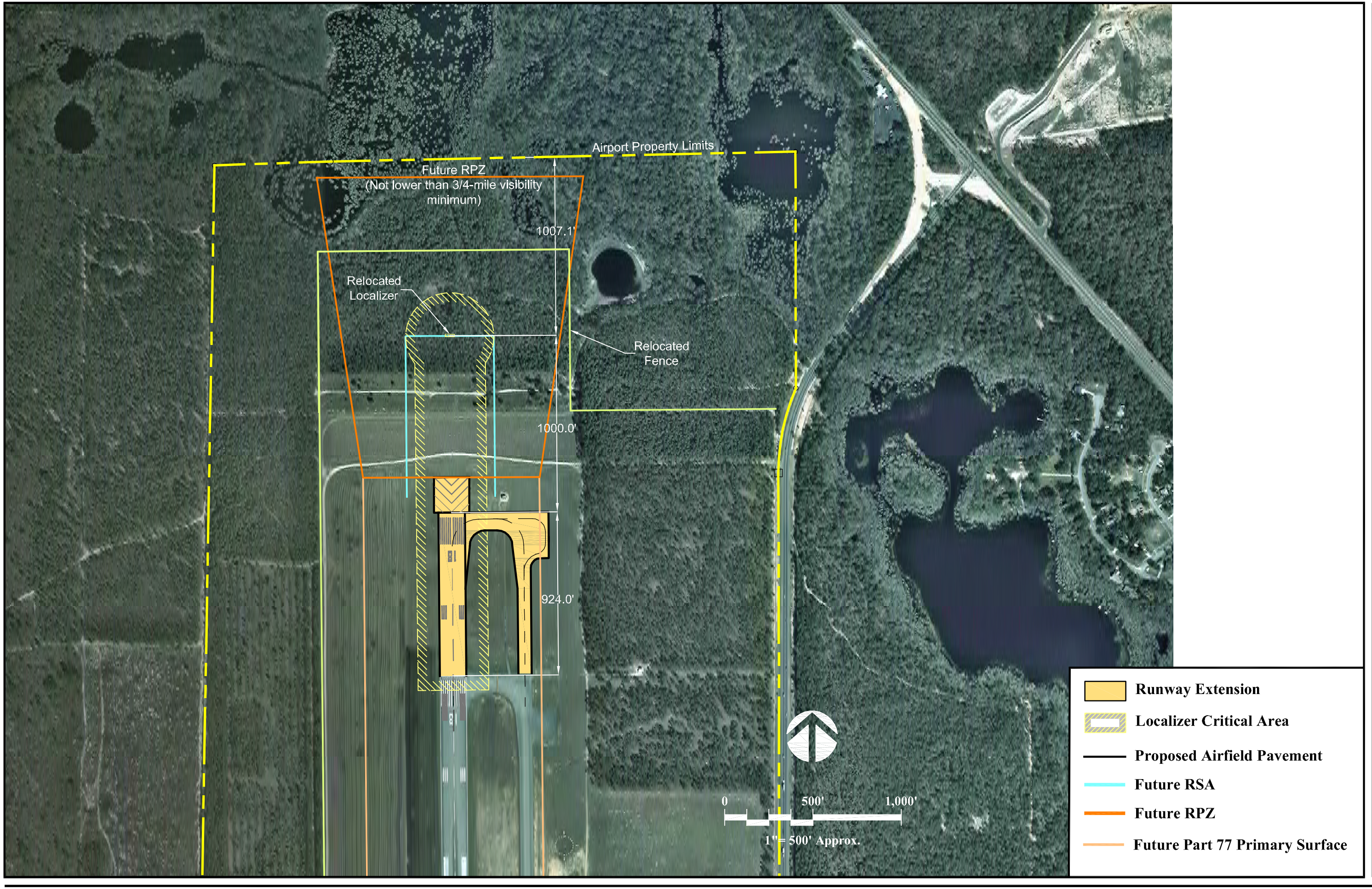
The runway extension will also affect the airport imaginary surfaces designed to protect the airspace around the airport. Review of the data obstructions along Runway 18-36 extended centerline shows that some tree clearing would be required to eliminate encroachment of the 34 to 1 approach surface. However, no major obstructions, such as buildings or towers have been identified. This alternative is therefore viable.

Alternative C – Extend Runway 18-36 to the North by 1,424' or 1,924'

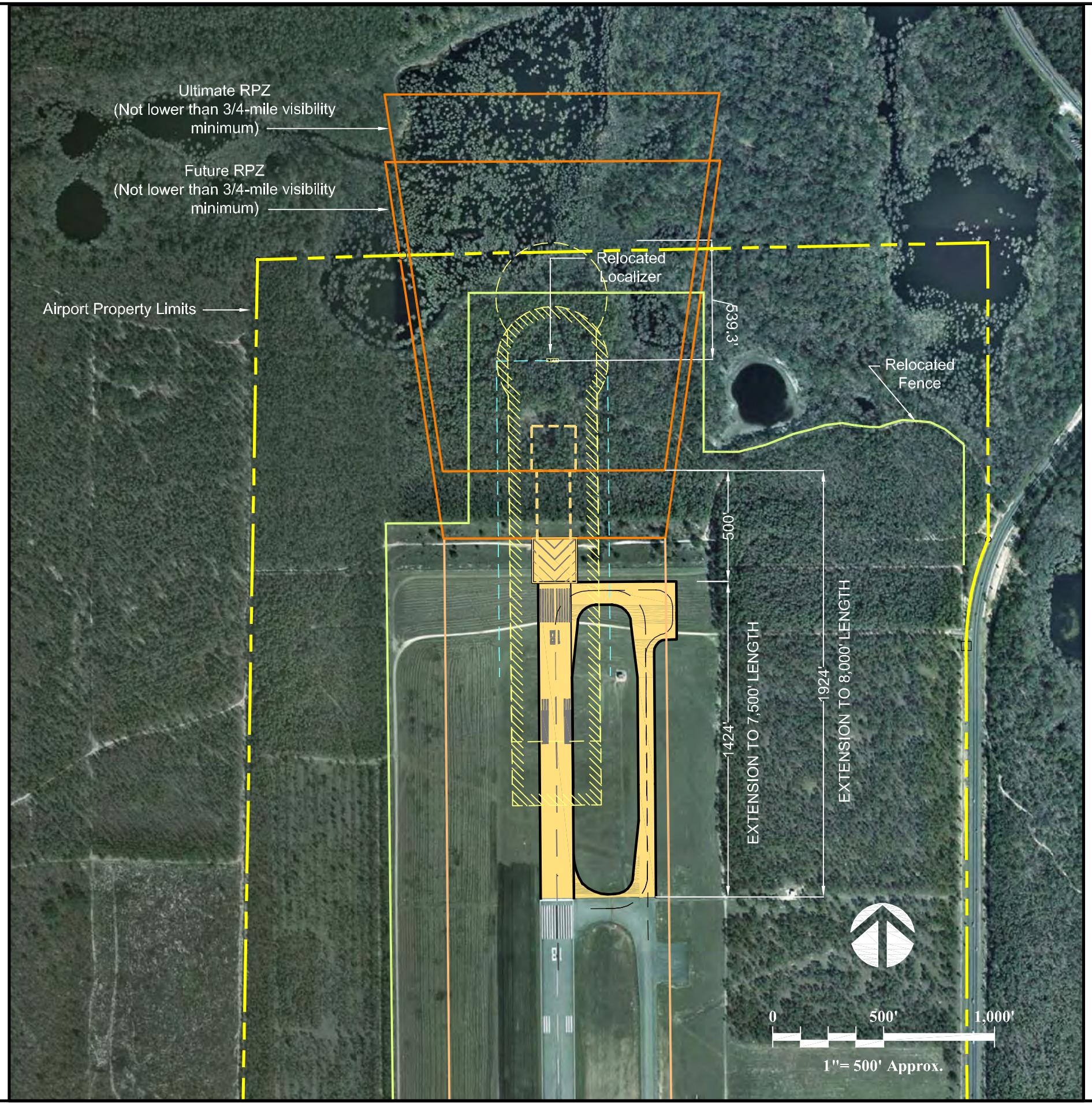
In Alternative C, Runway 18-36 is shown with two northerly extension options. The first option extends the runway a distance of 1,424' for an ultimate length of 7,500'. The second option proposes an extension of 1,924' to achieve an ultimate length of 8,000'. The option of extending the runway to 8,000' provides the highest level of safety while increasing the airport's overall capacity and is therefore the most desired option. However, this option also creates the most significant environmental impacts and would require the acquisition of additional land and/or easements thereby creating a very costly alternative. In both cases, the edge of the runway blast pad merely overlaps the line of trees north of Runway 18-36 extended centerline. As illustrated in **Exhibit 6-4**, the runway safety and localizer critical areas would remain within the airport's property. Conversely, both future and ultimate RPZs slightly extend beyond the airport's property line. Should this alternative be pursued, it is recommended that the airport obtain some form of control of the property located inside the RPZ and under the ultimate 34 to 1 approach surface as specified by the FAA. This could be through appropriate land use controls or legal agreements, such as avigation easements.

This alternative would require significant earthwork. In addition, as the RPZ and approach surface extend above the Apalachicola National Forest, major tree clearing would be required. The wooded swamp area located north of the blast pad would have to be filled to provide the appropriate RSA and ROFA grading. Environmental issues would have to be addressed before the completion of the runway extension and mitigation efforts proposed. As mentioned in the FAA AC 150/5300-13, Change 7, "it is recommended that the entire RSA and RPZ be accessible to rescue and fire fighting vehicles so that no part of the RSA or RPZ is more than 330 feet from either an all weather road or a paved operational surface." Thus, a service road would have to be constructed to access the remote corners of the RPZs.

RUNWAY 18-36 NORTH EXTENSION (7,000')



6-3



- Runway Extension
- Localizer Critical Area
- Proposed Airfield Pavement
- Future RSA
- Future / Ultimate RPZ
- Future Part 77 Primary Surface

RUNWAY 18-36 NORTH EXTENSION (7,500', 8,000' ULT.)

6-4

Selection of the Preferred Runway Alternative

Alternative A was rejected because an extension of this runway would create an overlapping of the runway safety areas. Alternatives B and C provide sufficient runway length to accommodate current and reasonably anticipated air transportation demand. Alternative C provides a better option regarding aircraft takeoff length requirements. In addition, only Alternative C will fulfill the needs of each airline during Runway 9-27 reconstruction. Alternative C also provides slightly higher levels of safety enhancement, delay reduction, and capacity benefits.

While Alternative C will trigger higher costs and environmental impacts than Alternative B, the same types of permits will be required and similar environmental mitigation would be required. Both alternatives, for example, impact the 100-year floodplain. Thus, as a minimum, it is recommended that Runway 18-36 be extended by an additional 1,424 feet to a total length of 7,500; however, the 1,924' extension to the north shown in Alternative C would be more desirable due to the added levels of safety and capacity created by the additional runway length. The extension of runway 18 should be divided into stages by implementing a short-term extension of runway 18 to 7,500' but the Airport's long-term plan should also include an additional 500' extension to achieve the desired 8,000' length. This extension would enhance airfield capacity and allow the airport to remain fully functional during the closure of Runway 9-27 during times of maintenance or construction. Extending runway 18/36 to an ultimate length of 8,000' would also allow both runways to function as primary runways during adverse weather conditions and prevailing winds since it will have equivalent length of runway 9-27 and will have similar approaches as well. The proposed extension will also prepare TLH for many of the aircraft that are expected to increase operations in and out of TLH in the future. Thus, **Alternative C (Exhibit 6-4)** has been selected as the preferred runway alternative for this study. This runway configuration will be utilized throughout the rest of this alternatives analysis.

Although the extension of Runway 18-36 to the north can be achieved through the purchase of easements rather than land purchases, it would entail an Environmental Assessment (EA) study. This study could recommend some actions concerning the wetland and animal/natural species to be impacted.

TAXIWAY ALTERNATIVES

The Airport currently has an extensive system of taxiways that enhance capacity and provide for the efficient movement of aircraft. Taxiways P and S serve primary Runway 9-27 to the north. The crosswind runway, Runway 18-36, is served by Taxiway A to the east.

As noted in the Facility Requirements chapter, there are design standard concerns with regard to current taxiway configuration and sizing that must be addressed. Taxiway centerlines to runway centerline spacing requirements are 400 feet for ARC C-IV runways and taxiway width requirements are 75 feet. The following sections discuss alternatives for the major taxiway improvements that will be required to maintain compatibility with FAA design criteria, as well as to enhance the overall airfield capacity.

Parallel Taxiway South of Runway 9-27

While it is not anticipated that the demand for one full-length parallel taxiway south of Runway 9-27 will occur during the 20-year planning period, the area south of the runway should ultimately be preserved for such a taxiway. This parallel taxiway will be included in the ALP drawings in order to ensure its viability in the future.

The parallel taxiway south to Runway 9-27 would need to be constructed with a minimum runway centerline to parallel taxiway centerline of 400 feet. This is based on the criteria contained in FAA AC 150/5300-13, Change 7, for aircraft in Approach Category C and Design Group IV. Likewise, it should be constructed to a width of 75 feet wide. The construction of this parallel taxiway would require the relocation of the ILS glide slope antennae.

High Speed Exit Taxiways along Runway 9-27

As indicated in the Facility Requirements chapter, the construction of acute-angled exit taxiways (commonly referred to as a high-speed exit) along Runway 9-27 would enhance the Airport capacity. While the construction of these taxiways is not foreseen within the 20-year planning period, appropriate space should be reserved for those. A brief discussion on what is considered the best location for high-speed exit taxiways at TLH follows.

High speed taxiways designed to expedite aircraft turning off the runway after landing, at speeds up to 40 knots, would reduce the runway occupancy time; thus, increasing the overall airfield capacity. The overall objective of these taxiways is to enable aircraft to move at a reasonable speed directly away from the runway as quickly as possible, and clear the total runway safety area in the optimum possible time so that the runway is safely available to the next landing or departing aircraft.

According to FAA AC 5300/13, Change 7, a 600-foot runway-to-taxiway separation distance is necessary for an efficient acute-angled exit taxiway, which includes a reverse curve for "double-back" operations. Thus, the separation distance between Runway 9-27 and Taxiway P is considered appropriate for the construction of high-speed exit taxiways. The ample separation distance between the runway and taxiway allow for a long taxiway on which aircraft can continue their deceleration. Because aircraft have a long distance available to decelerate before reaching the parallel Taxiway P, they can turn off the runway at higher speeds.

Review of the exit taxiway cumulative utilization percentages as listed in Appendix 9 of the design AC reveal that 100 percent of large aircraft, weighing between 12,500 and 300,000 pounds, exit at or before an exit located 6,500 feet from the threshold under dry runway conditions. Zero percent of these airplanes exit at or before an exit located 3,000 feet from the runway threshold. Thus, acute-angled exit taxiways at TLH should be located between a distance of 3,000 and 6,500 feet in order to accommodate a large number of aircraft.

To determine the appropriate location of the high-speed exit taxiways, a calculation was made to determine the distance it would take an aircraft to decelerate comfortably to a speed of 30 and 40 knots before initiating a change of direction. Results of these calculations are shown in **Table 6-2**. These results assume a constant rate of deceleration on the runway of eight feet per second. While there was no data available for the regional jets, those are more likely to have approach speeds similar to the large business jet such as the Gulfstream IV.

The average of the calculated distances (excluding the DeHavilland Dash 8-300) is approximately 4,317 and 4,193 feet for a runway exit speed of 30 and 40 knots, respectively. Thus, it is reasonable to assume that the optimum points to begin turning off the runway centerline are located approximately between 4,000 and 4,500 feet from runway ends. Pilots can always correct aircraft landing distances by adjusting their decelerating speeds though the application of brake pressure or the deployment of spoilers.

Given the existing airfield configuration and the current location of the passenger terminal apron, it is recommended that high-speed exit taxiways be located approximately 4,200 feet from the Runway 9 end and 4,000 feet from the Runway 27 end. Regarding the design of the high-speed exit taxiways, the radius of the

fillet on the inside of the curve should be sufficient enough to provide a widened taxiway throat. These wider sections would facilitate recognition of the entrance and turnoffs onto the taxiway. In addition, for safety reasons, 50 knots should be used as the reference for determining curve radii and adjacent straight portions for those rapid exit taxiways. Proposed high-speed taxiways are illustrated in **Exhibit 6-5**.

Table 6-2
HIGH-SPEED EXIT TAXIWAYS LOCATION

	Touchdown Speed	Taxiway Exit Location from Runway End (Exit runway @ 30 knots)	Taxiway Exit Location from from Runway End (Exit runway @ 40 knots)
Boeing 757-200	130	4,343’	4,219’
Boeing 737-500	135	4,570’	4,445’
Boeing 737-300	132	4,433’	4,308’
Boeing 737-200	132	4,433’	4,308’
Boeing 727-200	133	4,478’	4,354’
Boeing 717	130	4,343’	4,219’
Airbus A320-200	133	4,478’	4,354’
Airbus A319	133	4,478’	4,354’
MD 88	130	4,343’	4,219’
Gulfstream IV	139	4,805’	4,680’
Gulfstream III	131	4,388’	4,263’
Learjet 35	138	4,710’	4,585’
Falcon 900	96	2,988’	2,863’
Falcon 50	109	3,444’	3,319’
Dehavilland Dash 8-300	87	2,675’	2,550’

Source: Airport Design, A. L. Deveraux, 1994.

Additional Taxiway Improvements

Consideration should be given to extending Taxiway P to the west by 450 feet and Taxiway A to the south by 140 feet so that they tie together. This taxiway extension will enhance the aircraft traffic flow between the taxiway systems north of Runway 9-27 and east of Runway 18-36. Given the L-configuration of the Airport, there are no other viable alternatives to improve traffic flow between the two systems.

It is recommended that the bypass taxiways designed to serve both ends of Runway 9-27 be built parallel to the main entrance taxiway serving the runway. Both bypass taxiways will be shown at a 400-foot separation from Taxiways A and P on the Airport Layout Plan (ALP). The use of these bypass taxiways will decrease Runway 9-27 available takeoff distances to approximately 7,400 feet, meeting the takeoff requirements of a large majority of aircraft operating into and out of TLH.

As illustrated in **Exhibit 6-2**, if Runway 18-36 is extended to the north, provision should be made for a new run-up area along the extension of the parallel Taxiway A. Currently, the area east of the Runway 36 blast pad and south of the Taxiway A alignment provides sufficient room for the holding of small aircraft. Should Runway 18-36 be extended further south, the existing entrance taxiways serving Runway 36 could serve as bypass taxiways. These run-up areas need to be constructed to a size capable of accommodating one Design Group II aircraft or multiple Design Group I aircraft, as such areas would be primarily used by smaller aircraft.

Finally, as noted in the Facility Requirements Chapter, several taxiways will require widening and improvements in order to comply with ADG IV requirements. Taxiways C, D, E, and F would require widening to 75 feet, Taxiway C should be straightened, appropriate fillet pavement should be added where needed, and a new taxiway connector at the southwest corner of the existing apron should be constructed. The recommended taxiway improvements are illustrated in **Exhibits 6-5** and **6-6**.

PROPOSED TAXIWAY IMPROVEMENTS - RUNWAY 9-27

CENTRAL APRON (Existing)

Cargo Apron (under construction)

High-Speed Exit Taxiway

High-Speed Exit Taxiway

75'

215.0'

150'

Runway 27 Exit Turn

4045'

2544'

Runway 27 Touchdown Point

1500'

75'

Runway 27 End

1500'

2713'

4213'

400'

75'

Runway 9 End

Runway 9 Touchdown Point

Runway 9 Exit Turn

Airport Property Limits

0 600' 1,200'

1"= 600' Approx.

Proposed Taxiway Improvements (2004-2024)

Proposed Taxiway Improvements (Beyond 2024)

6-5

PROPOSED TAXIWAY IMPROVEMENTS - RUNWAY 18-36

6-6

GENERAL AVIATION ALTERNATIVES

The airport serves the general aviation community in the Tallahassee area. As such, certain types of facilities, including hangars and general aviation terminals, are needed to adequately support this aviation community. The Facility Requirements analysis has shown that over the 20-year planning period new facilities will be needed to support additional based aircraft storage, transient ramp, and the needs of the various tenants currently present on the airfield. In addition, space should be reserved for the operations of a new FBO.

It should be noted that it is the airport's goal to maintain the general aviation activity along the North and South GA aprons. Indeed these areas have readily developable land, construction of hangars and taxilanes designated to small aircraft had already been undertaken, and general aviation operations in that area avoid the mix of large jet and small single or twin-engine aircraft operations, thus increasing the overall airport safety.

North GA Apron

The North GA apron and its surrounding vicinity offer a lot of potentiality for new development. This area is currently underutilized due to the poor and degrading conditions of the apron and facilities. The area east of the old passenger terminal is a vast automobile parking lot that offers a lot of vacant space for potential development as well. When FedEx relocates east of the existing passenger terminal, their former facility could be used by a variety of freight forwarders and other types of cargo operators that are in need of space. However, the development of this area is rather dependent upon the existing FBO, Flightline, which leases most of the area. Thus, future development is likely to be dictated by Flightline vision rather than the City of Tallahassee's Aviation Department.

Nonetheless, **Exhibit 6-7** identifies four potential hangar expansion sites, as well as a future general aviation development area, north of the existing T-hangars, which could welcome either corporate hangars or new t-hangars. As illustrated in **Exhibit 6-7**, Sites E and F will be available for development as soon as FedEx relocates and could accommodate several hangars as well. Site G is ideal for the expansion of Aero, who has indicated the desire to expand their hangar to accommodate aircraft in the group II category.

Central and South GA Aprons

Conversely to the North GA apron area, the South GA ramp is an area full of activity where numerous aircraft operations occur. The proximity of the FBO, flight school, and maintenance facilities lead to significant aircraft and vehicle traffic. As mentioned before, it is not unusual to see as many as 50 transient aircraft parked in this area at any given time.

As indicated in the previous chapter, Taxiway Zulu (Z) should be rehabilitated as a ramp with a connection to the South GA apron, thus serving as an apron edge taxilane. This improvement would increase the size of the ramp to provide additional aircraft parking space. Remarking of the South GA apron would also improve space utilization on the ramp thus creating additional aircraft parking space. As illustrated in **Exhibit 6-8**, multiple hangars could be built south of the State of Florida hangar, should the demand for aircraft storage increase.

Exhibit 6-8 also shows the latest layout of the central apron to be constructed during the summer of 2005. Site B could accommodate two 100' x 100' hangars or one 200' x 100' and one 50' x 100'. Site C, which encompasses 10,000 square feet, is reserved for the expansion of Capital Avionics.

Future GA Development Area

The area north of the existing t-hangars is more likely to evolve dependent upon future tenant demand. The ultimate storage capacity will vary widely depending upon what type of operation or facilities that occupy the area. A parcel could be leased to a corporate user to construct a large hangar for a limited number of aircraft; conversely an FBO could construct a similarly sized hangar on the same parcel that would store numerous aircraft. The overall goal is to reserve this area for GA development per the airport's preference, with 10 acres being specifically reserved for a future FBO. The construction of additional t-hangars in this area would present several advantages. Developments along Runway 18-36 are more likely to be preserved for general aviation use. Thus, light single- and multi-engine aircraft are less likely to be damaged by the engine blasts associated with larger commercial and corporate jet aircraft. In addition, the area is close to Runway 18-36, which is the preferred runway for GA operations.

EXISTING BUILDING DATA TABLE	
BLDG.	DESCRIPTION
1	OLD TERMINAL BUILDING
2	AERO ASSOCIATES HANGAR
3	NORTH CARGO BUILDING
4	FLIGHTLINE NORTH B (USFS)
31	T-HANGAR B
32	T-HANGAR C
33	T-HANGAR D
34	T-HANGAR E
35	T-HANGAR F
36	T-HANGAR G
37	T-HANGAR A (Port-a-ports)
38	CORPORATE HANGARS EE
39	FLIGHTLINE NORTH A (Pepsi)
40	CORPORATE HANGAR D

POTENTIAL HANGAR DEVELOPMENT SITES

C	Area is 160' x 175', ideal for a new 130' x 150' hangar suited for commecial use.
D	Area is 200' x 150', ideal for a new 175' x 130' hangar suited for commercial use.
E	Area is 142' x 164'. ideal for a 140' x 140' hangar. Minimum standards for aircraft parking can be accommodated on new ga apron until federal express relocates.
F	Fedex relocation will make this area available once new cargo facility is constructed.

Proposed Apron

Existing Structures

Potential Site for Hangar Development

Flightline Lease

NORTH GA APRON POTENTIAL DEVELOPMENT

6-7

CENTRAL AND SOUTH GA APRON POTENTIAL DEVELOPMENT

EXISTING BUILDING DATA TABLE	
BLDG.	DESCRIPTION
4	FLIGHTLINE NORTH B (USFS)
5	OLD FIRE STATION
6	ELECTRICAL VAULT
7	FUEL FARM
8	FIRE STATION NUMBER 5
9	FLIGHTLINE SOUTH A (Ivan Munroe)
10	FLIGHTLINE SOUTH B (Coastal)
11	CIVIL AIR PATROL
12	STATE OF FLORIDA (DMS Hangar)
13	LEON COUNTY SHERRIFF
14	STATE OF FLORIDA (FOREST SERVICE)
15	LIVELY TECHNICAL SCHOOL (LTS)
20	CAPITAL AVIONICS HANGAR

POTENTIAL HANGAR DEVELOPMENT SITES

B	IDEAL FOR MULTIPLE 100' x 100' HANGARS OR A 100' x 265' HANGAR.
C	CAPITAL AVIONICS ONLY ONE ELIGIBLE TO DEVELOP THIS AREA. AREA IS 100' x 100'.

NAVIGATIONAL AIDS ALTERNATIVES

As noted previously in this report, two precision instrument approaches are currently available at TLH to Runways 27 and 36. In the Facility Requirements discussion, the ability to install precision approaches to Runways 9 and 18 was identified as a recommendation. Since it is anticipated that these precision instrument approaches would not be added until later in the planning period, the use of the Global Positioning Satellite (GPS) system capability will be planned to meet this improved approach capability. The following discussion reviews the various attributes and impacts associated with the implementation of precision approaches at the ends of Runway 9 and 18.

The provision of precision instrument approaches to Runway 9 and 18 would require the establishment of approach surfaces extending for a horizontal distance of 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1. Thus, to accommodate an unobstructed approach, both ends of the runways would require tree trimming and/or removal.

Along the Runway 9 final approach alignment, trees would require trimming both on and off airport property. Similarly, a review of the Runway 18 final approach reveals that only a few trees have been identified as encroaching the 50:1 approach surface to Runway 18. As mentioned before, the number of trees requiring trimming will significantly increase if Runway 18 is extended. The proposed precision approach to Runway 18 should be performed in conjunction with the extension of runway 18 since tree removal and surveying will both be required during the GPS installation and runway extension as well.

The obstructions to the ends of Runways 9 and 18 are addressed in the Airport Layout Plan (ALP) chapter and depicted on sheets six and seven of the ALP set. The first precision instrument approach should be established for Runway 9 since it's the primary runway and is capable of handling the most demanding aircraft expected at the airport.

In addition, a precision approach requires a Runway Protection Zone (RPZ), which should be owned in fee by the airport. The RPZ dimension for a particular runway end is a function of (primarily) aircraft approach category and visibility minimum. Because Runway 9 is expected to accommodate aircraft within various approach categories with visibility minimums lower than ¾ mile, the precision RPZ should have an inner width of 1,000 feet, an outer width of 1,750 feet, and a length of 2,500 feet. A review of the ALP reveals that the Runway 9 precision approach RPZ will be just about entirely contained within the airport property. Runway 18 is not expected to support aircraft operations with a lower than ¾ mile visibility minimum. Thus, Runway 18 precision RPZ will be slightly smaller than the Runway 9 RPZ The RPZ for Runway 18 would extend 1,700 feet from the primary surface. The RPZ would be 1,750 feet wide at the outer end and 1,000 feet wide at the inner end and remain well within the airport property.

Each precision approach should also have visual navigational aids to increase runway visibility during IFR conditions. Thus, it is recommended that a Medium Intensity Approach Lighting System with Rail (MALSR) be installed in conjunction with each GPS precision approach. The MALSR lighting system is depicted on the ALP sheet at each runway end that has a planned GPS approach.

LAAS Requirement

As mentioned in **Appendix C**, the Local Area Augmentation System (LAAS) will augment the GPS system to provide instrument landing system (ILS) to aid aircraft on approach. The LAAS, in particular, will permit Category I, II, and III precision approaches to each runway end without the need for additional ground

support equipment, such a VOR, ILS, or glideslope. For the purpose of this Master Plan Update, LAAS ground equipment requirements and sitting criteria are of main concern. It is important that the Airport reserve space for the installation of the ground support equipments associated with a LAAS system.

According to the FAA, the LAAS ground facility will include multiple reference antennas, receiving equipment, processing software/hardware, and VHF Data Broadcast (VDB) equipment. The GPS signals received by multiple reference antennas are processed to obtain differential correction and integrity information. The VDB equipment transmits the correction and integrity information to the airborne subsystem. The airborne subsystem uses the information obtained from the GPS satellite constellation and the ground subsystems to calculate differentially corrected position estimates. The reference antennas and the VDB equipment require very limited amount of space. However, preferable locations would be those that provide access to electrical power and are easily accessible. No data is currently available on the sizing of the electrical cabinet. However, preliminary studies show that the hardware/software equipment associated with a LAAS system should not encompass more than 100 square feet.

In addition, the LAAS ground equipment is expected to reduce siting constraints when compared to traditional NAVAIDs, such as the ILS. The LAAS ground facility will not require siting at a specific area on the airport and no extensive grading will be necessary. The area required to accommodate the LAAS system will be limited to the physical dimensions of the hardware; and the required LAAS components do not require co-location. The only constraint associated with the LAAS system will be the need to maintain an area in the vicinity of the antennas clear of obstacles. Any object within the LAAS object clearance area will result in diminished system performance.

At TLH, the LAAS electronic cabinet could be located close to the existing Air traffic Control Tower (ATCT) and the antennas could be dispersed at various locations on the airport property. Further study from the FAA would be required for the determination of the antennas exact locations. Electronic and magnetic interference, as well as line of sight would have to be checked before final installation. One of the main requirements associated with the LAAS ground support equipment, for example, is the need for a clear line of sight between the satellites and antennas. At this point, the FAA has not yet published the obstacle free zone requirements for LAAS systems. Thus, no further study could be made. However, it is worth noting that the Airport offers a lot of land available for development, thus the installation of a LAAS system should not pose an issue.

SUPPORT FACILITES ALTERNATIVES

Remote Transmitter/Receiver

As indicated in the Facility Requirements chapter, the relocation of the remote transmitter/receiver (RTR) is recommended in order to extend the communication range of the air traffic control facility. The RTR provides ground-to-ground communications between air traffic controllers and pilots for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times. As a secondary function, they may be used for advisory purposes whenever the aircraft is below the coverage of the primary air/ground frequency. As the RTR serves the terminal ATC facilities, a clear line of sight should be established between the two facilities.

The existing RTR encompasses an area of approximately 1,250 square yards and is located approximately 1,065 feet from the Runway 18-36 alignment. While the FAA would have to approve the relocation of the

RTR facility to another site, one alternate location could be an area west of Runway 36 end at a minimum separation of 500 feet from the Runway 18-36 centerline. This recommended site provides clear lines of sight between the airfield movement areas including runways, taxiways, and apron, and the RTR. The recommended site for the RTR facility is depicted on **Exhibit 6-9**.

Airport Surveillance Radar

As indicated in the previous chapter, the location of the new ASR-11 should encompass an area of approximately 2,180 square yards. The ASR-11 system will include the following facilities: an antenna tower, an electronic equipment shelter/building with heating, ventilation and air conditioning, a power distribution system, an uninterruptible power supply, a back-up emergency engine/generator set, fire detection, security, and cabling to connect the radar to the local radar approach control center. Telephone and power lines should also be provided to the site. The total structure height will vary between 47 to 107 feet in height depending upon local surrounding obstructions to the radar signal such as trees, buildings and local terrain. Based on height restrictions defined by the FAR Part 77 and assuming a total structure height of 107 feet, the ASR area should be located at a minimum distance of 1,250 feet from the centerline of either runway. This distance requirement does not account for ground elevation variations. The FAA also recommends that the ASR antenna be located as close to the ATCT control room as practical and at least 1,500 feet from any building or object that might cause signal reflection and at least one-half mile from other electronic equipment. The proximity of the Doppler radar northeast of Runway end also needs to be considered. Technical study will be required to ensure the Doppler radar will not have an impact on the weather radar, and vice versa.

The Moving Target Indicator (MTI) should be located in line of sight and between 0.5 and 6 nautical miles from the primary radar antenna. In addition, a monopulse secondary surveillance radar remote system monitor shall be installed in line of sight and between 0.5 and 10 nautical miles from the radar antenna. This system will provide a fixed location for monitoring the performance of the secondary radar by automatically replying with preset codes to secondary radar interrogations. As indicated by the FAA, this monitor can be installed at existing facilities.

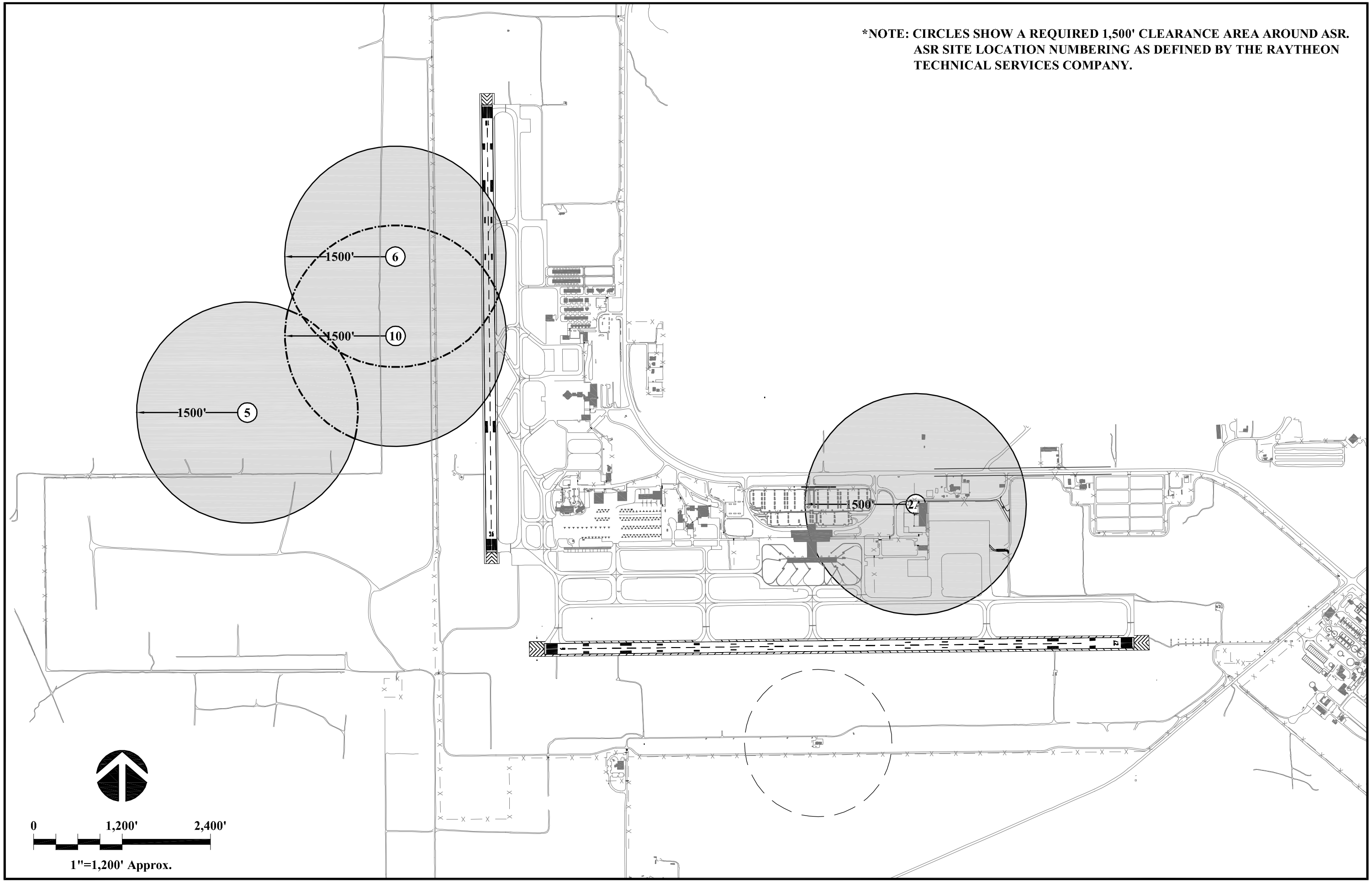
The FAA, working jointly with Raytheon Technical Services Company initially evaluated seven possible sites for the proposed ASR-11 facility. Further coordination between the two agencies resulted in the identification of site 10 as the selected site for the future ASR-11 installation. Site 10 is denoted in **Exhibit 6-10** along with the previously considered development areas. As mentioned before, land areas within 1,500 feet of the site should remain clear of buildings or objects that might cause signal reflection.

A site-specific draft environmental assessment and Finding of No Significant Impact (FONSI) will have to be prepared in order to determine the one site that has the optimum mix of least construction cost, optimal operational performance, and no significant environmental impacts.

REMOTE TRANSMITTER/RECEIVER ALTERNATIVE

PROPOSED ASR-11 SITE LOCATIONS

***NOTE: CIRCLES SHOW A REQUIRED 1,500' CLEARANCE AREA AROUND ASR. ASR SITE LOCATION NUMBERING AS DEFINED BY THE RAYTHEON TECHNICAL SERVICES COMPANY.**



6-10

TALLAHASSEE REGIONAL AIRPORT

MASTER PLAN UPDATE

Helicopter Parking Facility

In the Facility Requirements discussion, ten new helipads were identified as being needed within the next 20-year planning period. As indicated before, the largest helipad spaces should be designed to accommodate a helicopter with a MTOW of 15,000 pounds, a rotor diameter of 45 feet, and an overall length of 55 feet. To meet the FAA clearance requirement, the minimum blast pad dimension associated with the helipad should be 70 feet. Thus, the provision of ten helipads would require an apron of approximately 10,300 square yards.

Three different sites were identified as potential locations for future helicopter parking. These sites are shown on **Exhibits 6-11, 6-12, and 6-13**. The three selected sites were initially chosen due to their proximity to the GA apron in order to facilitate the movement of pilots and passengers towards their vehicles or hangars. The three sites also provide adequate clearance between buildings, fence, parapets, curbs, and objects that could be struck by the main or tail rotors.

Site 1: North GA Apron

Site 1 is located east of Runway 18-36 within the North GA Apron. This location provides easy access to the new central apron and also to existing facilities located within the North GA area. The proposed layout illustrates 9 parking positions that allow rapid movement to and from Taxiway A and to Runway 18-36.

Site 2: South GA Apron

Site 2 is located north of Taxiway Z on the southeastern portion of the South GA Apron. This location presents several advantages including its close proximity to the South GA facilities and centralized location on the airfield. The existing ramp provides enough space for the parking of 12 helicopters and is easily expandable to the east to create additional positions as needs increase.

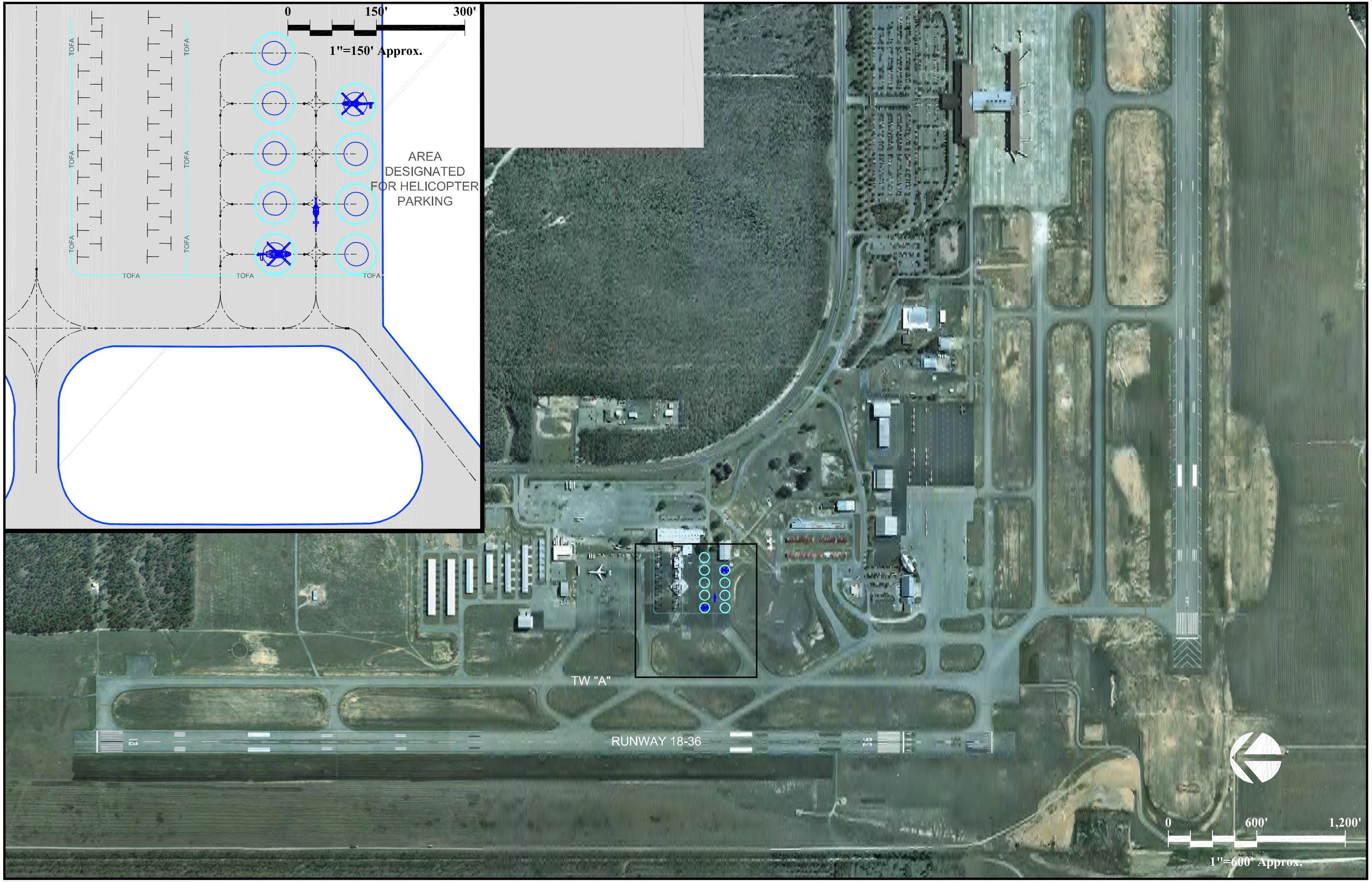
Site 3: North of the North GA Apron

Site 3 is located north of the t-hangars and east of Runway 18-36. This location provides a lot of room for expansion and segregates helicopter operations from aircraft operations. However, the proposed site is remote from existing airfield facilities and would consume a large area that is ideally suited for future GA hangar development.

Selection of the Preferred Helicopter Facility

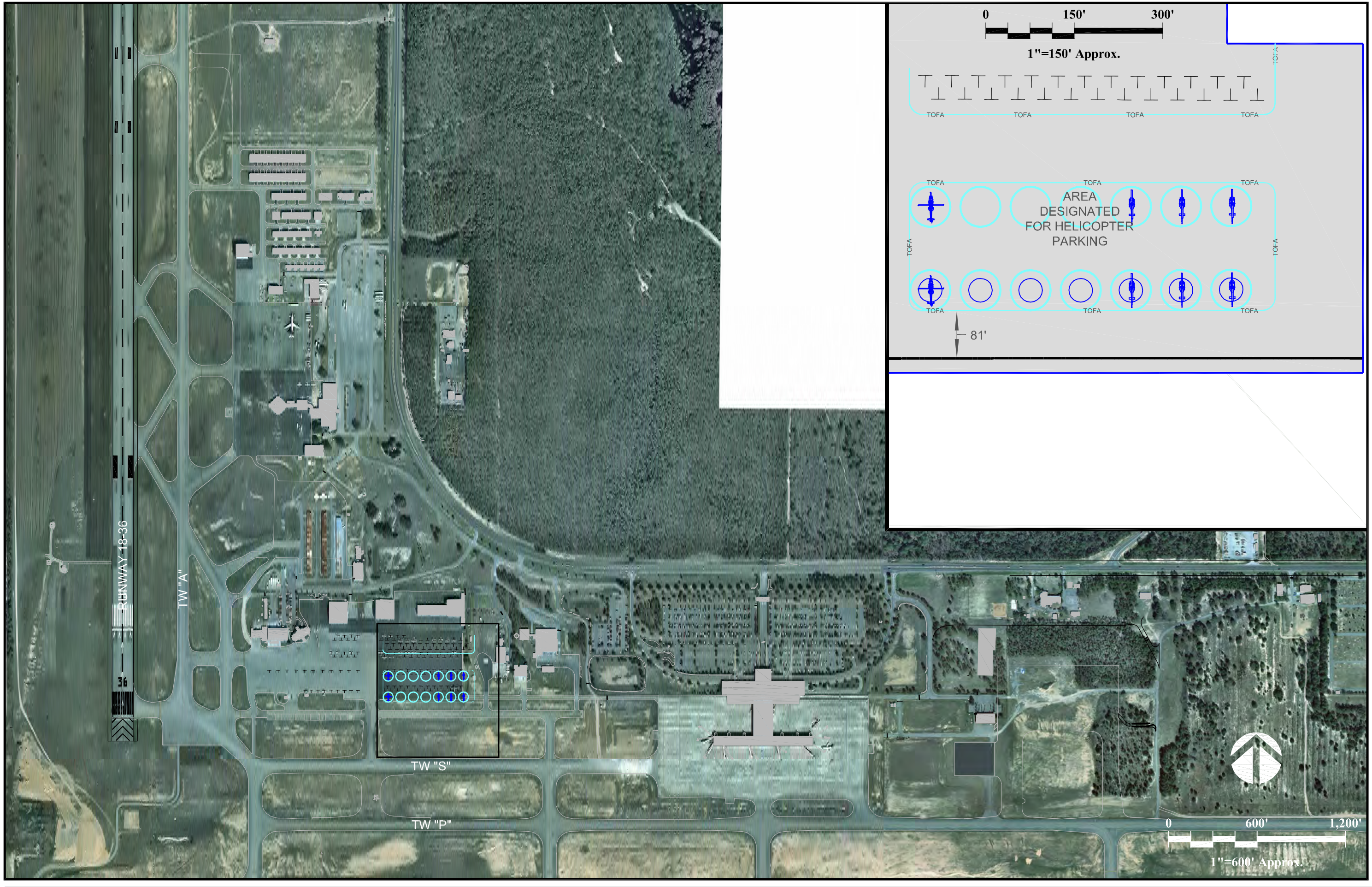
Three possible helicopter parking sites were evaluated in an effort to determine a feasible location that would meet the FAA design requirements and user expectations. While the costs of such facilities were not taken into consideration, it is reasonable to assume that the costs associated with alternative three would be substantially more due to the fact that alternatives 1 and 2 utilize existing pavement as helicopter parking positions. Because Site 2 presents more advantages, it is recommended as the preferred alternative. This site allows for expansion and provides the necessary clearances for the safe movement of aircraft and helicopters in the area. Finally, it is preferable that the helicopter operations be segregated from the small GA aircraft operations that occur on the North GA apron. Wake produced by the helicopters could pose threats to the smaller GA aircraft that operate in this vicinity.

HELICOPTER PARKING FACILITY - SITE 1



6-11

HELICOPTER PARKING FACILITY - SITE 2



6-12

HELICOPTER PARKING FACILITY - SITE 3

AREA DESIGNATED FOR HELICOPTER PARKING

0 150' 300'

1"=150' Approx.

25'

25'

TWY "B"

0 600' 1,200'

1"=600' Approx.

TW "A"

RUNWAY 18-36

6-13

CARGO ALTERNATIVES

As indicated before, air cargo activity at TLH occurs among different areas of the airport. The first area, located east of the passenger terminal, includes a dedicated air cargo building and apron. The second accommodates combination carriers' air cargo activities inside the passenger terminal building and on the passenger terminal apron. Finally, the north GA apron handles operations by FedEx.

Alternatives proposed in this section include the relocation of the FedEx facility east of the passenger terminal as recommended in the Air Cargo Study that was finalized in 2003. The proposed alternatives evolved from analyses of projected needs over a set period of time. Even though the needs were determined by reliable methods, it cannot be assumed that future events will not change these needs. While this section attempts to develop a viable scheme for meeting the needs over the next 20 years, no scheme should be adopted that requires expensive commitments prior to the certainty of need. In addition, the plan should allow for flexibility to expand beyond the plan, should the need arise. The refined alternative chapter will discuss in details how cargo expansion could be phased during the 20-year planning period. However, no action should be undertaken that is not consistent with the goals and objectives of the City of Tallahassee's Aviation Department, which has a vested interest in the results of any development or lack thereof. Of most importance, this section provides a development plan for TLH's air cargo facilities so that they could not only accommodate the demand expected, but to do so while minimizing operational constraints. While these objectives may not be all inclusive, they should provide a point of reference in the alternatives evaluation process.

"Do-nothing" alternative

By analyzing and comparing the benefits of various development alternatives, it is important to consider the consequences of no future cargo development at TLH. The "do-nothing" alternative essentially considers keeping the present cargo related facilities in their current location and condition, without any improvements. The primary result of this alternative would be the inability of the airport to safely accommodate the current and future demand projected.

While the previous sections have identified and quantified facility needs, they have not addressed the options for providing these requirements, nor have they explored issues of operational safety and efficiency to meet the identified needs over the planning period. This chapter reviews the identified needs and discusses the pros and cons of various options designed to address the cargo facility requirements discussed in **Appendix D**. The facility requirements indicated the need for various improvements, including issues surrounding the advantages associated with consolidating cargo facilities. Disregard for such improvements would seriously affect the capability of the airfield to continue serving air cargo users and the community. Expanding facilities at the airport is also necessary over the next 20 years. To ignore this would restrict the growth of this form of aviation in the local area and region. In turn, this would have a negative effect on commerce and economic growth in the region.

Thus, the "do-nothing" alternative is inconsistent with the long-term goals of the City of Tallahassee's Aviation Department. In addition, the airport has made assurances to the Federal Aviation Administration (FAA) in accepting past federal grants for airport improvement projects that the facility will be operated at all times in a safe and serviceable condition. Taking this into consideration, it would represent an irresponsible action affecting the long-term viability of the airport and the airport's service area. Therefore, the "do-nothing" alternative is not considered prudent or feasible.

Description of Alternatives for Air Cargo Facilities

All four of the air cargo concepts generated as part of this study utilize the area available just east of the existing passenger terminal facilities. Many benefits would be achieved by consolidating the operations associated with FedEx and the existing dedicated air cargo building on the east side of the passenger terminal. These enhancements are described in the following paragraphs.

When considering the consolidation of air cargo facilities, the first thought was given to the cargo operations associated with the passenger airlines. The existing location of the dedicated air cargo building, just east of the passenger terminal, is considered excellent. This location provides the airside access necessary to the passenger terminal facilities for the various ground support equipment (GSE) operating between the two facilities. This location also eliminates the need for GSE to cross any active taxiways or runways when traveling to or from the passenger terminal facilities. Likewise, due to the proximity of other facilities and automobile parking areas, the area west of the existing passenger terminal building does not afford the same advantages or space for air cargo development. For these reasons, only the area to the east of the passenger terminal was considered for the consolidation of air cargo facilities.

Undoubtedly, the relocation of FedEx's facilities to the east side would significantly enhance the safety of airport operations. As described previously, the current location for FedEx necessitates the movement of their Boeing 727-200 aircraft to occur right in the middle of facilities for light general aviation aircraft. By segregating these users, the risk associated with operating such large jet aircraft around small single and multi-engine aircraft is eliminated.

In addition, relocating FedEx would enhance elements of the airfield security. Currently FedEx, its feeders, and the airlines operating out of the dedicated air cargo building are all Federal Aviation Regulation (FAR) Part 121 operators. The security standards associated with this type of operation are much more stringent than those associated with FAR Part 135 (unscheduled commercial operations) and FAR Part 91 (general aviation operations). As such, the operators and airport staff would be in a better position to enhance, monitor, and enforce the security requirements of FAR Part 121 (regularly scheduled commercial operations).

Likewise, the air cargo operations currently conducted under FAR Part 135, primarily the express courier and freight forwarding operations, could be consolidated once FedEx moves to the east side of the airport. Therefore, it is recommended that the abandoned FedEx facility and ramp area should be utilized in the future to consolidate the express courier and freight forwarding operations. As shown in the forecast chapter, the express couriers and freight forwarding companies typically use light general aviation aircraft such as the Cessna 210, Cessna 208B Caravan, Shorts SC7 Skyvan, and Lear 24/25 jets. Such a consolidation would eliminate the current issues associated with the ground operations, which result in a significant number of delivery truck/car movements occurring on the South Ramp. The abandoned FedEx facilities could be configured to efficiently and safely accommodate the courier drop boxes necessary for the various users to pick-up and deliver documents, which primarily consists of bank paper and small packages.

Finally, the relocation of FedEx to the east side of the airport would provide another distinct advantage. All of the alternatives for the consolidated air cargo facilities provide the operators with frontage on the primary runway, Runway 9-27. Ultimately this could have beneficial impacts on the community with respect to noise, as nearly all of the current late night air cargo operations are conducted off of Runway 18-36, to the north. It has been documented that this activity contributes to the existing noise impacts north of the airfield. While many other factors influence the selection of runway end, typically the larger air cargo aircraft could operate off of either runway during most times of the year and under most meteorological conditions.

The air cargo concepts generated as part of this study are described in the following sections. Each includes air cargo buildings, aircraft parking aprons, truck docking/maneuvering areas, and vehicular parking for those facilities. Airside planning and design is primarily based upon the physical characteristics of the Boeing 727-200 (ARC C-III) but also includes elements of Design Group II in those areas dedicated to the feeder aircraft only. While not identified as a need within the 20-year timeframe, consideration was also given for Design Group IV aircraft. This identified whether or not the various alternatives could accommodate one or more of the wide body air cargo freighters.

Air Cargo Alternative A

In Alternative A, both sides of the existing dedicated air cargo building have been expanded. Each side would provide an additional 6,720 square feet of space to provide an overall facility of 20,160 square feet. Each addition to the building would have dimensions similar to the existing facility. However, under this configuration, both of the existing employee and customer parking lots would need to be relocated. The two lots located off each side of the ultimate building footprint would provide a minimum of 30 automobile parking spaces. Truck docks and airside access, similar to the current configuration, are also depicted for the future layout.

The relocated FedEx facility is oriented in a north-south direction and has the length and width to provide the required 10,063 square feet of space. This space is configured such that the overall width of the building is 60 feet, which provides the depth necessary for the processing between landside and airside activity. The landside facilities include the space necessary to accommodate truck maneuvering and docking (12 at deck level stalls shown). In addition a larger parking/storage area provides enough space (41,100 square feet) to accommodate nearly 50 truck-trailers. Employee and customer parking for FedEx are provided just south of the proposed building. As shown, this would allow the parking of 30 vehicles.

To the north of the relocated FedEx facility, an identical structure is depicted with similar features. As mentioned in the Facility Requirements, this additional space is included in all of the alternatives to plan for an additional integrated carrier. Although it is not anticipated for this space to be needed during the planning period, its inclusion insures that TLH will not limit the future potential for another integrated cargo carrier to be established at the airport. Trucks and vehicles will ultimately access the proposed air cargo facilities via a new road off of Capital Circle SW. Once constructed, the existing access into this area off of the passenger terminal loop can be closed and removed.

On the airside, Alternative A would ultimately provide approximately 614,000 square feet of apron space to accommodate four Boeing 727-200s in a power-in/push-out configuration. In addition, this area would provide the space necessary for the free movement in and out of ten feeder aircraft, of the size described in the Facility Requirements. The existing connector taxiway between Taxiway P and the current air cargo ramp would remain. In addition, a new connector taxiway would be constructed into the intersection of Taxiway P and Taxiway N to provide additional access into the cargo ramp. Alternative A is depicted in **Exhibit 6-14**.

AIR CARGO ALTERNATIVE A

CAPITAL CIRCLE SW

CAPITAL CIRCLE SW

FUTURE COMMERCIAL DEVELOPMENT

PASSENGER TERMINAL FACILITIES

TAXIWAY W

TUG ACCESS

GROUP II

GROUP II

GROUP II

GROUP III

TOFA

50' TYP.

TOFA

TRACTOR TRAILER STORAGE

25' TYP.

GROUP III TAXILANE

CLOSED LANDFILL

0 300' 600'

1"=300' Approx.

35' BRL

74.9322

TAXIWAY P

TAXIWAY L

TAXIWAY N

RUNWAY 9-27

Existing Buildings/Structures

Proposed Buildings/Structures

Future Terminal Expansion

Closed Roadway

Proposed Airfield and Roadway Pavement

ABBREVIATIONS:

BRL = BUILDING RESTRICTION LINE
TOFA = TAXIWAY/TAXILANE OBJECT FREE AREA

Air Cargo Alternative B

Exhibit 6-15 depicts the second alternative for the future air cargo facilities. Under this concept, the existing dedicated air cargo building is only extended to the west in order to provide the additional 13,440 square feet of space required. While the employee and customer parking lot to the west of the existing building will need to be relocated, the lot on the east side can remain. Thus, the relocated lot only needs to provide 25 additional automobile spaces for the required total of 30. Configuration of the truck docks are similar to the existing configuration, which will allow each individual tenant to one or two dedicated docks capable of loading or unloading at deck level.

The relocated FedEx facility is aligned in an east-west fashion, approximately 285 feet east of the existing dedicated air cargo building. As with Alternative A, the building is planned to provide a total of 10,063 square feet of space using a building depth of 60 feet. Truck docking and maneuvering areas are located on the north side of the cargo building, including the space necessary for the parking and storage of multiple tractor-trailers. Automobile parking for both employees and customers is provided via a 30-space lot located west of the proposed FedEx site.

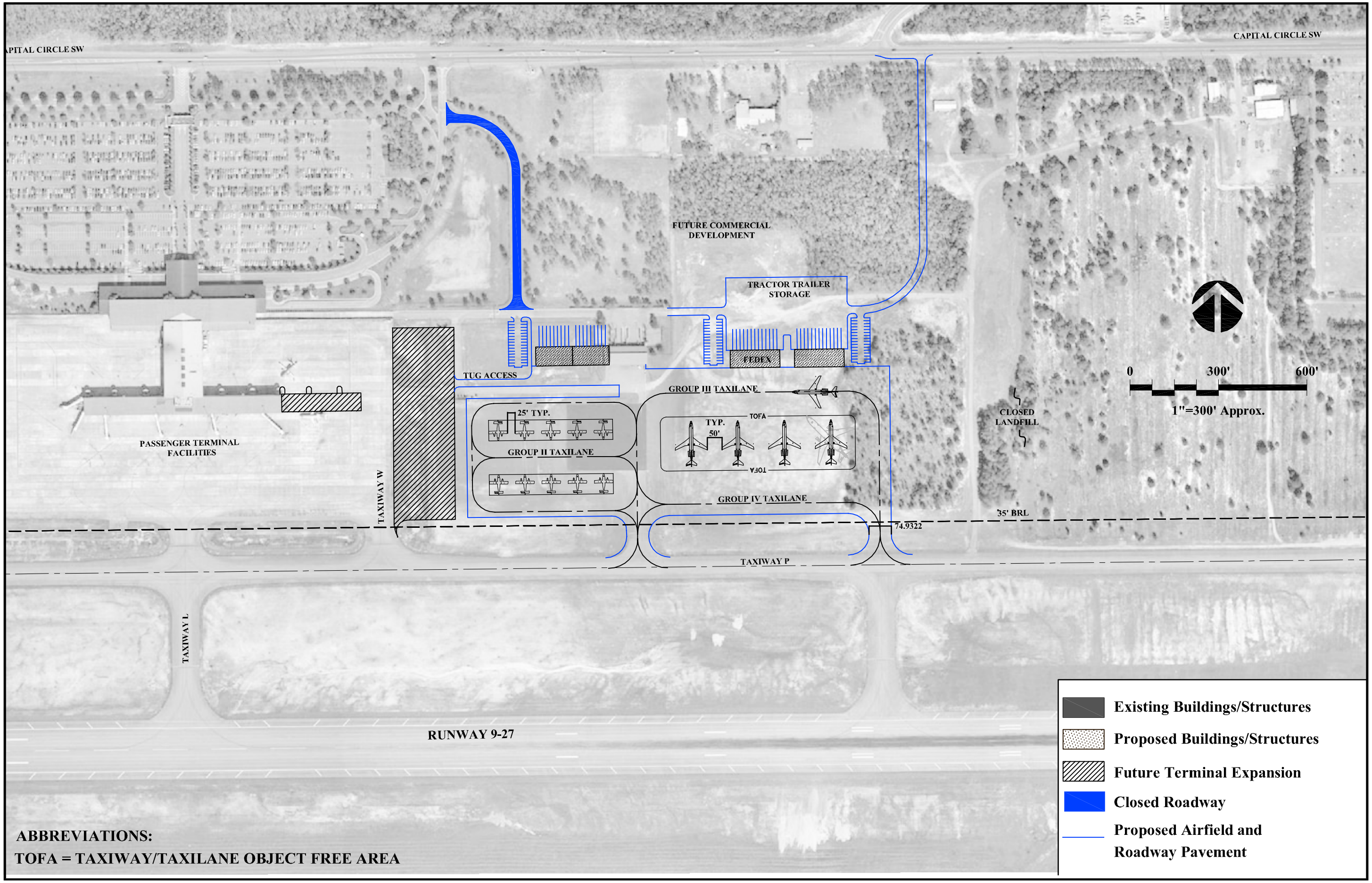
As with the other alternatives, space for another integrated air carrier cargo building, along with all of its required facilities, has been included. Each of the planned buildings have been positioned with the same alignment of the existing air cargo building, which creates a very uniform landside as well as airside layout. Vehicle and truck traffic to the future dedicated air cargo facilities is provided via a new access road off of Capital Circle SW, which will eliminate the need for the current road serving this portion of the airport.

Airside improvements include the extension of the existing air cargo apron and the paved area currently used for tug movements, the loading/unloading of carts, and some equipment storage. The final layout of this ramp would provide nearly 690,000 square feet of paved space for the movement of aircraft and ground support equipment. This area would allow four Boeing 727-200s and ten feeder aircraft to operate into and out of the cargo area without the need for any push back operations. As with Alternative A, the existing connector taxiway off of Taxiway P would be utilized in addition to a new connector formed by extending Taxiway N into the cargo ramp area. This would provide more than one way into and out of the aircraft parking area for all aircraft expected to use this area.

Air Cargo Alternative C

The reasoning behind the layout depicted for Alternative C was to place the larger air cargo jets on the side of the facilities closest to the larger aircraft operations associated with the passenger airlines. This segregation helps isolate the smaller feeder aircraft as well as places the FedEx fleet closer to the U.S. Postal Service facilities. Alternative C also attempts to maximize the available airside between the existing air cargo area and the passenger terminal area. This layout is depicted in **Exhibit 6-16**.

AIR CARGO ALTERNATIVE B



ABBREVIATIONS:
TOFA = TAXIWAY/TAXILANE OBJECT FREE AREA

AIR CARGO ALTERNATIVE C

0 300' 600'

1"=300' Approx.

TOFA

Existing Buildings/Structures

Proposed Buildings/Structures

Future Terminal Expansion

Closed Roadway

Proposed Airfield and Roadway Pavement

ABBREVIATIONS:
TOFA = TAXIWAY/TAXILANE OBJECT FREE AREA

As with the other alternatives, a total of 20,160 square feet of space is provided for tenants of the dedicated air cargo building, with the appropriate access for tug operations. As depicted in **Exhibit 6-16**, two additions to the existing facility are shown to the west. For the relocation of FedEx, a 10,063 square foot facility is located just to the east of the dedicated cargo-building complex. In addition to the space required for FedEx, an additional 10,063 square feet is depicted for future integrated cargo carrier operations. Unlike the other alternatives, these buildings are connected in a linear fashion.

All of the proposed cargo buildings are anticipated to have very similar landside facilities as shown for the other concepts. A number of deck level docks are shown for each structure to insure that each facility can efficiently accommodate the loading and unloading of trucks. Likewise, tractor-trailer parking and storage space is included for the two integrated cargo carrier buildings. The required automobile parking spaces are also provided to accommodate both employees and customers of the various facilities, all of which is tied to the new access road proposed for this area.

On the airside, one of the most distinct differences with this alternative and the others is the fact that it is connected to the existing passenger terminal ramp. Ultimately, roughly 686,000 square feet of ramp space would be provided to support future cargo operations. This allows the same mix of aircraft utilized on the other alternatives with the ability to conduct power-in and power-out operations. Access to the cargo ramp would be provided by the existing connector, Taxiway W, on the east side of the passenger terminal ramp, as well as the existing connector to the current air cargo ramp area. This would eliminate the need to construct a new connector taxiway on the east end of the cargo ramp.

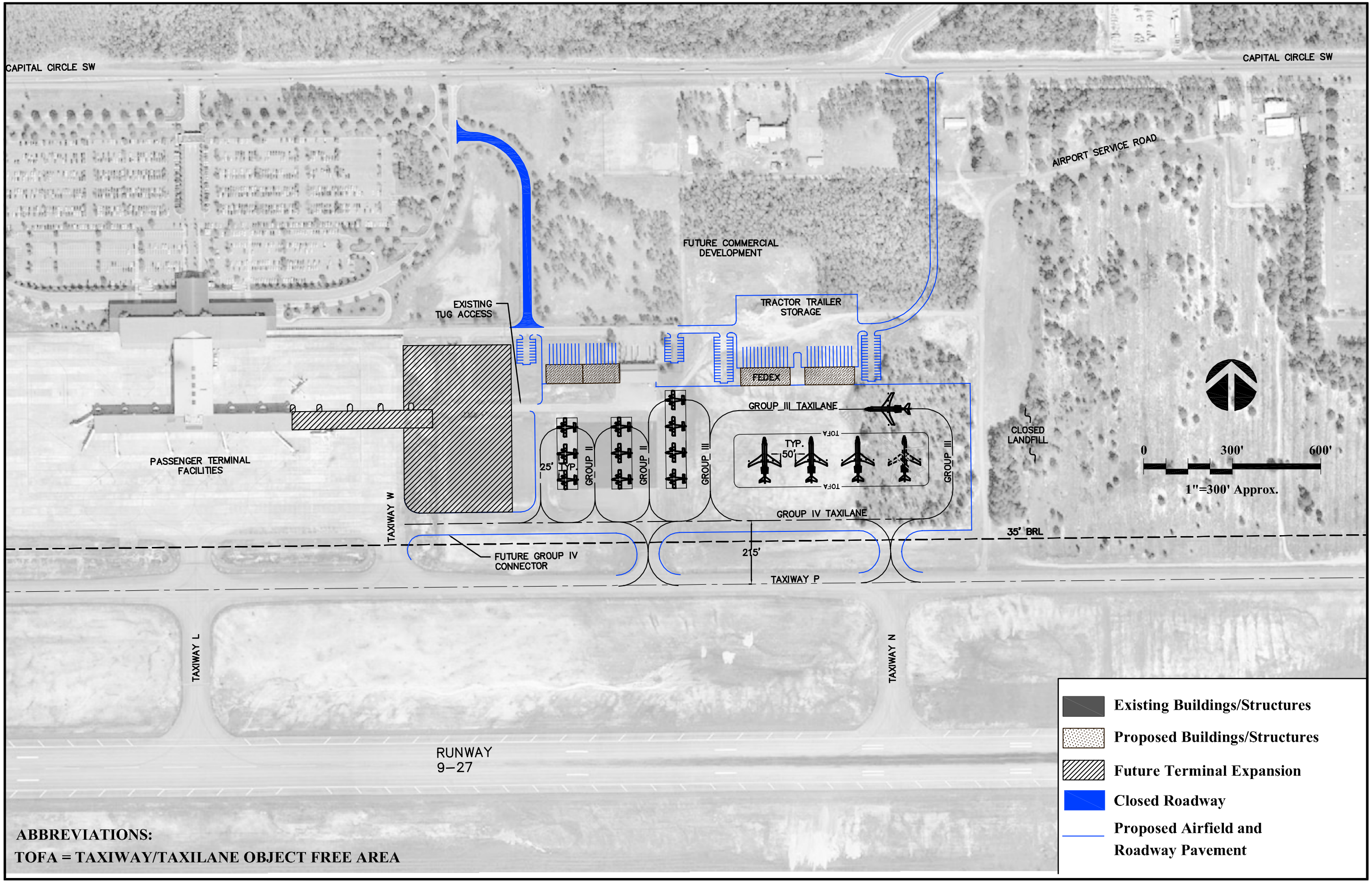
Air Cargo Alternative D

The fourth and final alternative for the future air cargo facilities is depicted in **Exhibit 6-17.** This concept combines many of the features included in the previous alternatives. As in Alternative B, the existing dedicated air cargo building is extended west to provide the additional 13,440 square feet of space required. Two separate employee and customer parking lots, one on each side of the future building footprint, provide the spaces for the required total of 30. Configuration of the truck docks are similar to the existing configuration, which will allow each individual tenant to one or two dedicated docks capable of loading or unloading at deck level.

The relocated FedEx facility is identical to the layout depicted in Alternative B with the building aligned in an east-west fashion, to the east of the existing dedicated air cargo building. This configuration provides a total of 10,063 square feet of space with a building depth of 60 feet. Truck docking and maneuvering areas are located on the north side of the cargo building, including the space necessary for the parking and storage of multiple tractor-trailers. Automobile parking for both employees and customers is provided via a 30-space lot located west of the proposed FedEx site.

As with the other alternatives, space for another integrated air carrier cargo building, along with all of its required facilities, has been included. Each of the planned buildings have been positioned with the same alignment of the existing air cargo building, which creates a very uniform landside as well as airside layout. Vehicle and truck traffic to the future dedicated air cargo facilities is provided via a new access road off of Capital Circle SW, which will eliminate the need for the current road serving this portion of the airport.

AIR CARGO ALTERNATIVE D



ABBREVIATIONS:
TOFA = TAXIWAY/TAXILANE OBJECT FREE AREA

Airside improvements include features from all three of the previous alternatives. Most of the proposed ramp space extends west from the existing air cargo apron and the paved area currently used for tug movements, the loading/unloading of carts, and some equipment storage. The final layout of this ramp would provide nearly 735,000 square feet of paved space for the movement of aircraft and ground support equipment. This area would allow four Boeing 727-200s and ten feeder aircraft to operate into and out of the cargo area without the need for any push back operations.

As in the other alternatives, the existing connector taxiway off of Taxiway P could be utilized in addition to a new connector formed by extending Taxiway N into the cargo ramp area. This provides more than one way into and out of the aircraft parking area for all aircraft expected to use this area. In the future, Alternative D also allows the cargo ramp to be tied into the existing and/or future passenger terminal ramp via a connector taxiway on the west side of the ramp. Because of the cargo aircraft parking configuration, this connector taxiway would have the proper set backs to allow Design Group IV aircraft to travel back and forth. Thus this connector would provide a true extension of Taxiway S, should the airport desire to continue that dual parallel taxiway east.

Refined and Preferred Air Cargo Alternative

Since the development of the aforementioned alternatives, preliminary engineering design was initiated and discussions between Airport representatives and engineers has lead to the development of a refined layout, which is illustrated in **Exhibit 6-18**. The proposed layout allows a significant amount of space for future expansion without impacting the closed landfill and provides room for the expansion of the existing passenger terminal and apron.

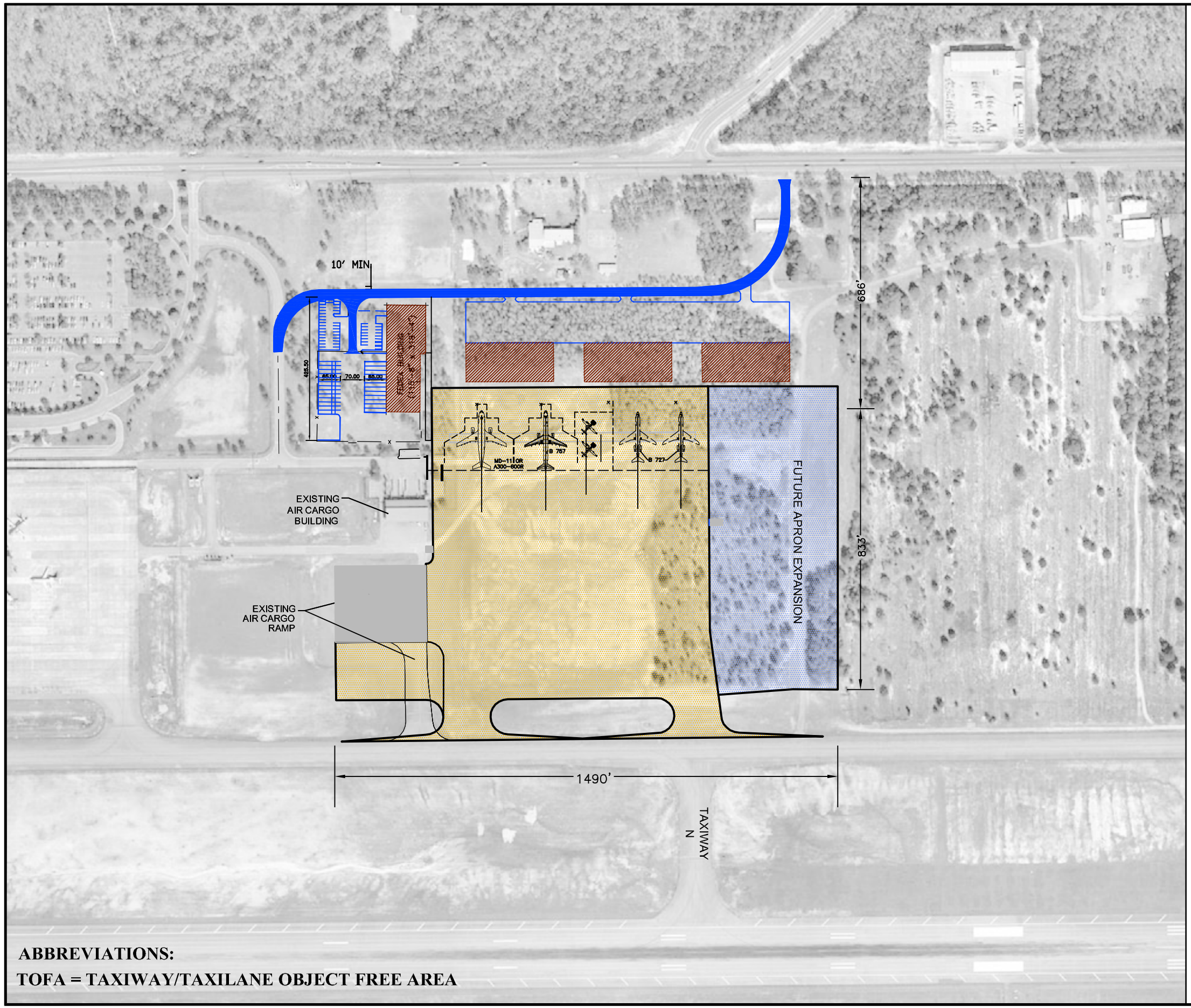
The refined layout anticipates the construction of new cargo facilities in two phases. The first phase includes the construction of FedEx's new facility, which incorporates 95,000 square yards of apron required for the 38,000 square yards and includes the construction of a new cargo building that would accommodate the needs of a future cargo tenant.

Vehicle and truck traffic to the future dedicated air cargo facilities is provided via a new access road extending from Capital Circle SW, which will eliminate the need for the current road that serves this portion of the airport. It should be noted that the design of the cargo building is more likely to vary depending on future cargo needs and requirements.

Truck docking and maneuvering areas are located on the north side of the proposed cargo building and include space for the parking and storage of multiple tractor-trailers. Automobile parking for both employees and customers is provided via two parking lots located between the proposed air cargo facilities.

The final layout of this cargo apron would provide nearly 133,000 square yards of paved space for the movement of aircraft and ground support equipment. This area would allow a variety of large and mid-sized aircraft to operate into and out of the cargo area without the need for push back operations. Access to the ramp area is achieved through use of a newly constructed taxiway extending from Taxiway P. A second connector is formed through the extension of Taxiway N into the ramp area to create additional access for the aircraft expecting to use this area.

REFINED AIR CARGO ALTERNATIVE



0 300' 600'

1"=300' Approx.

LEGEND

- Proposed Buildings/Structures
- Short-Term Apron Expansion
- Long-Term Apron Expansion
- Proposed Airfield and Roadway Pavement

6-18

PASSENGER TERMINAL ALTERNATIVES

Previous portions of this planning report documented the analysis of the immediate terminal area as well as the terminal building. The major area of emphasis within the surrounding site was the commercial aircraft-operating apron. The landside component of the existing site plan was analyzed in a separate Parking Expansion Feasibility Study that is included in **Appendix E**. Within the existing terminal building, areas that were studied include ticketing, baggage claim, baggage screening, concessions, as well as passenger screening and holding areas. The results of the Terminal Area Demand/Capacity Analysis in the previous chapter form the program for the development of future improvements to the existing terminal area and terminal building at TLH. It provides the appropriate sizing and quantities of the major terminal area and building facilities.

This section identifies the Preferred Terminal development concept and explains the process used to arrive at its selection. The path to reaching this Preferred Terminal consists of two successive levels of analysis. These two levels are: Initial Concepts Identification and the Preferred Alternative. The initial level considered many options, but in limited detail. The later level of analysis includes more detail but for a single concept. This section describes the Terminal Area Concepts Development process in detail.

Initial Concepts Identification

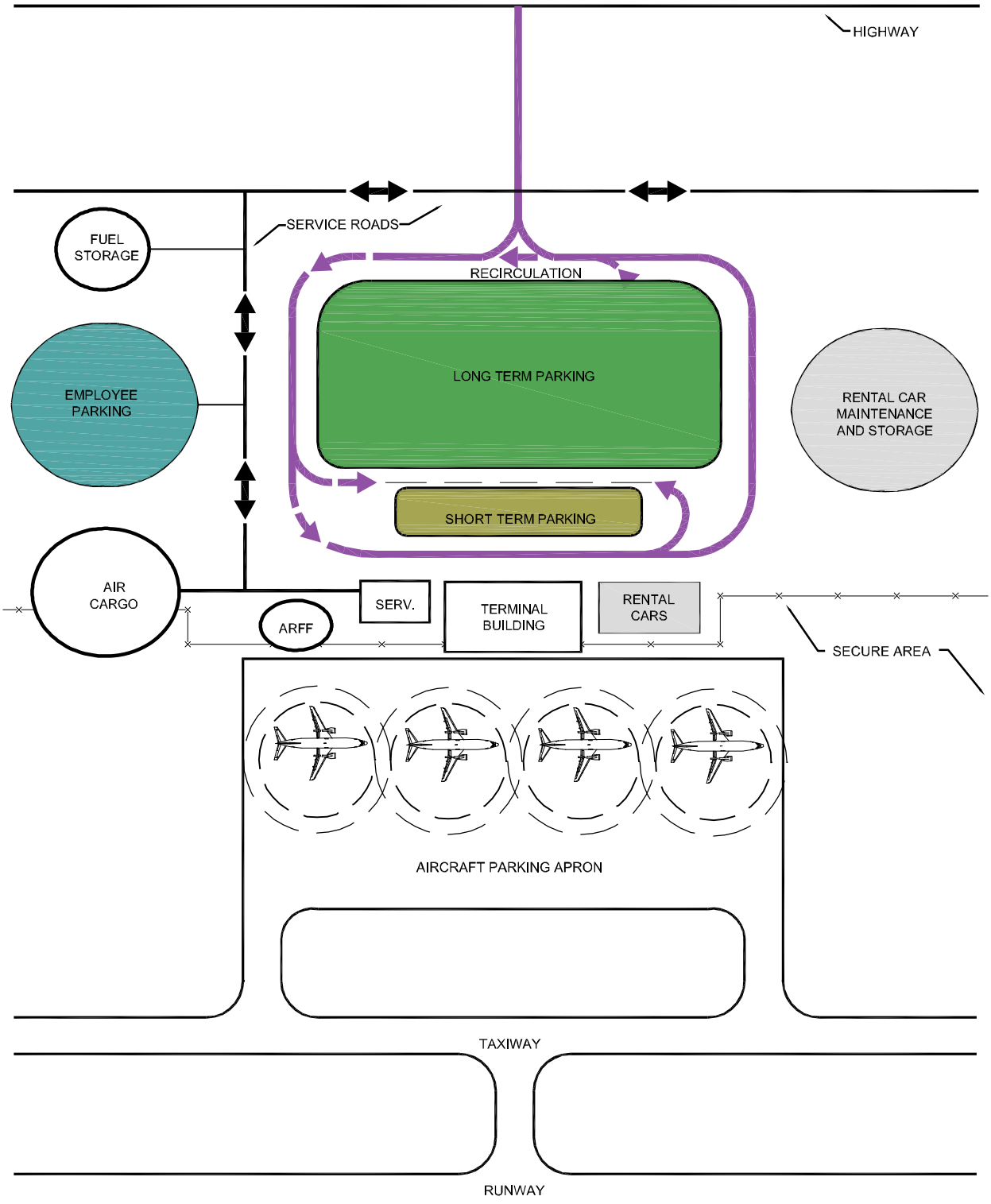
During the Initial Concepts Identification phase, broad-brush, long-range conceptual alternative sketches were developed. These initial concepts explored the range of possibilities available in broad conceptual terms without providing component detail. The goal was to consider a few general issues that were to define the direction of development. Although many concepts of both the terminal area (site) and terminal building were studied, two (2) terminal area site and five (5) terminal building concepts were successfully completed and presented to the TLH staff.

The concepts were developed to meet three primary sets of criteria:

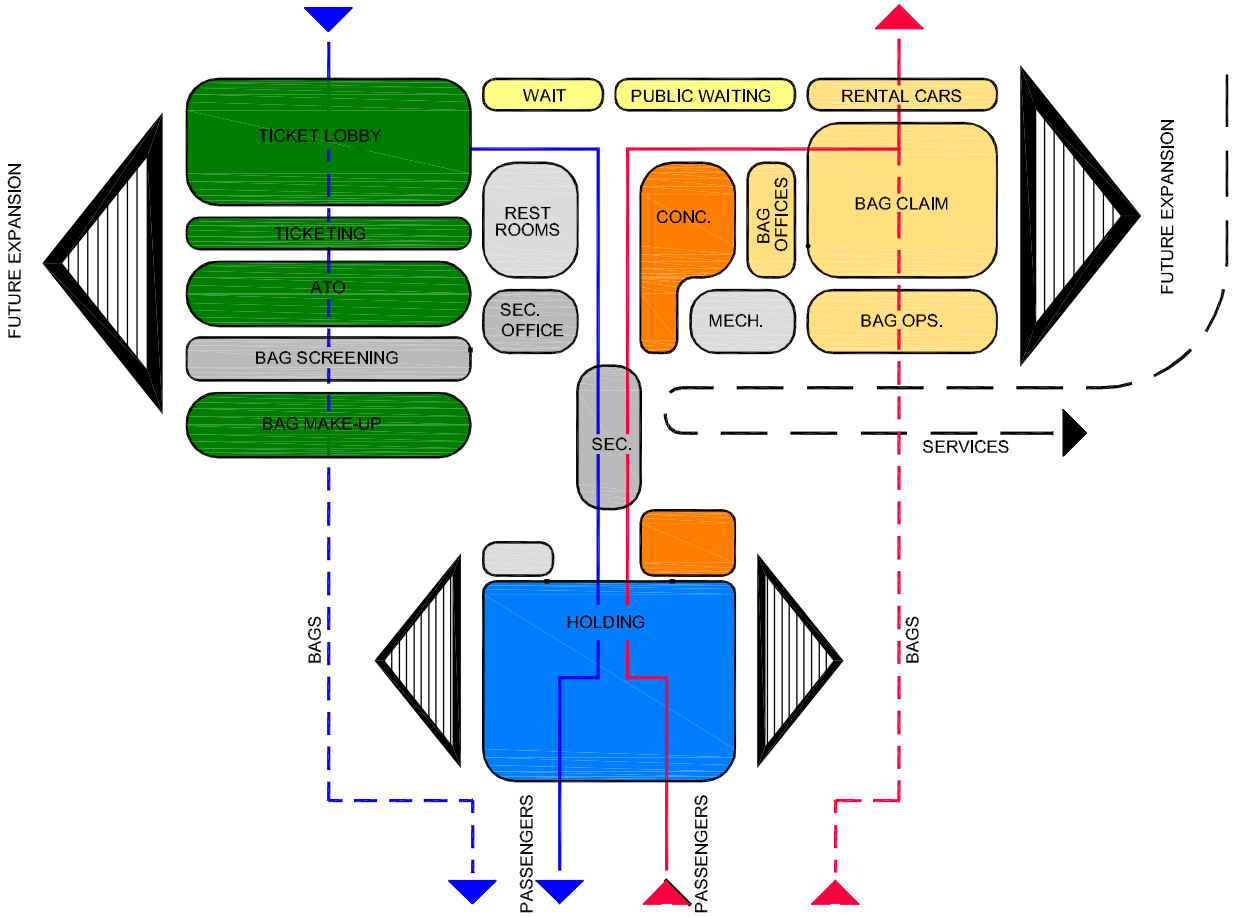
- FAA guidelines for safety, and security;
- Proper arrangements of functions; and,
- Facility Requirements as defined in the Demand/Capacity Analysis.

The FAA provides guidance for site and terminal building organization in Advisory Circular 150/5360-13 *Planning and Design Guidelines for Airport Terminal Facilities*. **Exhibits 6-19 and 6-20** illustrate the "ideal" site and terminal layouts as recommended in FAA guidance material as well as from experience by the Consultants. The primary objectives for the site layout illustrated by **Exhibit 6-19** include a dedicated terminal loop road with continuous, uninterrupted one-way traffic flow, gentle curves, consolidated public parking, access to parking from the loop road both prior to after the terminal curb front, separated service roads, and an adequately sized apron. The primary objectives for the terminal layout illustrated by **Exhibit 6-20** include separation of outbound and inbound passengers and baggage, single passenger screening checkpoint, behind-the-scenes baggage screening, centralized concession locations, ease of future expansion, and simple circulation paths for travelers and airline employees.

IDEAL TERMINAL SITE



IDEAL TERMINAL CONFIGURATION



INITIAL CONCEPTS

As determined in the Demand/Capacity chapter of this report, the existing terminal building at TLH is appropriately sized in overall square footage to serve the current needs of the Tallahassee area. However, expansion will be required to meet future aviation activity requirements. The current configuration of the terminal also generally follows the "ideal" layout of a modern commercial air service facility, although the allocation or arrangement of spaces within the terminal could be improved. In an "ideal" configuration, the layout of an airport terminal separates the arriving and departing traffic flow of passengers and baggage, and is arranged so that redundant functions and staffing are unnecessary. This includes reduced congestion due to the horizontal separation of TLH's arriving and departing passenger functions. The use of a single screening checkpoint is a good example of not having redundant facilities within the terminal.

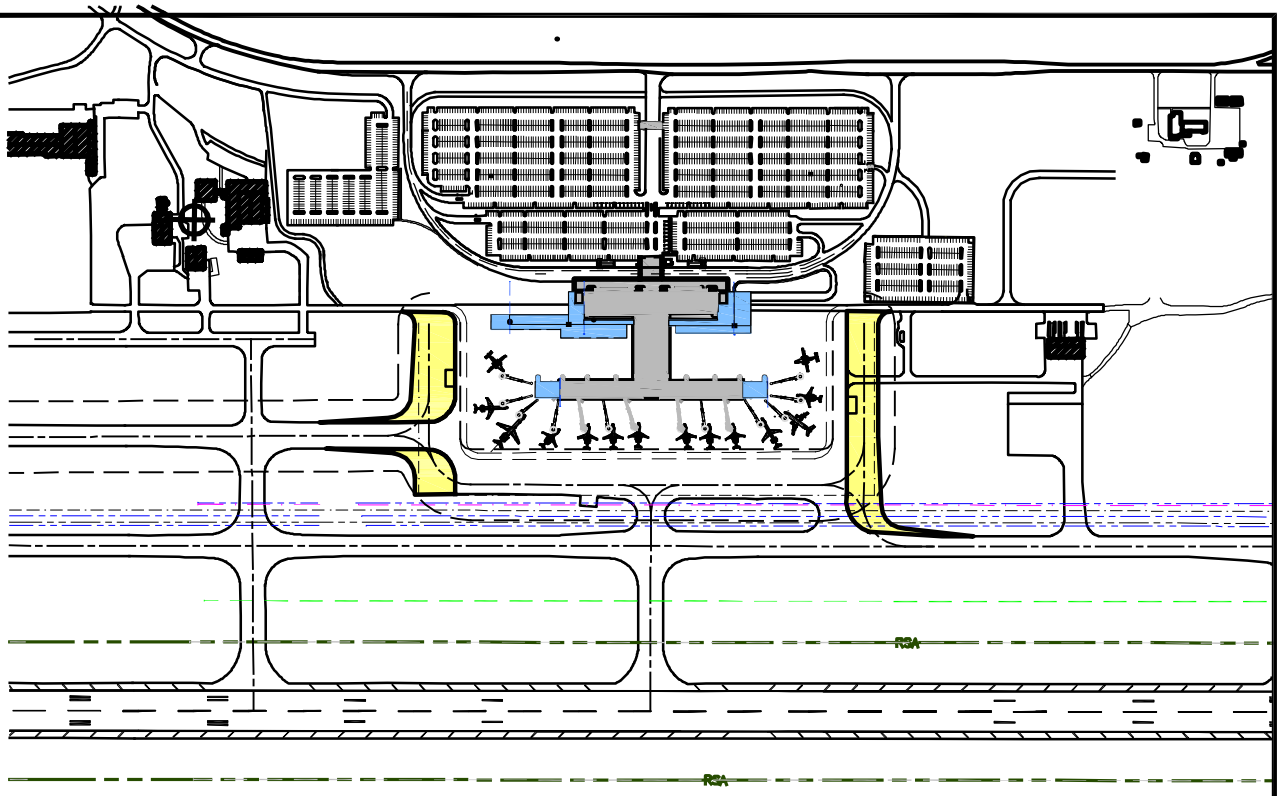
Specific areas that have been identified that need improvement include the ticket lobby, the baggage claim lobby, and the connector corridor joining the airside and landside portions of the building. The ticket lobby, which is currently overwhelmed by TSA's checked baggage-screening functions, is much too shallow to function properly in this manner. The baggage screening activities need to be moved to a behind-the-scenes location out of the ticket lobby. However, even without the baggage screening activity the ticket lobby is too shallow to appropriately accommodate both peak passengers in the ticketing queue and circulating passengers moving through the ticket lobby. The bag claim lobby also suffers from a lack of depth between the baggage claim carousels and the rental car counters. In the connector corridor, the passenger screening activities and the location of the administration area's central access stair add to the poor layout. The passengers waiting in line at the security-screening checkpoint block the access to, and display frontage of, several concessionaires. In addition, the location of the security screening station also creates an uneven split between the un-secure and secure concession areas. These concerns, along with others, have been addressed in various ways in the concepts that follow.

Initial Site Concept 1

The first concept took the approach that all aircraft would be using loading bridges. To accomplish this the northern apron level ground boarding gates were abandoned. The use of a loading bridge at each gate requires the expansion of the concourse and the relocation of several existing bridges to provide wingtip clearance for each aircraft. Additional loading bridges are required to meet the overall activity demand. Initial Site Concept 1 involves increasing the aircraft-parking apron to accommodate the larger footprint of an expanded secure concourse. The apron must be expanded both to the west and to the east. This site concept should be associated with any terminal building concept that expands the secure concourse. **Exhibit 6-21** illustrates Initial Site Concept 1

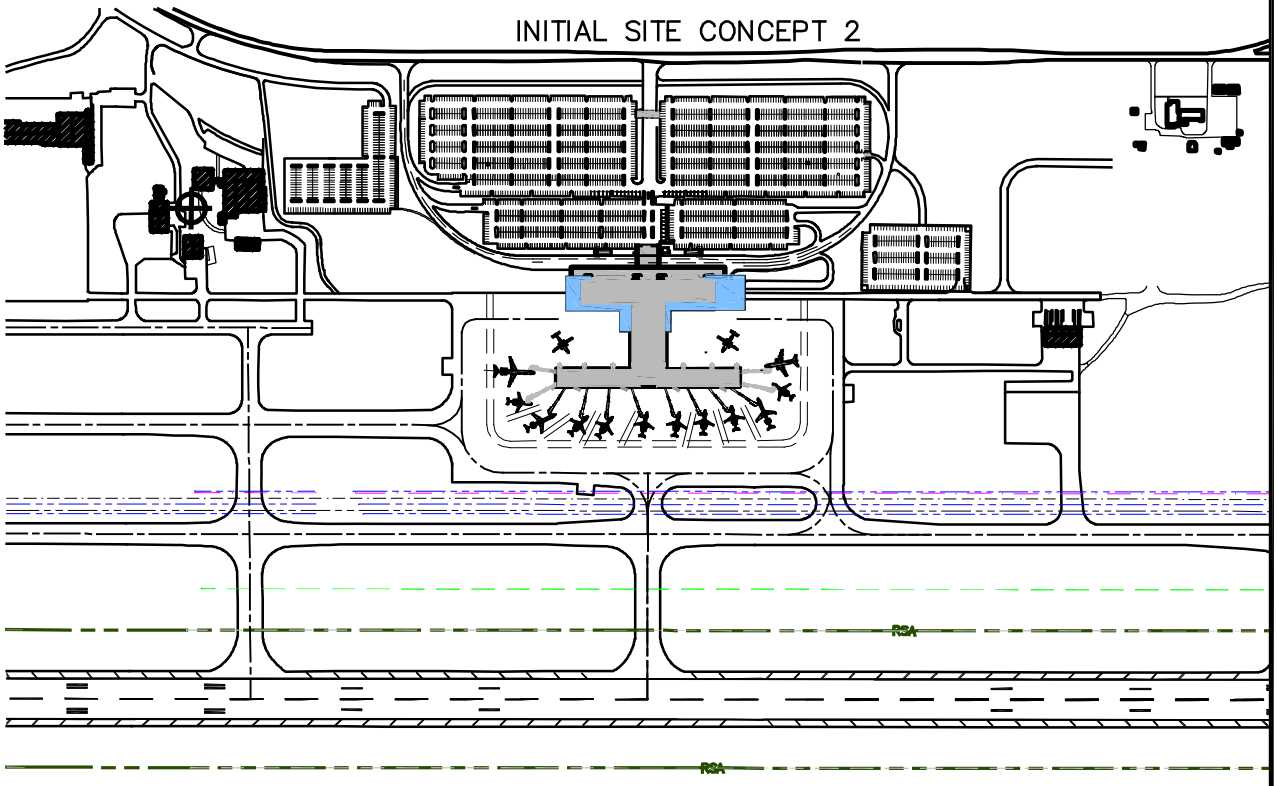
Initial Site Concept 2

The objective of Initial Site Concept 2 was to fit all future aircraft within the existing apron area without expanding the secure concourse. The relocation of several existing and the addition of new aircraft loading bridges to the existing concourse create nearly all of the additional aircraft parking spaces required. However, two (2) of the apron level ground boarding gates must remain open on the northern face of the concourse to accommodate the future activity demand. **Exhibit 6-21** illustrates Initial Site Concept 2.



INITIAL SITE CONCEPT 1

INITIAL SITE CONCEPT 2



Initial Terminal Concept 1

Initial Terminal Concept 1 is based on the idea of extending the current linear configurations of the ticket lobby, the bag claim lobby, and the concourse. The westward expansion of the ticket lobby provides the room necessary for reconfiguring the layout of the ticketing functions. To provide adequate ticket lobby depth for both queuing and circulating passengers, the airline ticket offices (ATO's) are rotated 90º and placed in-line with the agent counters. The space created between these offices is used as the passenger lobby space. Currently the baggage screening functions are carried out in the ticket lobby. The expansion of the ticket lobby creates space below to accommodate the relocation of this activity. The bag claim lobby is expanded to the east allowing for the addition of the extra conveyors required to handle the increase in the peak hour forecast. Future baggage claim carousels are linear rather than triangular to take up less depth and allow more room for passengers to claim their bags and circulate through the claim lobby. This expansion also creates additional space below bag claim which houses the larger inbound bag operations area that is required to meet the future demand. The secure passenger holding concourse is expanded to the east and west. The creation of this larger concourse provides this concept with the ability to park all aircraft along the airside of the concourse. Parking aircraft at this expanded concourse will require moderate expansion of the current apron as shown in. **Exhibit 6-22** illustrates Initial Terminal Concept 1.

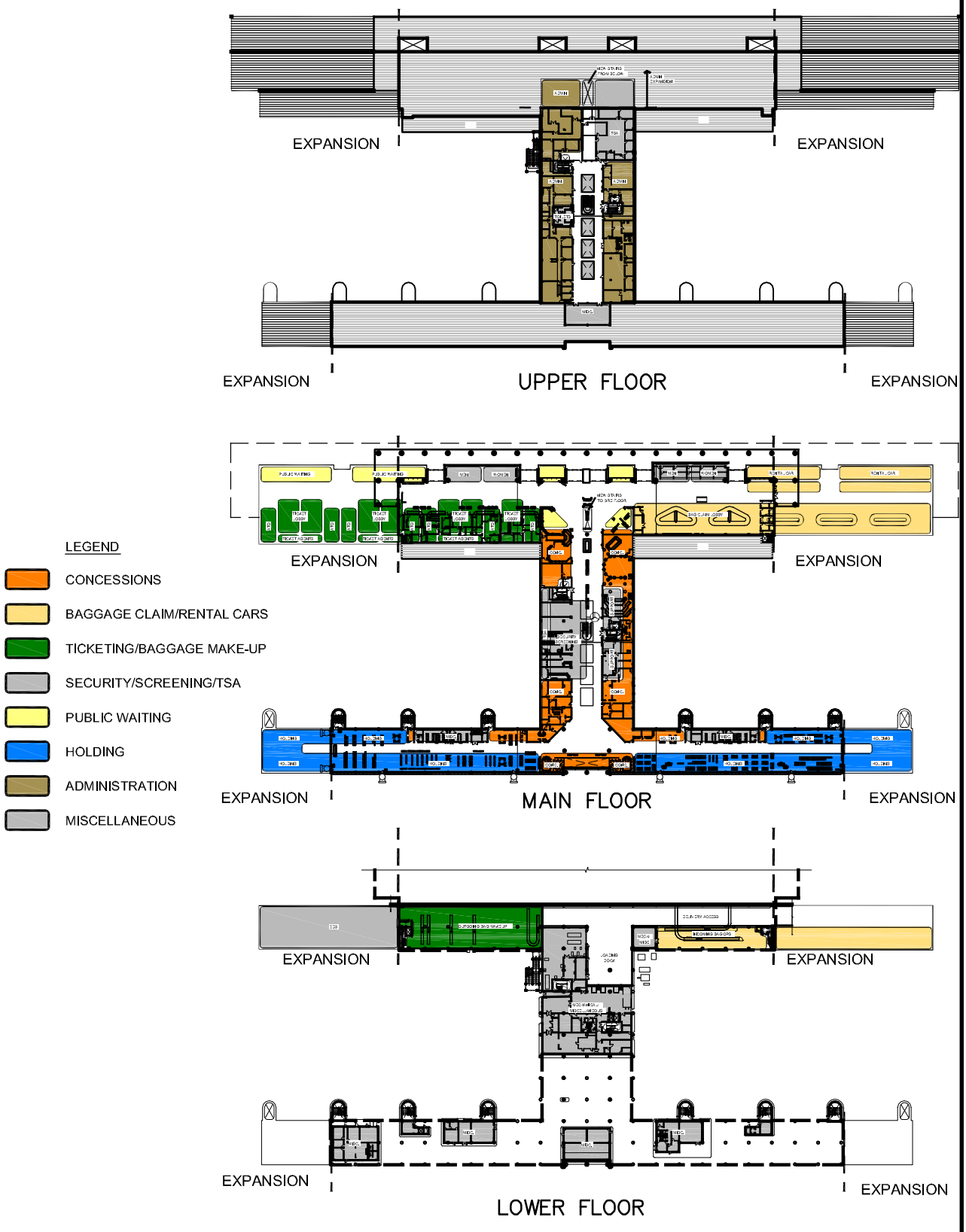
Strengths	**Weaknesses**
✈ Simple Extension Alternative	✈ Awkward Ticket Lobby Arrangement
✈ Additional Non-Secure Toilets	✈ Longer Walk Distances
✈ Additional Secure Concessions	✈ Minor Apron Expansion Required
✈ Concessions Frontage Improved	✈ New Vertical Circulation Required

Initial Terminal Concept 2

Initial Terminal Concept 2 is a variation of expanding the existing ticketing and bag claim functions to the west and east in their respective directions. However, unlike Initial Terminal Concept 1, this concept adds more space to the south as well to gain critical depth in these spaces. In addition, space is created for larger un-secure toilet facilities and several public-waiting areas. As in Initial Concept 1 the baggage screening functions are relocated to the lower level. The passenger screening station is relocated closer to the landside of the terminal building allowing for more unobstructed concession space in the connector on the secure side of the terminal building. This relocation of security requires the addition of an alternative access to the third level where TSA offices and airport administration is located. Two elevators are added in this concept; one providing dedicated access to the TSA offices, and the other providing access to the airport administration area. The existing elevators and stairs on the secure side of the passenger-screening checkpoint provide access to the concourse for airport staff only. A form of access control would be necessary for the stair and elevator. The current size of the concourse remains the same, although the loading bridge configuration is altered to accommodate the future fleet mix of smaller regional jet aircraft. **Exhibit 6-23** illustrates Initial Terminal Concept 2.

Strengths	**Weaknesses**
✈ Existing Concourse Remains	✈ New Vertical Circulation Required
✈ Additional Non-Secure Toilets	✈ Requires closing lightwells
✈ Additional Secure Concessions	
✈ Concessions Frontage Improved	

INITIAL CONCEPT 1

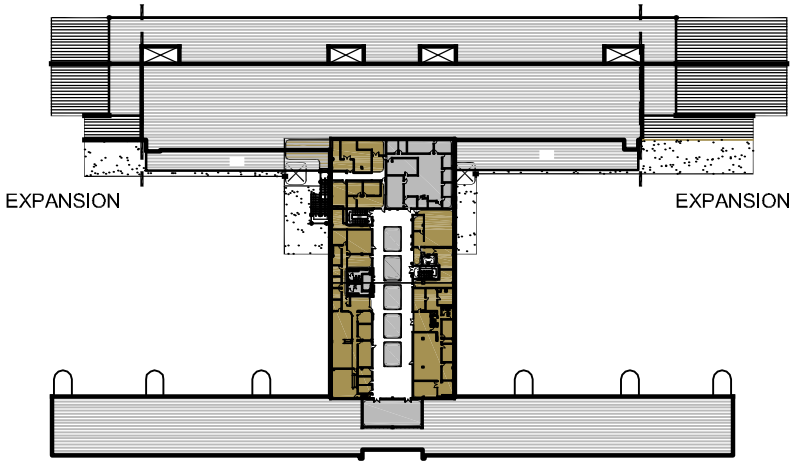


6-22

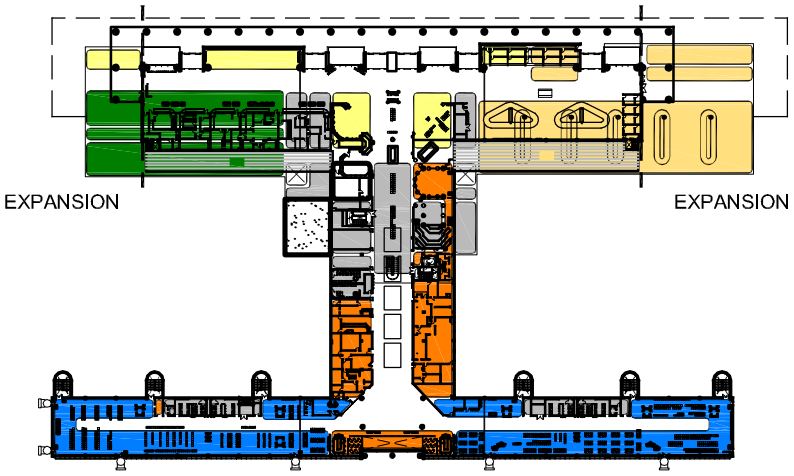
TALLAHASSEE
REGIONAL AIRPORT

MASTER PLAN UPDATE

INITIAL CONCEPT 2



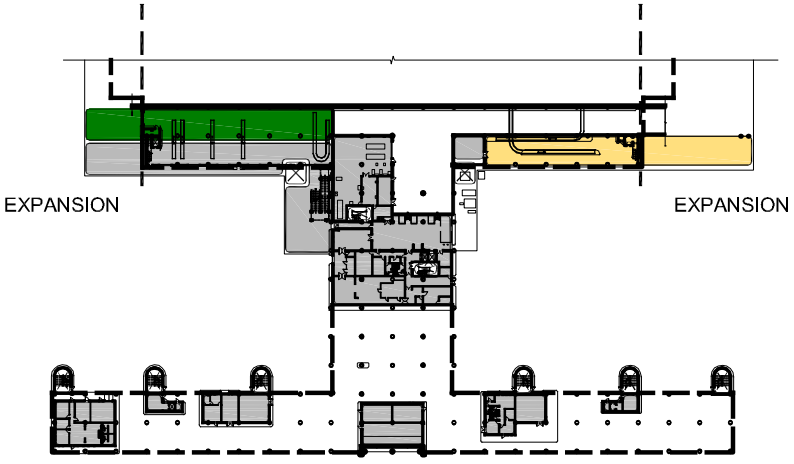
UPPER FLOOR



MAIN FLOOR

LEGEND

- CONCESSIONS
- BAGGAGE CLAIM/RENTAL CARS
- TICKETING/BAGGAGE MAKE-UP
- SECURITY/SCREENING/TSA
- PUBLIC WAITING
- HOLDING
- ADMINISTRATION
- MISCELLANEOUS



LOWER FLOOR

Initial Terminal Concept 3

Initial Terminal Concept 3 involves expanding the main terminal south, but not extending the wings east or west. The checked baggage screening functions currently located in the ticket lobby are relocated to the lower level behind the bag make-up area on the apron. Expanding south also creates the future space required in the inbound bag operations area. The large central stair to the third level is removed to help increase passenger way finding and traffic flow through the connector as well as increase concessions visibility. The removal of this stair creates the need for a new public access to the airport administration area on the upper level. With the existing elevator and stairwell on the eastern side of the connector remaining in the un-secure section of the terminal it serves as the public access to both TSA and the administration area. The security screening and TSA functions remain in their current locations, although they are expanded to fulfill the future demand. Leaving the security screening station in its current location makes it necessary to add additional secure concessions in the holding concourse. This is possible by converting some existing hold room space to concession space. The space lost in the existing hold room is gained back by the extension of the concourse to the east and west. This extension, as in Concept 1, allows all aircraft to park along the airside of the concourse; but apron expansion becomes necessary. **Exhibit 6-24** illustrates Initial Terminal Concept 3

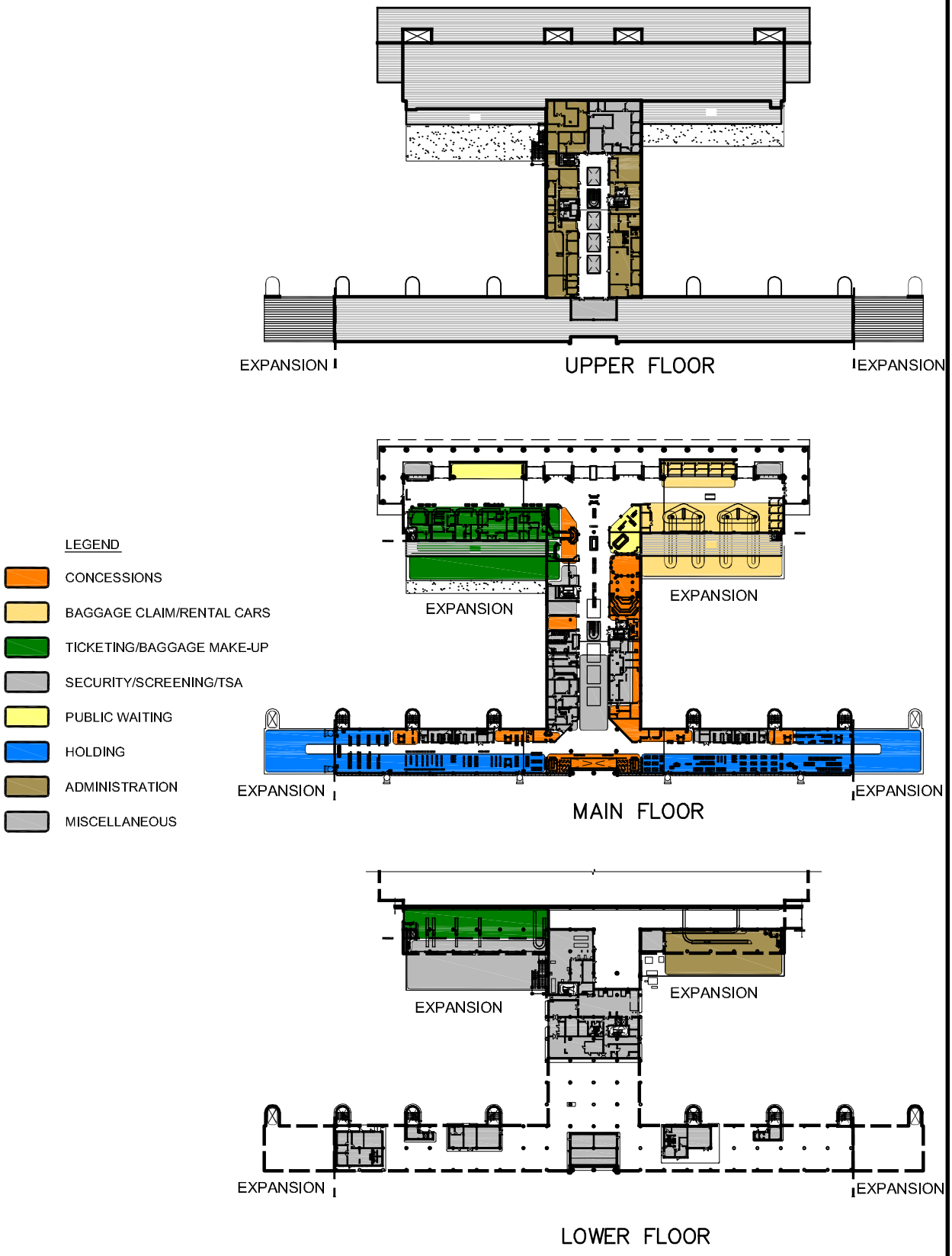
Strengths	Weaknesses
✈ Makes Use of Unused Apron	✈ Requires Apron Expansion
✈ Additional Non-Secure Toilets	✈ Only 4 Bag Claim Devices Provided
✈ Increases Depths Of Lobbies	
✈ Places All Aircraft On Airside Of Concourse	

Initial Terminal Concept 4

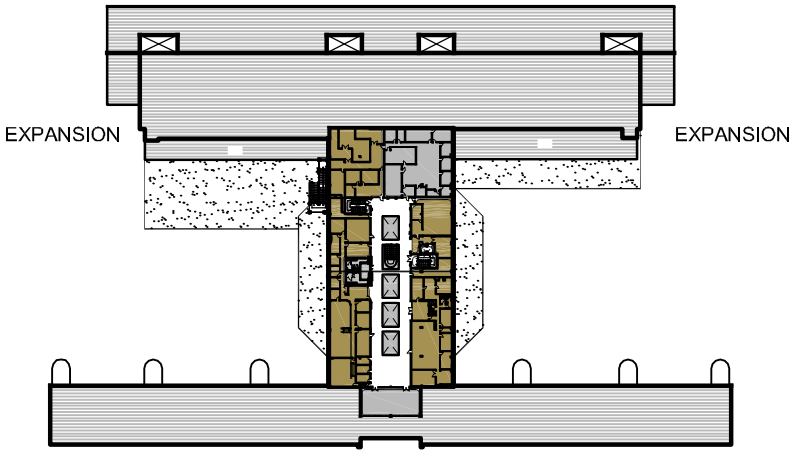
The major theme behind Initial Terminal Concept 4 is to maintain the existing footprint of the un-secure landside portion of the building. To do this, the ticketing and bag claim lobbies are expanded into the center lobby and the northern wall of the terminal building is reconfigured. While encroaching into the center lobby of the terminal creates a narrower circulation corridor, it does allow for the space required for the future ticket and bag claim functions. The reconfiguration of the northern wall improves passenger circulation through the ticketing and bag claim lobbies. The second major component of Initial Terminal Concept 4 is the increased width of the connector between the secure and un-secure sides of the terminal making room for existing functional spaces that are relocated to the connector. This expansion allows for passenger traffic to flow around the newly created central core of the connector. Concessions, public waiting, and the security screening station comprise the outer ring of the central core. The interior of the core is made up of the support spaces required for these functions to operate properly. The current baggage screening functions are moved to the lower level adjacent to the bag make-up area. The secure concourse as shown in Initial Terminal Concept 4 is similar to that of Terminal Concept 2 in that it remains the same overall size, however the arrangement of the passenger loading bridges is altered to accommodate the future fleet mix. **Exhibit 6-25** illustrates Initial Terminal Concept 4.

Strengths	Weaknesses
✈ Makes Use of Unused Apron	
✈ Additional Secure Concessions	✈ Awkward Circulation Through Connector
✈ Makes Use Of Existing Concourse	

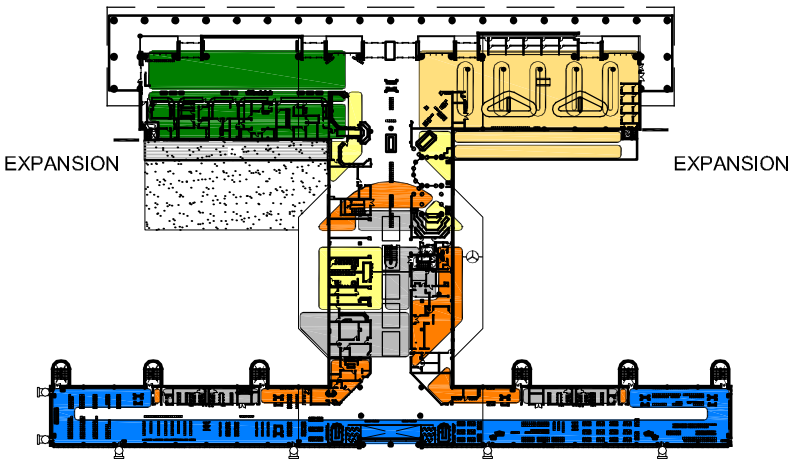
INITIAL CONCEPT 3



INITIAL CONCEPT 4



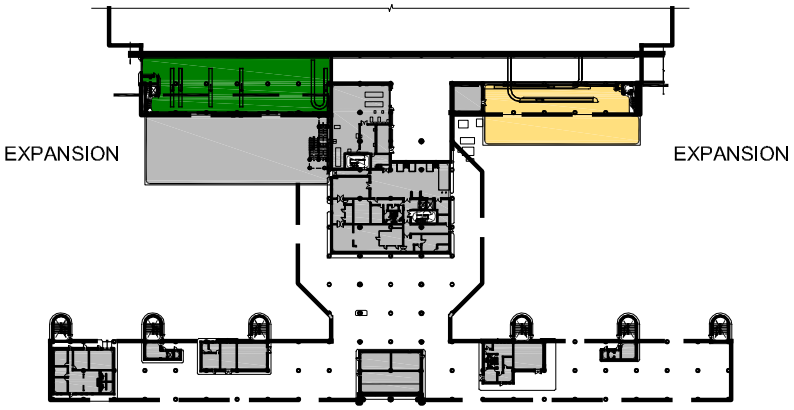
UPPER FLOOR



MAIN FLOOR

LEGEND

- CONCESSIONS
- BAGGAGE CLAIM/RENTAL CARS
- TICKETING/BAGGAGE MAKE-UP
- SECURITY/SCREENING/TSA
- PUBLIC WAITING
- HOLDING
- ADMINISTRATION
- MISCELLANEOUS



LOWER FLOOR

Initial Terminal Concept 5

Initial Terminal Concept 5 follows the same pattern as Terminal Concept 4 in that the width of the connector between the airside and landside of the terminal building must be increased. Although the idea is similar to Terminal Concept 4 this concepts approach is different. Instead of forcing passengers around the perimeter of a central concessions area, the connector is widened and the concession and support spaces are pushed outwards allowing passenger traffic to flow through the center. To gain the amount of space required for the ticket and bag claim functions a combination of Terminal Concepts 2 and 4 are combined. Along with the linear expansion to the east and west of Terminal Concept 2 the northern face of the terminal building is reconfigured as in Terminal Concept 4. Pushing the circulation corridor to the north and expanding the ticketing and bag claim lobbies to the west and east respectively, allow for a generous main lobby with new un-secure toilet facilities and public waiting areas. The baggage screening functions, which are currently being performed in the ticket lobby, are relocated to the lower level as in Terminal Concepts 1 through 4. The security screening station remains in its current location, which prompts the use of an expanded corridor in order to provide adequate secure airside concessions. The extra space created in the concourse is converted to secure concessions spaces. Once again, the extra length provided by the extension of the secure concourse allows all of the aircraft to simultaneously park on the airside of the concourse. **Exhibit 6-26** illustrates Initial Terminal Concept 5.

Strengths	**Weaknesses**
✈ Additional Non-Secure Toilets	✈ Relocation of existing stair and elevator
✈ Additional Secure Concessions	✈ Majority of Concessions Still On Un-Secure Side
✈ Places All Aircraft On Airside Of Concourse	

Summary

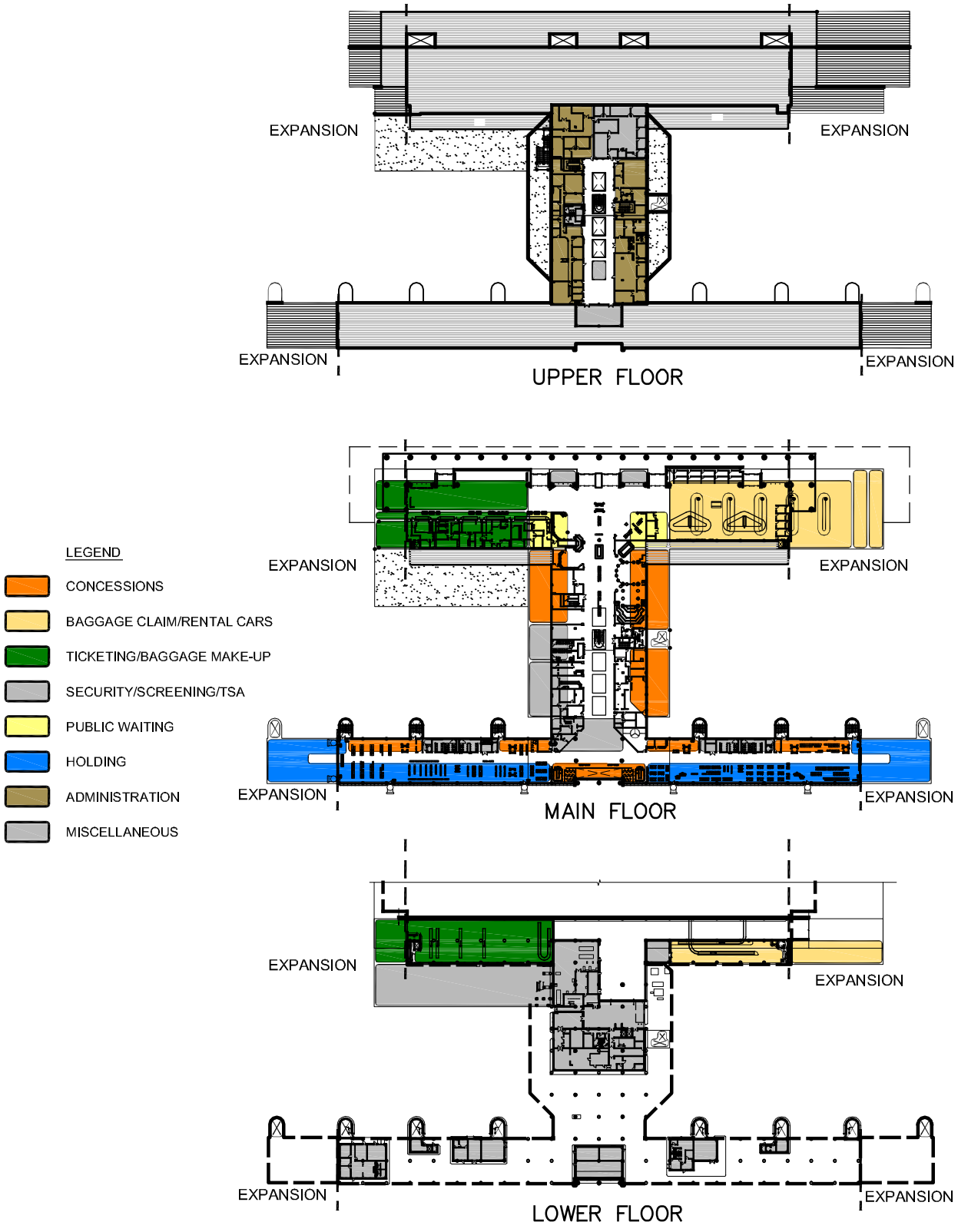
The landside component of the site components followed the previously completed Parking Expansion Feasibility Study. Therefore, the only options considered concerning the site were whether or not to expand the existing aircraft parking apron. If the secure passenger holding concourse is enlarged the existing apron must be enlarged to accommodate the larger secure concourse footprint.

After reviewing the Initial Concepts the airport staff rejected Concepts 4 and 5. It was decided that no one single concept met the criteria they had established. However, they all agreed that components of Initial Concepts 1, 2, and 3 merged together would best meet their objective. Each approved element was then incorporated into a single concept that became the Preferred Terminal Concept.

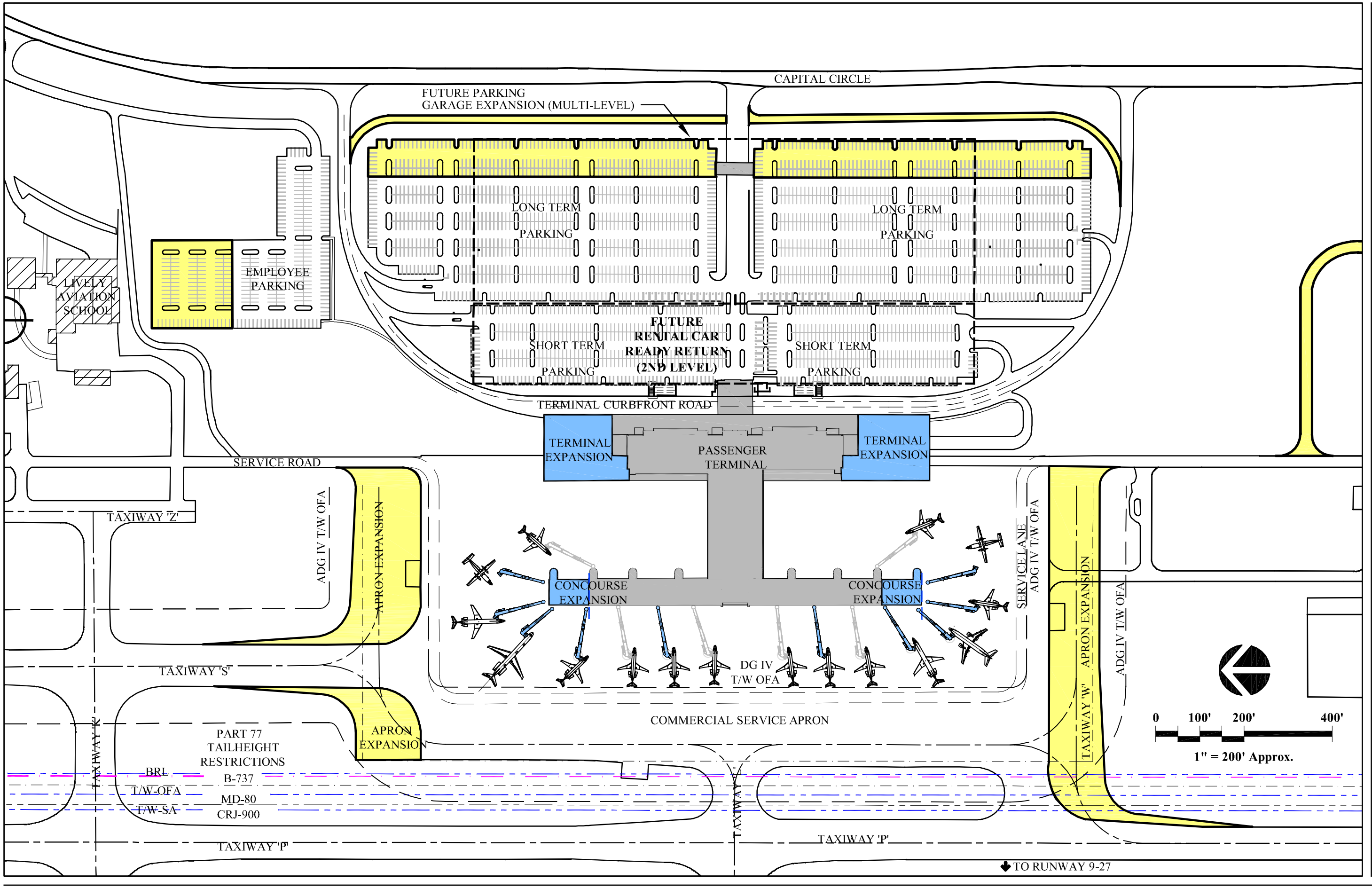
PREFERRED ALTERNATIVE

The airport staff decided that an option including an enlarged secure passenger holding concourse was the preferred choice. With the expansion of the secure concourse as part of the Preferred Terminal Concept, an increased aircraft-parking apron was required. Of the two site concepts provided, only Initial Site Concept 2 allowed for an expanded concourse. Therefore, Initial Site Concept 2 will serve as the Preferred Site Concept. **Exhibit 6-27** illustrates the Preferred Site Concept.

INITIAL CONCEPT 5



PREFERRED SITE CONCEPT



6-27

The airport staff chose elements from various Initial Concepts including the bag screening area, the baggage claim area, and the expanded concourse layout. The baggage screening facility from Initial Concept 1 was selected as the preferred layout. The ticketing and baggage claim areas from Initial Concept 2 were the preferred layout of these areas. Concept 3 included the best layout of the connector corridor and secure concourse. These components were consolidated into one concept creating the Preferred Terminal Concept, which was submitted to and approved by the airport staff. **Exhibits 6-28, 6-29, and 6-30** illustrate the Preferred Terminal Concept lower, main and upper levels, respectively. Construction phasing of the site and building, conceptual cost estimates, conceptual funding plans, and identification of short-range vs. long-range improvements are all part of the implementation analysis. Each of these items will be covered in greater detail in the Project Implementation section.

PREFERRED TERMINAL CONCEPT - LOWER LEVEL

BAG SCREENING FACILITY

OUTGOING BAG MAKE-UP

20 YEAR DEMAND | 10 YEAR DEMAND

20 YEAR DEMAND | 10 YEAR DEMAND

68'

270'

LINE OF CONVEYOR SYSTEM SHED ROOF

LOADING DOCK

MECH/ MISC

DELIVERY ACCESS

INCOMING BAG OPS

LINE OF INBOUND BAG OPS SHED ROOF

10 YEAR DEMAND | 20 YEAR DEMAND

MECHANICAL/ MISCELLANEOUS

- CONCESSIONS
- BAGGAGE CLAIM/RENTAL CARS
- TICKETING/BAGGAGE MAKE-UP
- SECURITY/SCREENING/TSA
- PUBLIC WAITING
- HOLDING
- ADMINISTRATION
- MISCELLANEOUS
- OUTGOING BAGGAGE
- INCOMING BAGGAGE

MISC.

MISC.

MISC.

MISC.

20 YEAR DEMAND | 10 YEAR DEMAND

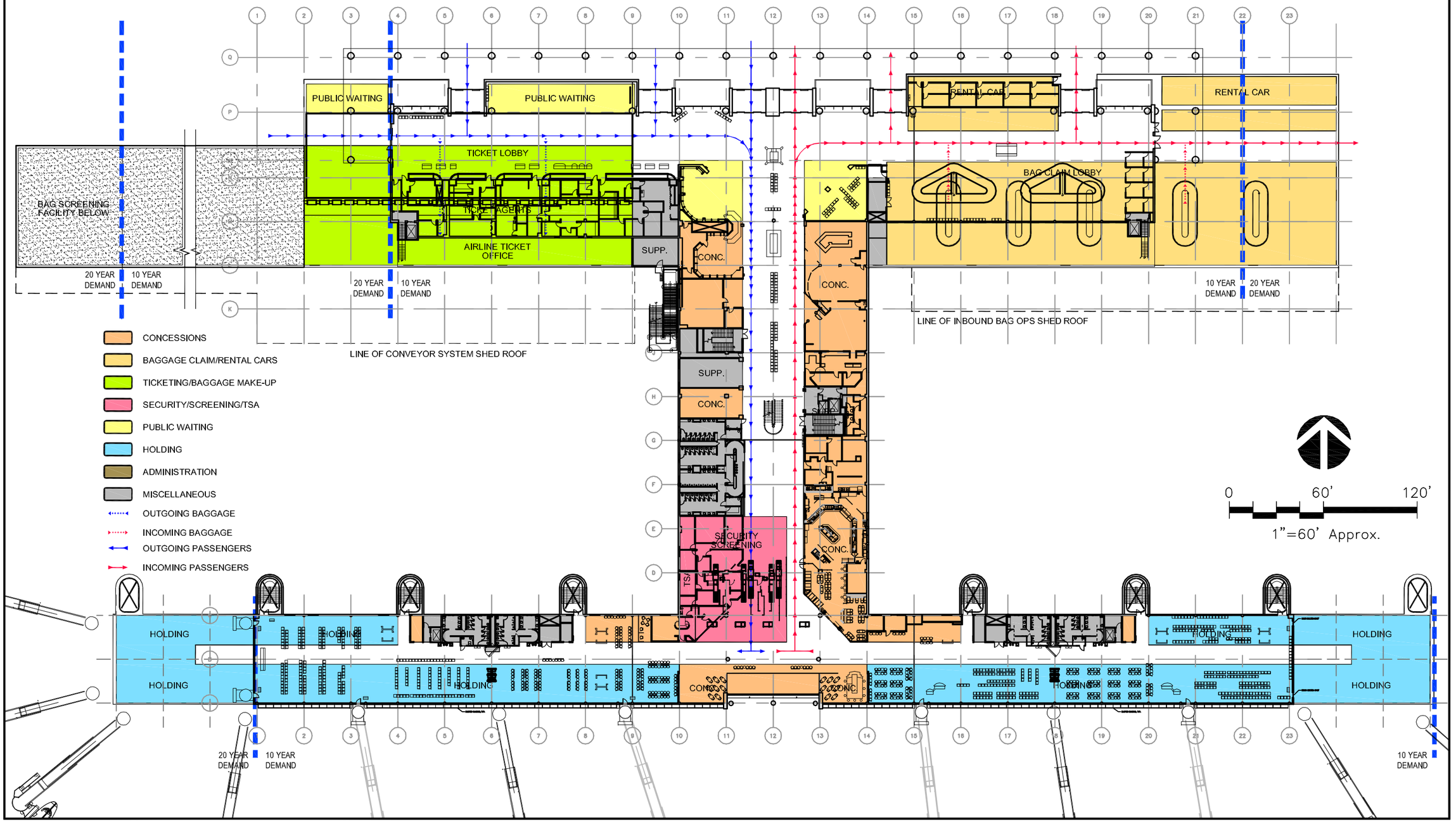
10 YEAR DEMAND

0 60' 120'

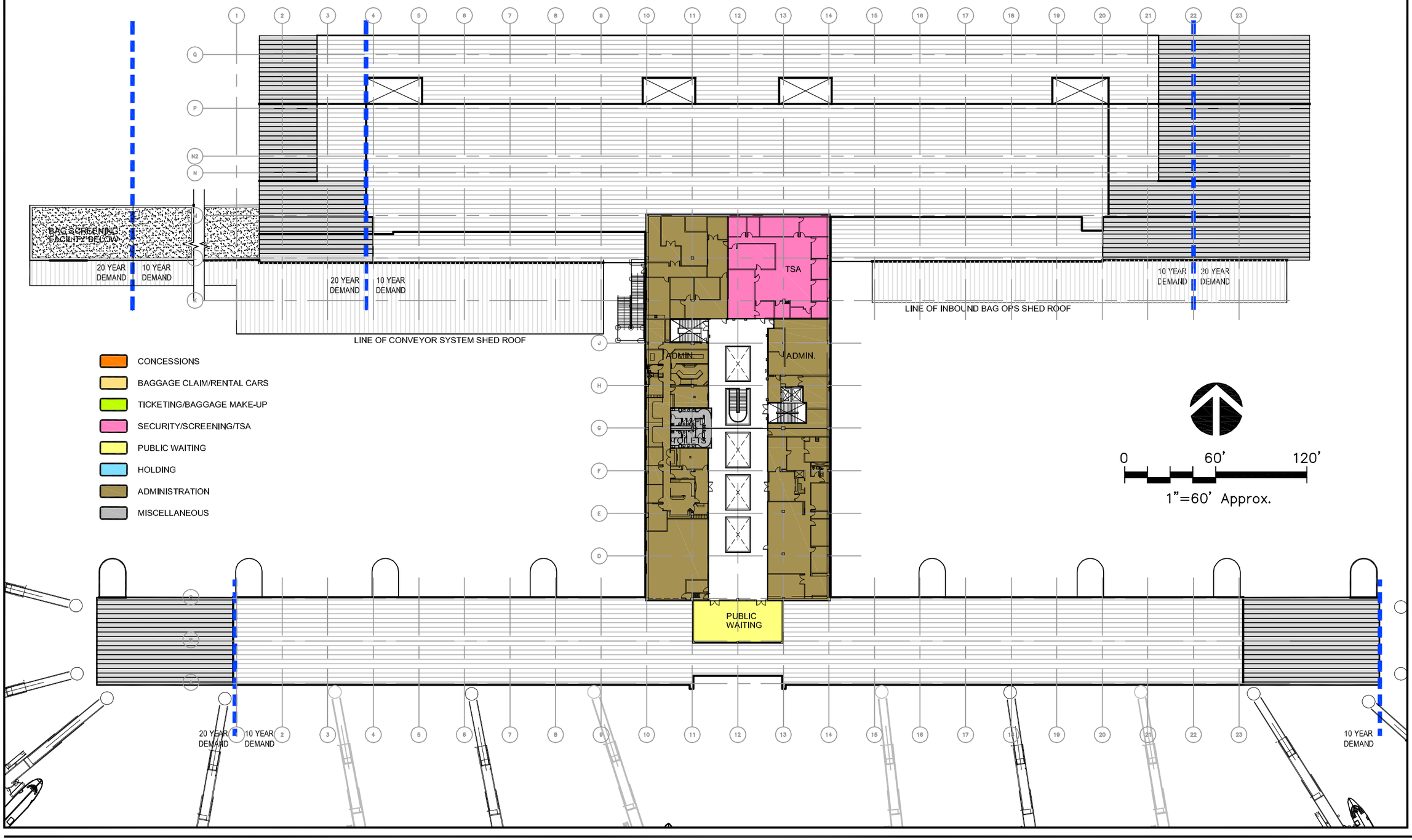
1"=60' Approx.

6-28

PREFERRED TERMINAL CONCEPT - MAIN LEVEL



PREFERRED TERMINAL CONCEPT - UPPER LEVEL



AIRPORT GROUND ACCESS ALTERNATIVES

Airport ground access capacity will become a critical component of air services at TLH. The growth of the Airport is expected to generate rising volumes of surface traffic and increased congestion on Capital Circle S. W. As the Airport runway and terminal capacity are expanded, ground access to the Airport needs to be improved to maximize the benefits of infrastructure investment.

As indicated in the Facility Requirements Chapter, Capital Circle S.W. will reach capacity during the planning period. Preliminary calculations indicate that the peak hour trips are more likely to exceed Capital Circle S.W. by 2008. Thus, by 2008, motorists are more likely to experience an unacceptable degree of congestion during peak hours. It is worth noting that these calculations only take into consideration anticipated development within the airport's property. Thus, any commercial development along Capital Circle S.W. would create additional traffic and congestion.

The following section discusses the roadway construction alternatives that would eliminate or lessen traffic congestion on Capital Circle S.W. The first alternative discusses the possibility of widening Capital Circle S.W. to a four lane-road, the second describes the advantages of a new airport access road that would parallel the existing alignment of Capital Circle S.W., and the third alternative investigates the proposed relocation of Capital Circle S.W. closer to Lake Bradford, as envisioned by the Tallahassee Planning Department.

Alternative 1: Widening of Capital Circle S.W.

Alternative 1 includes the widening of Capital Circle to four lanes and creates a provision for turning lanes or auxiliary lanes at intersections wherever practical. This alternative has several advantages including improved traffic operations and roadway safety. Alternative 1 also allows for the development of amenities that could produce economic stimulation of the area.

The widening of Capital Circle S.W. presents a major drawback. The widening of the road would increase traffic capacity, but passenger cars and trucks would still have to cross the road to access or leave the Airport facilities. Vehicular crossing would potentially decrease the road's capacity and may generate major safety issues. Thus, the widening of Capital Circle S.W. presents major advantages from a traffic capacity standpoint but major safety issues would still remain.

Alternative 2: Creation of an Airport Access Road

One of the main elements that contribute to the congestion of Capital Circle S.W. is the presence of several intersections along the road. While these intersections provide vital access to the passenger terminal, general aviation facilities, cargo areas, etc., they interfere with the free-flow operation of traffic. Attendant driveways and interference from traffic entering and leaving the through-traffic lanes cause a loss in efficiency, which leads to congestion and safety problems at relatively low volumes.

To solve this problem, Alternative 2 incorporates a new two-lane road parallel to Capital Circle S.W. that would segregate airport traffic from through traffic. This two-lane road would provide access to the general aviation facilities, passenger terminal, and cargo areas. In addition, to preserve capacity and improve safety on this new airport road, provisions are made for several left-turn and right-turn lanes. The additional lanes allow left and right turn traffic to be removed from the through lanes. In

addition, median lanes and round about have been added, whenever practical. The preliminary design for this road is illustrated in **Exhibit 6-32**.

Alternative 3: Capital Circle S.W. Relocation

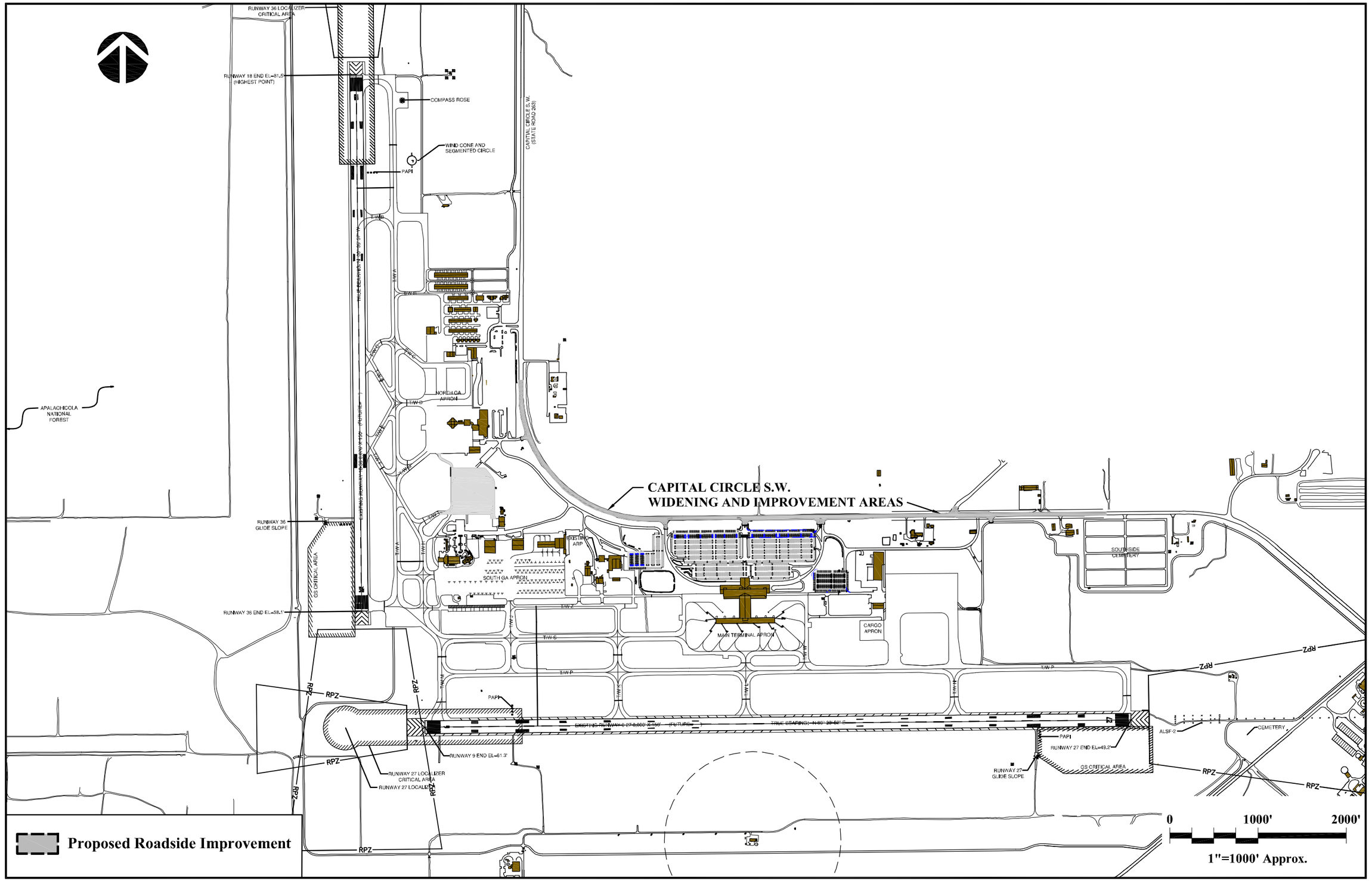
As mentioned previously, the Tallahassee Planning Department has indicated that Capital Circle S.W. is more likely to be realigned further north in the future, so that it runs closer to Lake Bradford. Should this plan be pursued, a portion of Capital Circle S.W. that currently runs along the Airport's property would become dedicated to airport access. This alternative would shift all non-airport related traffic to the realigned road and, therefore, increase the airport access road vehicular traffic capacity. Thus, the "new" airport access road would provide sufficient capacity to accommodate existing and future airport' users vehicular traffic. The realignment of Capital Circle S.W. is depicted in **Exhibit 6-33.**

Preferred Alternative

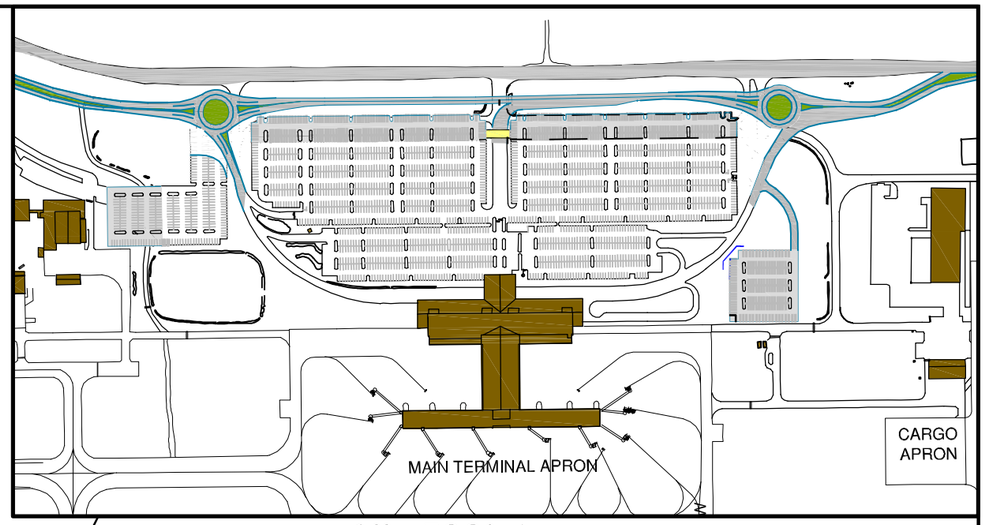
At this time, the selection of a best alternative cannot be made. This selection will depend on the recommendation made by the Blue Print 2004 committee. If Capital Circle S.W. is realigned and the existing road becomes dedicated to airport access, only minor improvements at the intersections would be required. In that event, the new airport access road would offer sufficient capacity to accommodate expected traffic.

On the other hand, should the Capital Circle S.W. alignment remain as it is now, the creation of a new airport access road which would parallel the existing alignment is preferred. A dedicated airport access road presents several advantages over the widening of Capital Circle S.W. The creation of a new road would segregate airport traffic from through traffic, thus avoiding a mixture of vehicle classes and reducing interference from traffic entering and leaving the through-traffic lanes. A dedicated access road would also allow the erection of airport identification signs that clearly point out Airport facilities. Finally, a dedicated access road would also improve the flow of traffic between the various airport facilities.

ALTERNATIVE 1 - WIDENING OF CAPITAL CIRCLE S.W.



ALTERNATIVE 2 - CREATION OF AN AIRPORT ACCESS ROAD



1"=500' Approx.

RUNWAY 36 LOCALIZER CRITICAL AREA
RUNWAY 18 END EL=81.5' (HIGHEST POINT)
COMPASS ROSE
WIND CONE AND SEGMENTED CIRCLE
PAPI
CAPITAL CIRCLE S.W. (STATE ROAD 263)
T-W-B
T-W-A
T-W-D
T-W-C
T-W-E
T-W-F
T-W-G
T-W-H
NORTH GA APRON
APALACHICOLA NATIONAL FOREST
RUNWAY 36 GLIDE SLOPE
EXISTING RUNWAY 9-27 6,000' X 150' (ASPHALT)
TRUE BEARING: N 89° 39' 58" W
GS CRITICAL AREA
RUNWAY 36 END EL=58.1'
EXISTING ARP
SOUTH GA APRON
T-W-Z
T-W-S
MAIN TERMINAL APRON
CARGO APRON
T-W-P
T-W-N
T-W-M
T-W-L
T-W-K
T-W-J
SOUTHSIDE CEMETERY
RPZ
PAPI
RUNWAY 9 END EL=61.3'
RUNWAY 27 LOCALIZER CRITICAL AREA
RUNWAY 27 LOCALIZER
EXISTING RUNWAY 9-27 6,000' X 150' (ASPHALT) (FUTURE)
TRUE BEARING: N 89° 39' 58" E
ALSF-2
CEMETERY
PAPI
RUNWAY 27 END EL=49.2'
RUNWAY 27 GLIDE SLOPE
GS CRITICAL AREA

Proposed Roadside Improvement

0 1000' 2000'

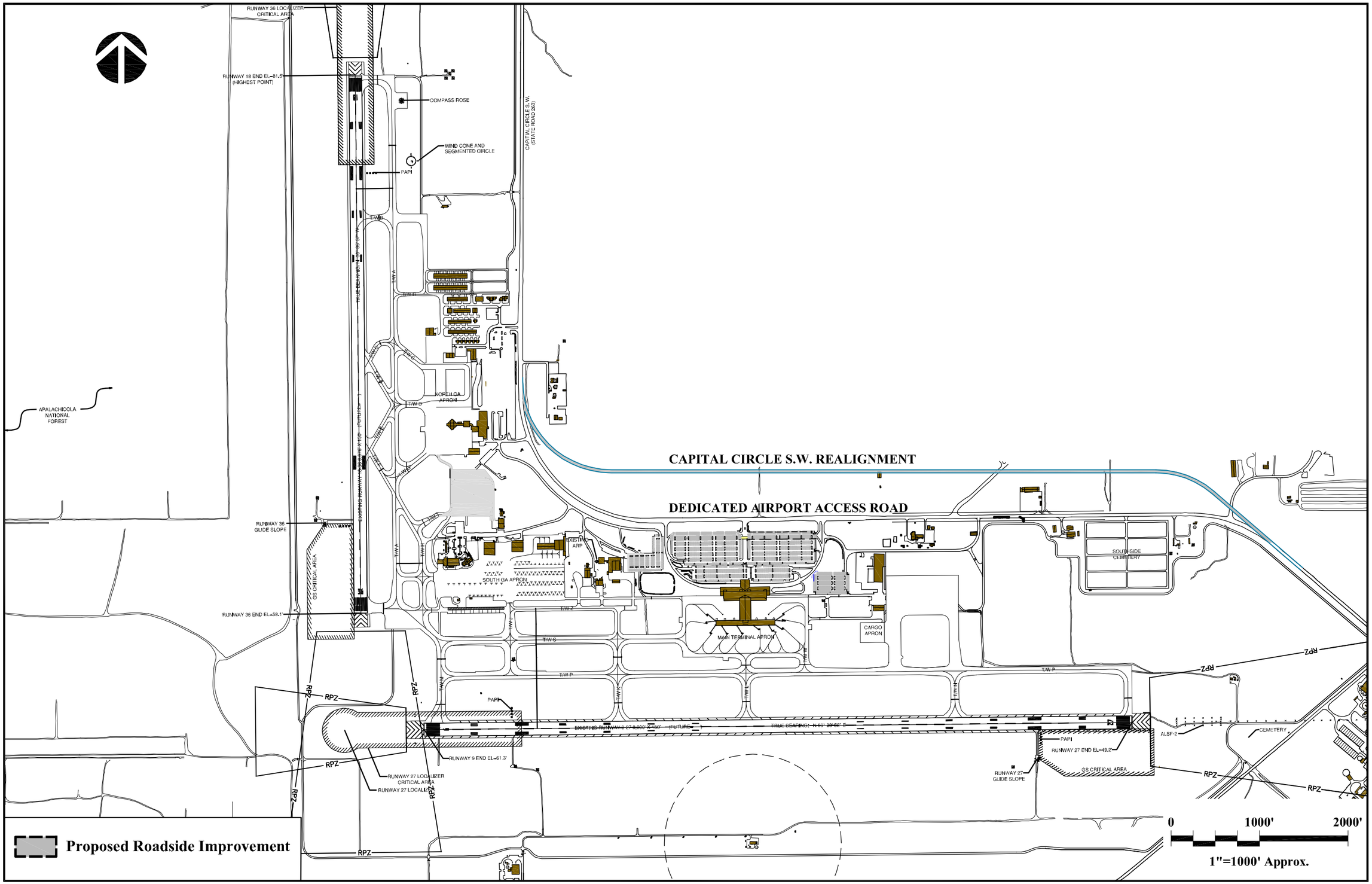
1"=1000' Approx.

6-32

TALLAHASSEE REGIONAL AIRPORT

MASTER PLAN UPDATE

ALTERNATIVE 3 - CAPITAL CIRCLE S.W. RELOCATION



6-33

MULTIMODAL TRANSPORTATION CENTER

Given the area's historic and projected growth, the provision of a multimodal transportation center at the Airport would be a welcomed addition to the local transportation network since it would create a fast, safe, and convenient link between Tallahassee business and recreation centers and the Airport. In the very long-term, it is foreseeable that the center would also provide regional and national transportation options for both passengers and freight.

The first step in Tallahassee's attempt to reduce the number of cars on roadways would be achieved through the development of a multimodal center. During the early phase, the center would serve primarily as a bus stop to provide parking space for three to four buses. The facility would include traveler amenities such as benches, telephone and vending service, bike racks, and would provide shelter from the elements. Bus services and routes could be established and modified to meet routine travel demand.

During the mid to long term, it is foreseeable that bus services could be complemented with light rail service connecting the Airport directly to downtown Tallahassee. Given the current and projected gasoline prices, the use of light rail would likely be a cost-effective alternative to automobile transportation. In addition, light rail would help reduce the amount of traffic congestion on County roadways.

To make the multimodal center more attractive, it is recommended that the facility provide a transportation interface for airport travelers. Additional services including over-the-road bus service, local transit, rental car services, and rail could all be integrated into the multimodal facility. This interfacing of modes would allow travelers to use two or more methods of transportation to reach their origins and destinations.

The center should be designed to provide simplified and unobstructed flow of vehicles, passengers, visitors, buses, etc., in and around the facility and associated areas. The design of the center should be such that the concept minimize walking distances, bus/commuter airline/rental car processing and services times; thereby reducing congestion which could result from intermingling of non-related activities. Thus, the favored location for a multimodal transportation center would be across from the existing passenger terminal. The three-story parking structure that is recommended as part of the long-term terminal improvements provides an adequate location for the proposed multimodal transportation center. At first, it would be simple to provide spaces for three to four buses and associated facilities on one of the proposed deck. In the very long-term, one level could be added or retrofitted to accommodate light rail facilities.

HOTEL ALTERNATIVES

The need for a hotel on airport property was identified in the 1996 Master Plan Update. As mentioned in the previous report, a certain percentage of travelers can be expected to take advantage of a hotel located within the airport boundary. Airport hotels represent a great convenience to travelers, and are seen at many regional airports elsewhere in the nation. They also provide the airport with a new revenue center. It is assumed that the development of an airport hotel would be instituted by a private third-party developer on property managed by the airport.

While a more detailed analysis would need to be performed to determine specific information about the size, desirable amenities and other considerations necessary to establish a viable hotel operation on the airport, it is recommended that appropriate development sites be reserved on the airport property. The previous Master Plan Update identified three potential locations as potential airport hotel sites, which are still vacant. These

potential hotel sites are described below under Alternatives A, B, and C. Alternative D identifies a new hotel site on top of a proposed parking deck across from the passenger terminal.

Alternative A

The site known as the "Criswell property." It should be noted that the airport does not currently own this property. The airport must therefore first move to acquire the property. The airport has previously publicly listed its intent to acquire the parcels making up the Criswell property in recent updates of the Airport Layout Plan of 1988. It is recommended that the airport purchase this property, whether or not a proposed hotel becomes the ultimate use of the site. The Criswell property has future strategic value for possible use in vehicle access to the proposed air cargo expansion area. Further, the Criswell property marks the only break in the airport property line along Capital Circle S.W. It is in the best interests of the airport to have a contiguous property line along the entire length of airport land fronting Capital Circle S.W.

Most importantly, as the airport continues to expand, the Criswell property will become increasingly more valuable due to its proximity to the airport operation. Future ownership of this property by others may result in the establishment of additional airport services by outside companies. Such a scenario could effectively remove potential incomes that would otherwise be captured by the airport operation.

This rectangular site of slightly less than seven acres is directly east of the main airport parking lot and is convenient to the passenger terminal. Proximity to the terminal is the greatest advantage for siting a hotel on this property. This makes it attractive to travelers and developers alike. The property also possesses highly visible frontage along Capital Circle S.W.

Alternative B

A portion or all of the roughly triangular portion of airport property (approximately 33 acres) east of Capital Circle S.W., where it curves from west to north across from the former terminal building. The site is now occupied by maintenance facilities for rental car agencies that currently conduct business at the airport.

The alternative has the advantage of being much larger than the Criswell property, allowing room for hotel, associated development, and future expansion if desired. This hotel development proposal is based on the assumption that the existing rental car wash/maintenance facilities could be relocated to a more central airport site already dedicated to various maintenance functions. Advantages of this site include potential use of the property for recreational development associated with the hotel or the airport.

Alternative C

Alternative C is located on the easternmost portion of airport property, approximately 2,000' northeast of Runway 27 end. The proposed site resides within a densely populated and undeveloped vegetation area located east of the NWS observation station and Southside Cemetery.

This easternmost site is the largest suitable site for a hotel or other business development. This property is also attractive for associated recreational land use, such as a golf course. This type of development has been demonstrated as a successful revenue generator and compatible land use at other airports around the nation. However, land parcels within this acreage could be more profitable for the airport as part of an extended light commerce park development.

Alternative D

In this alternative, the hotel would lie on top of the parking deck located north and adjacent to the passenger terminal building. The main advantage of this alternative is its proximity to the terminal. In this alternative, the traveler has direct and convenient access to the airport amenities. While this alternative would require significant funding, its prime location, on top of the parking deck and possibly the multimodal transportation facility, makes it a very attractive site. The locations of each alternative are depicted on **Exhibit 6-34.**

Preferred Alternative

Alternatives A (the Criswell property) and D appear to offer the most benefit of convenience to travelers using the Airport. Once the Criswell property is acquired, Alternative A may also have the advantage of being more quickly developable than the other alternatives. Alternative D is ideal from a location standpoint but construction costs will exceed Alternative A figures. The construction of an airport hotel adjacent to the passenger terminal would require the construction of a parking deck that would significantly impact airport operations. From an engineering and operations standpoint, the construction of such a hotel would be more complicated than the building of a hotel in periphery of the terminal area. Alternative B may be more marketable to potential developers because of its greater size and possibilities for other complementary development. However, existing rental car wash/maintenance facilities would have to be relocated. Finally, the potential hotel site indicated in Alternative C may be too inconvenient, and the site offers the prospect of other potentially more profitable commercial development.

PROPOSED HOTEL LOCATIONS

6-34

ECONOMIC DEVELOPMENT ALTERNATIVES

Land at an airport that is not needed for the ultimate development of airfield facilities is commonly used for economic development opportunities. Those areas that are adjacent and/or have the ability to access the runway and taxiway system should be reserved for aviation related expansion, while the rest can be used for compatible non-aviation related facilities. Primarily, this section identifies and evaluates the opportunities that are possible given the previous alternative analyses. The development of realistic economic opportunities will require close coordination with the staff from the City of Tallahassee to ensure that efforts by the City, as well as those suggested in this study, are coordinated.

As mentioned before, several areas were identified as readily available for aviation related and/or non-aviation related development. The locations for these areas are depicted on **Exhibit 6-35**.

- Area A: 80 Acres
- Area B: 25 Acres
- Area C: 58 Acres
- Area D: 102 Acres
- Area E: 275 Acres

Area A

Due to the proximity of this land to the airfield, only aviation related facilities should be considered in the future for Area A. This area would better serve as a location for flight schools, an FBO or other airfield related facilities, such as maintenance building. While it would be preferable to keep small aircraft in that area, should the demand for a regional jet facility rise, this site would be a prime location.

Areas B, C and D

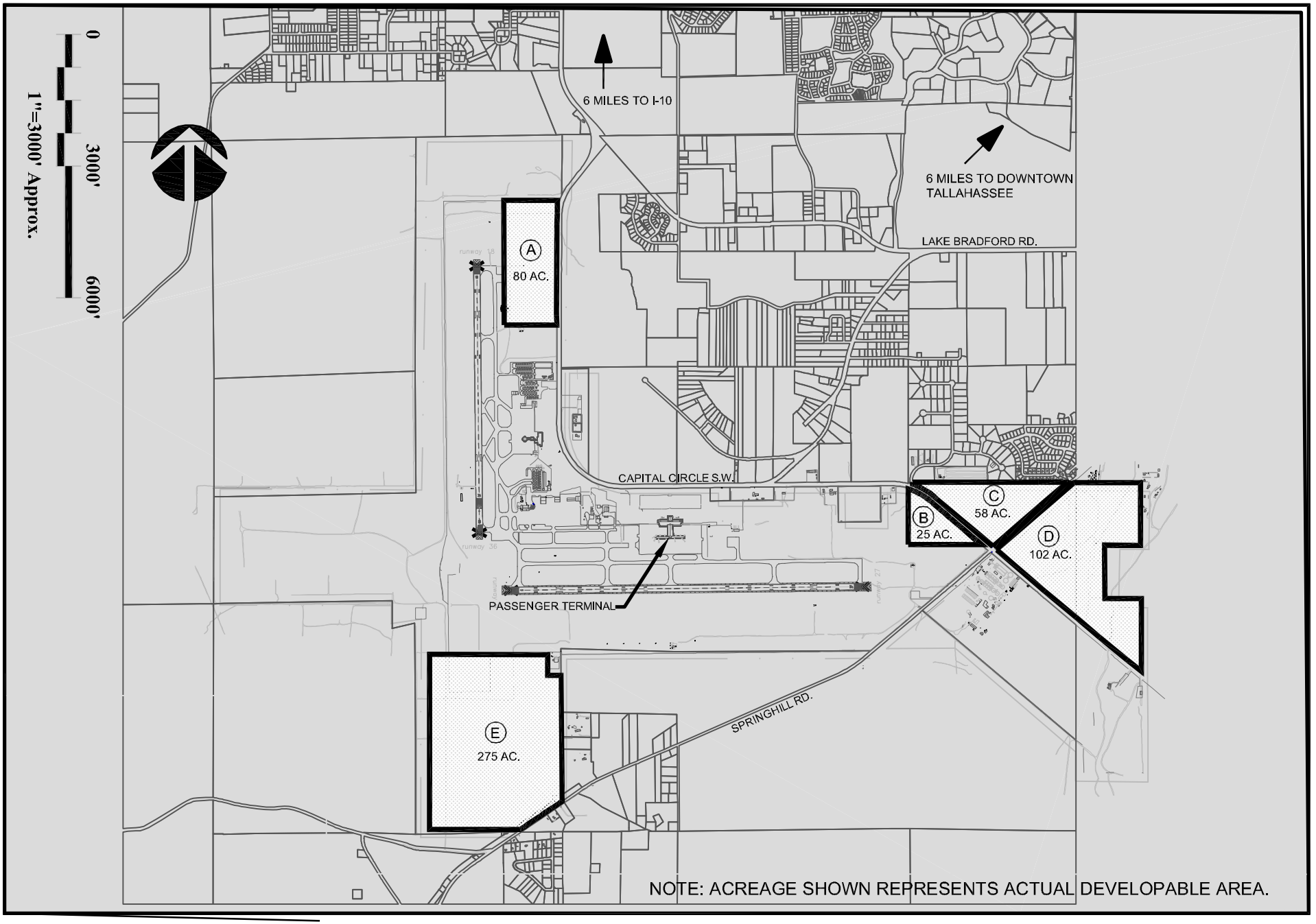
Areas B, C and D which lie beyond the end of Runway 27 along Capital Circle S.W., should be reserved for commercial uses. Buildings or hangars to be built in that area should not exceed a certain height to avoid encroachment of the transitional and inner approach surfaces.

Area E

Area E could serve a variety of purposes. The South part of this area could accommodate businesses that do not require airside frontage while the northern portion should be reserved for development requiring airside frontage.

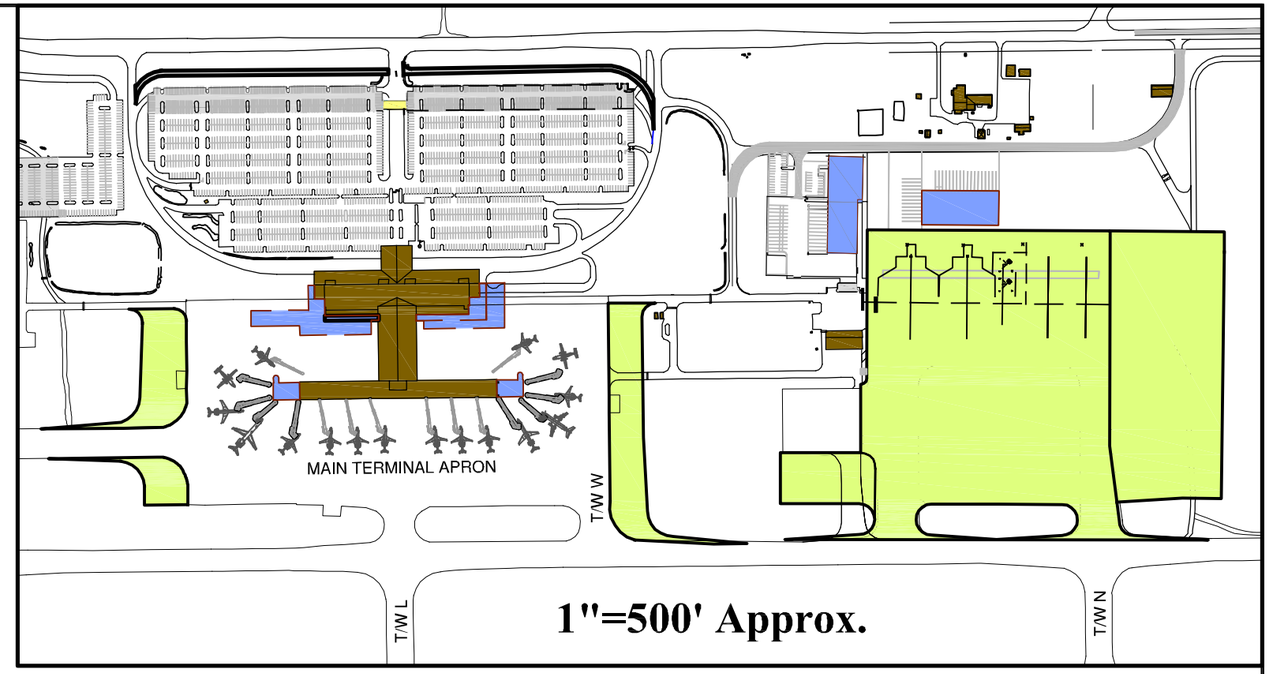
SUMMARY OF AIRPORT ALTERNATIVES

The preceding sections have identified and analyzed a number of planning alternatives for future development at TLH. These alternatives focused on meeting the identified facility needs of the airport while maintaining operational efficiency and the required safety standards. The positive and negative aspects of each alternative were presented and discussed to provide an indication of differences between various options. The preferred alternatives for the airfield, terminal building and apron, air cargo facilities, landside access and general aviation facilities are depicted in **Exhibit 6-36**. These developments will be carried forward into the development of the Airport Layout Plan Set.



AVAILABLE AVIATION AND/OR NON-AVIATION PROPERTIES

REFINED ALTERNATIVES



Chapter 7 – Airport Layout Plan Set

GENERAL OVERVIEW

An update to the Airport Layout Plan drawing set (ALP) for the Tallahassee Regional Airport (TLH) is included and discussed in this chapter. The Federal Aviation Administration (FAA) as a part of the Master Plan process requires the Airport Layout Plan set. This drawing set provides a portion of the input required to determine the eligibility of proposed airport improvement projects. The FAA will generally not provide financial assistance for projects that are not depicted on the ALP. The drawings which comprise the updated ALP illustrate the current (2003) facilities at TLH and proposed improvements resulting from the analyses contained in the previous sections of the Master Plan Study for the short, intermediate, and long-term planning periods.

The Airport Layout Plan (ALP) set was prepared in conformity with the criteria established by the Federal Aviation Administration (FAA) in **Advisory Circular (AC) 150/5070-6A, "Airport Master Plans"** and **AC 150/5300-13 Change 8, "Airport Design"** and supporting circulars and orders.

The ALP set includes the following individual drawing sheets:

- Cover Sheet (Sheet 1)
- Airport Layout Plan Data Sheet (Sheet 2)
- Airport Layout Plan (Sheet 3)
- Terminal Area Plan (Sheet 4)
- Runway 9 Inner Portion of the Approach Surface Drawing (Sheet 5)
- Runway 27 Inner Portion of the Approach Surface Drawing (Sheet 6)
- Runway 18 Inner Portion of the Approach Surface Drawing (Sheet 7)
- Runway 36 Inner Portion of the Approach Surface Drawing (Sheet 8)
- FAR Part 77 Horizontal and Conical Surface Drawing (Sheet 9)
- FAR Part 77 Imaginary Surfaces – Runway 9 Approach (Sheet 10)
- FAR Part 77 Imaginary Surfaces – Runway 27 Approach (Sheet 11)
- FAR Part 77 Imaginary Surfaces – Runway 18 Approach (Sheet 12)
- FAR Part 77 Imaginary Surfaces – Runway 36 Approach (Sheet 13)
- On-Airport Land Use Plan (Sheet 14)
- Airport Property Map Data Sheet (Sheet 15)
- Airport Property Map (Sheet 16)

Additionally both a location and a vicinity map for the airport are incorporated onto the title sheet, which also provides an index of individual drawing sheets. A reduced version of the ALP set is included at the end of this chapter.

AIRPORT LAYOUT PLAN DRAWING

The ALP drawing depicts all existing facilities as well as proposed development over the course of the master plan. These facilities include, but are not limited to: the runway and taxiway system, taxilanes, hold aprons, lighting, NAVAIDs, terminal facilities, hangars, other airport buildings, aircraft parking areas, automobile parking, and airport access elements. Key dimensional criteria are included for the airfield geometry. This includes, but is not limited to, the size of the runways and various taxiways; runway safety and runway object

free areas; building restriction lines; and navigational aid critical areas. Airport coordinates, airport elevations, general airport data, basic runway data, a modification approval block, and wind rose data are included on the separate Airport Layout Plan Data Sheet.

One of the most significant improvements shown on the ALP involves the extension of Runway 18 to the north by approximately 1,424 feet. An extension of this length will allow Runway 18-36 to function as a primary runway during temporary closures of Runway 9-27 and also when winds favor a north or south direction. Runway 9-27 experiences closures during times of maintenance, and the runway is expected to endure a complete rehabilitation in the short-term timeframe to resolve a deficiency in grade. The northern runway extension will also create additional advantages by improving safety and capacity.

Additional airfield improvements include the integration of high-speed taxiway exits for increased capacity along with the addition of various taxiway connectors for improved airfield circulation. An extension of Taxiway 'A' will coincide with the runway extension in order to avoid aircraft back taxiing and will provide additional access to developments on the north side of the airfield.

Several apron improvements are shown on the plan including a cargo apron expansion, main terminal apron expansion, and the south apron area expansion. These expansions create additional room for ground circulation and aircraft parking and are required to accommodate the growth of both commercial and general aviation traffic that are expected to occur during the planning period.

The plan also indicates proposed commercial hangar construction for the expansion of existing business or for new businesses that are expected to commence at TLH throughout the planning period. Additional cargo hangars are shown to meet demand or to fulfill the needs of a shipping company that has yet to be identified.

The criteria that were applied in the development of the runway and taxiway system as well as those associated with mandatory FAA safety and object clearance criteria are defined below in **Table 7-1.**

Table 7-1
AIRFIELD DESIGN STANDARDS FOR TALLAHASSEE REGIONAL AIRPORT

Airfield Design Criteria	Runway 9-27	Runway 18-36
Airport Reference Code (ARC)	C-IV	C-IV
Runway Safety Area Length beyond Runway End	1000 feet	1000 feet
Runway Safety Area Width	500 feet	500 feet
Runway Width	150 feet	150 feet
Runway Object Free Area Length beyond Runway End	1000 feet	1000 feet
Runway Object Free Area Width	800 feet	800 feet
Runway/Taxiway Separation	400 feet	400 feet
Taxiway Width	75 feet	75 feet
Taxiway Safety Area Width	171 feet	171 feet
Taxiway Object Free Area Width	259 feet	259 feet
Taxiway Lighting	MITL	MITL
Aircraft Parking Limit Line (distance from RW centerline)	500 feet	500 feet
Runway Lighting	HIRL	HIRL
Pavement Strength Rating	115,000 SWL	115,000 SWL
	170,000 DWL	170,000 DWL
	330,000 DTWL	330,000 DTWL

Source: FAA AC 150/5300-13, Change 8.

TERMINAL AREA PLAN

The Terminal Area Plan drawing (TAP) depicts the same configuration and dimensional information shown on the ALP drawing, but provides a larger scale version of the terminal area so that certain features and greater detail of the proposed improvement can be discerned. The plan includes recommended access roads, parking areas, buildings, and apron expansion areas.

Airside improvements shown on the Terminal Area Plan include provisions to expand the main terminal building and concourse areas. As illustrated, a concourse expansion will create additional gates for expected increases in airline activity and similar expansions to the passenger terminal will accommodate additional passenger traffic associated with the increased airline activity. The proposed eastern and western expansions to the terminal and concourse areas create the need for additional apron area. For this reason, respective expansions to the commercial service apron to the west and east are shown and will require phasing together to allow use of the new concourse gates. Taxiway fillet improvements are shown that provide added turning radius for commercial aircraft and high speed taxiway exits are shown in the vicinity of the terminal to expedite aircraft movements from the runway to increase overall capacity.

Landside improvements shown include expansion to the existing west parking facility and also consider the construction of a multi-level parking garage to provide space for increases in passenger parking requirements. A new on-airport hotel facility is located above the proposed parking garage for convenient lodging for travelers or those desiring to stay overnight in the vicinity of the airport.

APPROACH ZONE PROFILES

The Approach Zone Profiles depicted on **Sheets 5 through 8** display the full profile view of the existing and ultimate approach surfaces without the use of match lines or truncated depictions. Obstructions are listed numerically in a table with data describing the obstruction, obstruction elevation, affected Part 77 surface, surface elevation, amount of penetration, and proposed dispositions. Potential obstructions in the approach zones include vertical clearances required over roadways and railroads as well as incursions by power poles, trees, buildings, etc. for both the existing and ultimate approaches.

The Inner Portion of the Approach Surface drawings are covered in **sheets 5 through 8**. Each sheet denotes a plan and profile view of a particular runway end. Sheets five and six cover the approaches to runway 9-27. The drawings identify that prior to the installation of a precision approach, an extensive tree removal will be required to keep the heights of these objects below the required 50 to 1 approach surface. As indicated on sheet 6, the existing approach to runway 27 has a cluster of objects penetrating the approach surface in the vicinity of the Thomas Smith Sewage Treatment Plant. Most of the objects are trees; however, the plans also indicate penetrations by man made objects such as a light pole and a navigational aid as well. Sheet 7 denotes the approach to Runway 18 and shows that a precision approach could safely be accommodated from this runway end without any tree removal. Sheet 8 covers the approach to runway 36 and demonstrates that the existing approach is unobstructed.

FAR PART 77 IMAGINARY SURFACES PLAN

To enhance the safe operation of aircraft in the airspace around the airport, the FAA has adopted **Federal Aviation Regulations (FAR) Part 77 "Obstructions Affecting Navigable Airspace".** Subpart C of FAR

Part 77 establishes standards for determining obstructions to air navigation. 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 to protect the navigable airspace from encroachment by hazards that would potentially affect the safety of airport operations.

The FAR Part 77 Imaginary Surfaces Plan depicts the physical features of the area around the airport including existing obstructions that penetrate the surfaces. 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.

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.

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.

Approach Surfaces - These surfaces begin at the end of the Primary Surface (200' 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.

Transitional Surface - A sloping area beginning at the edges of the Primary and Approach Surfaces and sloping upward and outward at a ratio of 7:1 until it intersects the Horizontal Surface.

AIRPORT LAND USE PLAN

The Airport Land Use Plan shows the proposed utilization of property within the existing and future boundary of Tallahassee Regional Airport. The land use designations illustrated correspond with the future developments shown on Airport Layout Plan and assign undeveloped areas to their most desired or likely use for the future. The purpose of the plan is to ensure that the airport strategically allocates areas of property for future need such that future acquisition of land and easements are minimized.

AIRPORT PROPERTY MAP

The Airport Property Map is intended to accurately show the airport property line and all current lease boundaries. To develop this property map, an extensive review of recorded deeds, plats, and rights of way was conducted. 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. As noted on this drawing, a significant amount of acreage is identified for easement acquisition to the to the north and west of the airport. Although easements have been identified, the land should actually be acquired whenever possible to allow the

airport the ability to ensure its future viability and capability to meet development both during the period covered under this master plan 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 avoids the need to acquire costly developed property in the future to meet airport's development needs. The proposed easements and acquisitions depicted on the Airport Property Map will ensure the viability of the airport for an extended period of time and will provide proper protection for the future development of approaches and runway extensions that are expected to occur in the future.

SUMMARY

The preceding chapters have identified the forecast level of activity at TLH, applied that demand to the existing available facilities to determine future facility needs, and investigated an array of alternatives that could be employed to meet the projected demand. From the alternatives analysis and its subsequent refinement, a set of development actions have been defined for use in graphically depicting the future extent and configuration of facilities at TLH. These have been briefly discussed in the preceding sections. The next step in the planning process consists of refining the preliminary costs that were first identified in the alternatives analysis, developing a prioritized phasing program for the recommended development actions and determining the funding sources that will be employed to pay for the recommended improvements. The financial considerations including phasing, development and capital costs and funding options will be addressed in the Financial Plan Chapter.

U.S. Department of Transportation
Federal Aviation Administration
Southern Region – Airports Division
Effective Date: May 2004

Airport Layout Plan Drawing Set Checklist

Name of Airport: TALLAHASSEE REGIONAL AIRPORT
Location of Airport: TALLAHASSEE, FL
Date of Review: 6/26/06 Reviewed by: RCOSBORNE

Significant Development Changes Since Previous ALP Approval/ or Narrative

1. EXTENSION OF RW 18 TO THE NORTH BY 1,424' FOR A TOTAL
2. LENGTH OF 7,500'
3.
4.
5.
6.

In order to protect the airspace for future conditions, complete the following information:

Future Airport Reference Point (ARP) **(if same as existing, provide existing ARP)**

ARP Latitude 30°27'04.63"N ARP Longitude 84°19'50.69"W

Future Rwy End Coordinates & Rwy End Elevation **(if same as existing, provide existing coordinates)**

Rwy End 9 Rwy End Latitude 30°23'28.72" Rwy End Longitude 84°21'23.56" Rwy End Elevation 61.3'
Rwy End 27 Rwy End Latitude 30°23'29.44" Rwy End Longitude 84°19'52.22" Rwy End Elevation 49.2'
~~Rwy End 18 Rwy End Latitude 30°24'41.84" Rwy End Longitude 84°21'32.22" Rwy End Elevation 81.5'~~
Rwy End 36 Rwy End Latitude 30°23'41.70" Rwy End Longitude 84°21'31.68" Rwy End Elevation 58.1'
RWY END 18 LAT - 30°24'55.93" LONG - 84°21'32.15" ELEV 81.5'

Existing and Proposed Modification of Standards (MOS)

Existing Deviation of Standard/ FAA Approved MOS FAA Approval Date (if any) Expiration Date (if any)

1. RUNWAY 9-27 LINE OF SIGHT (NOT APPROVED)
2.
3.

Proposed Deviation of Standard/ FAA Modification of Standards

1.
2.
3.

Runway Safety Area Re-Evaluations

(X) Concur with Runway Safety Area Determination currently on file with FAA.

( ) Reevaluation of Runway Safety Area Determination completed as part of planning document and shown on this ALP set.

Narrative Report	Yes	No	Comments
Report Provided	( )	( )	
Aeronautical Forecasts			
- 0-5 yrs., 6-10 yrs., 10-20 yrs	( )	( )	REFER TO MASTER PLAN
-Total annual operations	( )	( )	
- Annual itinerant operations	( )	( )	
- Based aircraft	( )	( )	
- Annual instrument approaches (if applicable)	( )	( )	
- Annual itinerant operations by critical aircraft	( )	( )	
- Annual itinerant ops by more demanding aircraft	( )	( )	
Proposed Development Justification	( )	( )	
Special Issues (MOS, etc.)	( )	( )	
Development Schedule and Graphics	( )	( )	
Proper Agency Coordination (sponsor, local, state)	( )	( )	
Airport Layout Drawing			
Proper Agency Approval (Sponsor, Local, State)	( )	(X)	
Sheet Size - 24"x36"/ 22" x 34"	( )	(X)	30" X 42"
Scale 1"=200'-600'	(✓)	( )	
2'-10' Labeled Contours	(✓)	( )	
North Arrow			
- True & magnetic	(✓)	( )	
- Declination w/ annual rate of change	(✓)	( )	
Wind Rose			
- Source & time period	(✓)	( )	
- MPH & knots	(✓)	( )	
- 12 MPH individual & combined coverage	(✓)	( )	
- 15 MPH individual & combined coverage	(✓)	( )	
Airport Reference Point (ARP)			
- Existing w/ Lat./ Long. (NAD 83)	(✓)	( )	ALP DATA SHEET
- Ultimate w/ Lat./ Long. (NAD 83)	(✓)	( )	FOR COORDS
Elevations (Existing & Ultimate)			
- Existing runway ends	(✓)	( )	
- Displaced thresholds	(✓)	( )	
- Ultimate runway ends	(✓)	( )	
- Runway intersections	( )	( )	N/A
- Runway high & low points	(✓)	( )	
- Touchdown zone elevation (highest Rwy elevation in first 3,000' of any Rwy having published straight -in minima)	(✓)	( )	
Drawing Lines			
- Existing property boundary	(✓)	( )	
- Ultimate property boundary	(✓)	( )	SEE PROPERTY MAP
- Building restriction line (both sides)	(✓)	( )	
- Existing development shown as solid	(✓)	( )	
- Future development shown as dashed/ shaded	(✓)	( )	

Airport Layout Drawing (Continued)

	Yes	No	Comments
Runway Drawing Details (Existing & Ultimate)			
- Runway(s) Depiction	✓		
- Length & width	✓		
- End numbers	✓		
- True bearing (nearest sec.)	✓		
- Markings (basic, NPI, PIR)	✓		
- Lighting (thresholds only)	✓		
- Threshold lat/ long & elevations	✓		
- Displaced threshold lat/ long & elevations	✓		
- Runway safety areas & dimensions	✓		
- Runway object free areas & dimensions	✓		
- Runway obstacle free zones	✓		
- Centerline w/ true bearing	✓		
- Approach aids indicated (ILS, REILS, etc.)	✓		
- Lat/ long & elevation for non-federal on-airport NAVAIDs (used for instrument approach procedure)	✓		
Taxiway Details (Existing & Ultimate)			
- Taxiway widths	✓		
- Designations	✓		
- Separation dimensions to:			
Runway centerline(s)	✓		
Parallel taxiway(s)	✓		
Aircraft parking area(s)	✓		
Aircraft Parking Aprons			
- Existing & ultimate aprons shown	✓		NEED TO ADD
- Dimensions		X	SEE TERMINAL PLAN
- Tie-down layout/ locations	✓		
Runway Protection Zones (RPZs)			
- Existing & ultimate RPZs shown	✓		
- Dimensions	✓		
- Approach slope (20:1, 34:1, 50:1)	✓		
Title & Revision Blocks			
- Name and location of airport	✓		
- Name of preparer	✓		
- Date of drawing	✓		
- Drawing title	✓		
- Revision block	✓		
- FAA disclaimer	✓		
- Sponsor approval block	✓		
Airport Data Block (Existing & Ultimate)			
- Airport elevation (MSL)	✓		ALP DATA SHEET
- Airport Reference Point (ARP) Data	✓		
- Airport & terminal NAVAIDS (beacon, ILS)	✓		
- Mean maximum temperature	✓		
- Airport Reference Code (ARC) for each runway	✓		
- Design Aircraft for each runway	✓		
- Identify GPS at airport	✓		

Airport Layout Drawing (Continued)

	Yes	No	Comments
Runway Data Block (Existing & Ultimate)			
- % effective gradient	(Y)	( )	
- % wind coverage (MPH & knots)	(Y)	( )	ALP DATA SHEET
- Maximum elevation above MSL	(Y)	( )	
- Runway length	(Y)	( )	
- Runway width	(Y)	( )	
- Runway surface type (turf, asphalt...)	(Y)	( )	
- Runway strength (SWG, DWG...)	(Y)	( )	
- Part 77 approach category (visual, NPI, PIR)	(Y)	( )	
- Type instrument approach (ILS, GPS...)	(Y)	( )	
- Approach slope (20:1, 34:1, 50:1)	(Y)	( )	
- Runway lighting (HIRL, MIRL, LIRL)	(Y)	( )	
- Runway marking (PIR, NPI, BCS)	(Y)	( )	
- NAVAIDS & visual aids	(Y)	( )	
- Runway safety area dimensions (standard and non-standard)	(Y)	( )	
Miscellaneous			
- Airport facility/ building list (existing & future)	(Y)	( )	
- Standard legend	(Y)	( )	
- Location map	(Y)	( )	> COVER SHEET
- Vicinity map	(Y)	( )	
- Roadways, traverse ways identified	(Y)	( )	

Additional Comments:

Airport Airspace Drawing

Ultimate Runway Length Plan View of Surfaces	(Y)	( )	
Profile View of Ultimate Runway Lengths	(Y)	( )	
Obstruction Data Tables	(Y)	( )	
Sheet Size Same as ALP	(Y)	( )	
Plan View Scale 1"=2000'	(Y)	( )	
Profile View Scale 1"=1000' Horizontal, 1"=100' Vertical	(Y)	( )	
Title & Revision Blocks	(Y)	( )	
Approach Plan View Details			
- USGS base map	(Y)	( )	
- Runway end numbers shown	(1)	(X)	NEED TO SHOW
- Elevation contours of 50' on all slopes	(Y)	( )	
- Show most demanding surface lines as solid and others as dashed	(Y)	( )	
- Identify penetrating objects & top elevations (for those in inner approach add note, "Refer to the inner portion of the approach surface plan view details for close-in obstructions.")	(Y)	( )	SEE NOTES ON SHT
- Show PIR approach of 50,000 on separate sheet as necessary	(Y)	( )	
- Note any height restriction zoning/ ordinances/ statutes in place	(Y)	( )	
Approach Profile View Details			
- Ground profile along extended centerline (highest profile elevations of width & length of approach)	(Y)	( )	
- Identify significant objects (roads, rivers, etc.) w/ elevations	(Y)	( )	
- Existing & ultimate runway ends and approach slopes	(Y)	( )	

Additional Comments:

Inner Portion of the Approach Surface Drawing	Yes	No	Comments
Large-Scale Plan View for Each Runway End (up to 100' height above runway end)	(✓)	( )	
Large-Scale Profile View for Each Runway End (up to 100' height above runway end)	(✓)	( )	
Sheet Size	(✓)	( )	
Scale 1"=200' Horizontal, 1"=20' Vertical	(✓)	( )	
Title & Revision Blocks	(✓)	( )	
Separate Approach Tables with Obstruction Data			
- Type of approach (NPI, etc.)	(✓)	( )	
- Approach Slope (20:1, etc.)	(✓)	( )	
- Obstruction number	(✓)	( )	
- Obstruction description	(✓)	( )	
- Approach penetration (in feet)	(✓)	( )	
- Proposed mitigation (including "none.")	(✓)	( )	
Inner Approach Plan View Details			
- Aerial photo base map	(✓)	( )	
- Obstructions numbered	(✓)	( )	
- Property line depicted	(✓)	( )	
- Identify by numbers all traverse ways w/ elevations & vertical clearances in approach (at approach edge & extended centerline)	(✓)	( )	
- Depict existing & ultimate runway ends	(✓)	( )	
- Ground contours shown	(✓)	( )	
Inner Approach Profile View Details			
- Identify significant terrain/ items in RSA	(✓)	( )	
- Identify obstructions with numbers on plan view	(✓)	( )	
- Depict roads and railroads at edge of approach as dashed	(✓)	( )	

Additional Comments:

Terminal Area Drawing			
Large-Scale Plan View of Terminal/ GA Area(s) as Needed	(✓)	( )	
Show Existing & Future Buildings	(✓)	( )	
Sheet Size Same as ALP	(✓)	( )	
Scale 1"=50'-100'	(✓)	( )	
Title & Revision Bocks	(✓)	( )	
Legend	(✓)	( )	
Building Data Table (Existing & Ultimate)			
- Number facilities	(✓)	( )	
- Include top elevations	(✓)	( )	REFER TO ALP
- Identify obstruction marking	(✓)	( )	

Additional Comments:

Land Use Drawing (Existing & Ultimate)	Yes	No	Comments
- Basic airport features/ surfaces	(✓)	( )	
- Property lines	(✓)	( )	
- Include all land uses (industrial, residential, etc.) on & off airport (including non-aeronautical) to minimum 65 LDN	(✓)	( )	
- Line of sight or runway visibility zones shown	( )	(x)	N/A
- Note any existing land use ordinances/ statutes in place	( )	(x)	N/A
- Noise contours as required in scope of work (60, 65 & 70 LDN)	(✓)	( )	
- Sheet size same as ALP	(✓)	( )	
- Scale same as ALP	(✓)	( )	
- Title & revision block	(✓)	( )	
- Aerial base map	( )	(x)	
- Legend (symbols and land use descriptions)	(✓)	( )	
- Identify recommended land use changes	(✓)	( )	
- Identify public facilities (schools, parks, etc.)	(✓)	( )	

Additional Comments:

Airport Property Map (Existing & Ultimate)			
Property Lines (Clear & Bold)	(✓)	( )	
RPZ's Shown	(✓)	( )	
Tracts of Land on and off Airport	(✓)	( )	
Sheet Size Same as ALP	(✓)	( )	
Scale Same as ALP	(✓)	( )	(1" = 300')
Title & Revision Block	(✓)	( )	
Legend	(✓)	( )	
Airport Features (expansion, etc.)/ Critical Surfaces (RSA's, etc.) Shown (to aid in determining eligible land needs)	(✓)	( )	
Data Table			
- Numbering system for parcels	(✓)	( )	
- Date of acquisition	(✓)	( )	
- Federal aid project number	(✓)	( )	
- Type of ownership (fee, easement, federal surplus, etc.)	(✓)	( )	
- Parcel acreage	(✓)	( )	

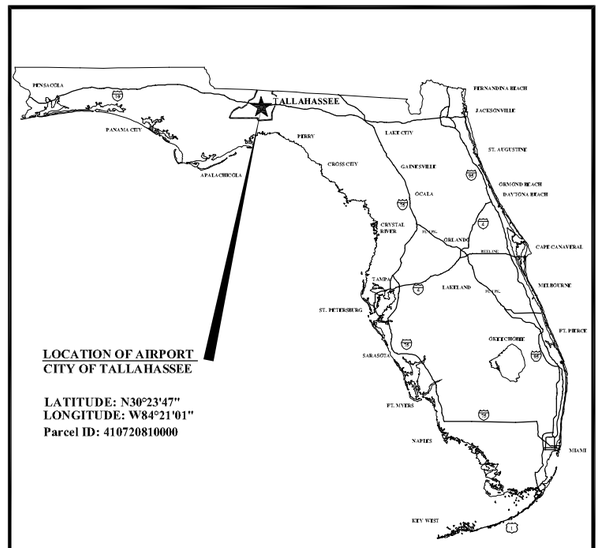
Additional Comments:

TALLAHASSEE REGIONAL AIRPORT

TALLAHASSEE, FLORIDA

AIRPORT LAYOUT PLANS

COT PROJECT#: 01200
FDOT PROJECT#: 22677819401



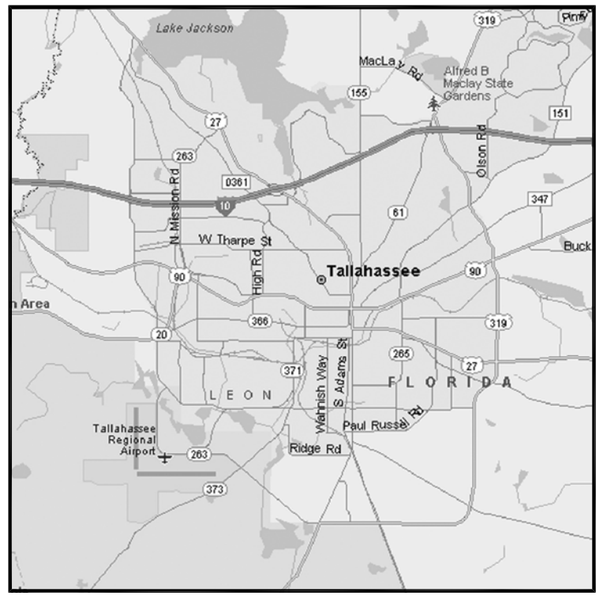
LOCATION OF AIRPORT
CITY OF TALLAHASSEE

LATITUDE: N30°23'47"
LONGITUDE: W84°21'01"
Parcel ID: 410720810000

LOCATION MAP
NOT TO SCALE

Index To Drawings

Drawing No.	Description
1	COVER SHEET
2	AIRPORT LAYOUT PLAN DATA SHEET
3	AIRPORT LAYOUT PLAN
4	TERMINAL AREA PLAN
5	RUNWAY 9 INNER PORTION OF THE APPROACH SURFACE DRAWING
6	RUNWAY 27 INNER PORTION OF THE APPROACH SURFACE DRAWING
7	RUNWAY 18 INNER PORTION OF THE APPROACH SURFACE DRAWING
8	RUNWAY 36 INNER PORTION OF THE APPROACH SURFACE DRAWING
9	FAR PART 77 HORIZONTAL AND CONICAL SURFACE DRAWING
10	FAR PART 77 IMAGINARY SURFACES - RUNWAY 9 APPROACH
11	FAR PART 77 IMAGINARY SURFACES - RUNWAY 27 APPROACH
12	FAR PART 77 IMAGINARY SURFACES - RUNWAY 18 APPROACH
13	FAR PART 77 IMAGINARY SURFACES - RUNWAY 36 APPROACH
14	ON - AIRPORT LAND USE PLAN
15	AIRPORT PROPERTY MAP
16	AIRPORT PROPERTY MAP DATA SHEET



VICINITY MAP
SCALE 1"=3,000'

PREPARED FOR:

CITY OF TALLAHASSEE

JOHN MARKS - MAYOR
ANITA FAVORS - THOMPSON, CITY MANAGER
KENNETH AUSTIN - DIRECTOR OF AVIATION

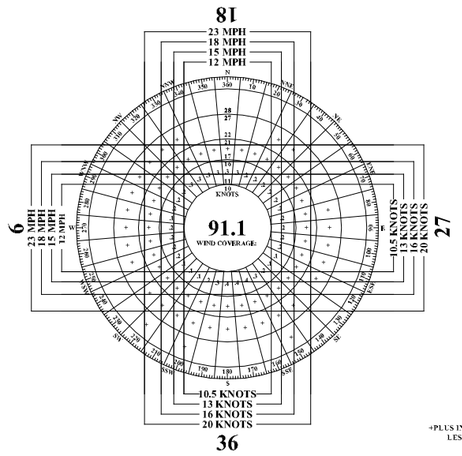
TALLAHASSEE REGIONAL AIRPORT

JUNE, 2006

PREPARED BY:

THE LPA GROUP INCORPORATED
Aviation Consultants

ATLANTA, GA • BATON ROUGE, LA • CHARLESTON, SC • CHARLOTTE, NC • 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

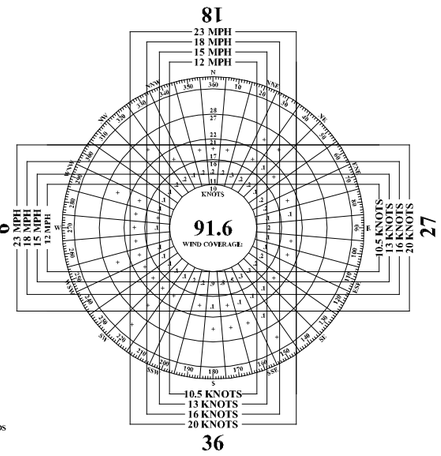


ALL WEATHER WINDROSE

ALL WEATHER WIND COVERAGE BY RUNWAY				
RUNWAY	10.5 KNOT WIND (12 MPH) COVERAGE(%)	13 KNOT WIND (15 MPH) COVERAGE(%)	16 KNOT WIND (18 MPH) COVERAGE(%)	20 KNOT WIND (23 MPH) COVERAGE(%)
9 – 27	95.41%	97.58%	99.62%	99.94%
18 – 36	96.73%	98.37%	99.73%	99.96%
TOTAL	99.70%	99.95%	99.99%	100%

SOURCE: NATIONAL CLIMATIC DATA CENTER (NCDC)
STATION: TALLAHASSEE REGIONAL AIRPORT, FLORIDA
PERIOD: JAN. 1992 - DEC. 2001

+PLUS INDICATES WINDS LESS THAN 0.1%



IFR WINDROSE

IFR WEATHER WIND COVERAGE BY RUNWAY				
RUNWAY	10.5 KNOT WIND (12 MPH) COVERAGE(%)	13 KNOT WIND (15 MPH) COVERAGE(%)	16 KNOT WIND (18 MPH) COVERAGE(%)	20 KNOT WIND (23 MPH) COVERAGE(%)
9 – 27	94.02%	96.88%	99.25%	99.80%
18 – 36	97.56%	98.72%	99.59%	99.91%
TOTAL	99.49%	99.82%	99.95%	99.99%

CEILING < 1000 FT. AND/OR VISIBILITY < 3.00 MILES

RUNWAY DATA TABLE

	RUNWAY 9-27		RUNWAY 18-36	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAY LENGTH	8,000 FT	SAME	6,076 FT	7,500'
RUNWAY WIDTH	150 FT	SAME	150 FT	SAME
AIRPORT REFERENCE CODE	C-IV	SAME	C-IV	SAME
CRITICAL AIRCRAFT	BOEING 757-200	SAME	BOEING 757-200	SAME
TRUE BEARING	N 89° 23' 52" E	SAME	N 00° 35' 57" W	SAME
EFFECTIVE GRADIENT (%)	0.15 %	SAME	0.39%	SAME
RSA DIMENSIONS (RWY END)	500 FT X 1,000 FT	SAME	500 FT X 1,000 FT	SAME
ROFA DIMENSIONS (RWY END)	800 FT X 1,000 FT	SAME	800 FT X 1,000 FT	SAME
OFZ DIMENSIONS (RWY END)	400 FT X 200 FT	SAME	400 FT X 200 FT	SAME
RUNWAY LIGHTING	HIRL	SAME	HIRL	SAME
PAVEMENT STRENGTH:				
SINGLE WHEEL GEAR	115,000 LBS	SAME	115,000 LBS	SAME
DUAL WHEEL GEAR	170,000 LBS	SAME	170,000 LBS	SAME
DUAL TANDEM WHEEL GEAR	330,000 LBS	SAME	330,000 LBS	SAME
SURFACE COMPOSITION	ASPHALT	SAME	ASPHALT	SAME
PRIMARY SURFACE (FAR PART 77)	8,400 FT x 1,000 FT	SAME	6,478 FT x 1,000 FT	SAME

	RUNWAY 9		RUNWAY 27		RUNWAY 18		RUNWAY 36	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE
APPROACH CATEGORY	NON-PRECISION	PRECISION	PRECISION	SAME	NON-PRECISION	PRECISION	PRECISION	SAME
VISIBILITY MINIMUMS	≥ 1 MILE	< ¾ MILE	< ¾ MILE	SAME	≥ 1 MILE	< ¾ MILE	< ¾ MILE	SAME
APPROACH SURFACE SLOPE	34:1	50:1	50:1	SAME	34:1	50:1	50:1	SAME
RUNWAY END COORDINATES								
LATITUDE (NAD 83)	30° 23' 28.72" N	SAME	30° 23' 29.60" N	SAME	30° 24' 41.84" N	30° 24' 55.03" N	30° 23' 41.70" N	SAME
LONGITUDE (NAD 83)	84° 21' 23.56" W	SAME	84° 19' 52.22" W	SAME	84° 21' 32.32" W	84° 21' 32.15" W	84° 21' 31.68" W	SAME
RUNWAY ELEVATION (NAVD 88)	61.3 FT	SAME	49.2 FT	SAME	81.5 FT	SAME	58.1 FT	SAME
TOUCHDOWN ZONE EL. (NAVD 88)	70.5 FT	SAME	54.0 FT	SAME	81.5 FT	SAME	64.0 FT	SAME
RUNWAY MARKINGS	PRECISION	SAME	PRECISION	SAME	PRECISION	SAME	PRECISION	SAME
NAVAIDS	PAPI, GPS, REIL	PAPI, GPS, REIL, MALSR	PAPI, GPS, ILS, ALSF-2	SAME	PAPI, GPS, VOR, REIL	PAPI, GPS, VOR, REIL, MALSR	PAPI, GPS, ILS, NDB	PAPI, GPS, ILS, NDB, MALSR
RUNWAY PROTECTION ZONE:								
INNER WIDTH	500'FT	1,000 FT	1,000 FT	SAME	500 FT	1,000 FT	1,000 FT	SAME
OUTER WIDTH	1,010 FT	1,750 FT	1,750 FT	SAME	1,010 FT	1,750 FT	1,750 FT	SAME
LENGTH	1,700 FT	2,500 FT	2,500 FT	SAME	1,700 FT	2,500 FT	2,500 FT	SAME
ACRES	29.47 AC	78.91 AC	78.91 AC	SAME	29.47 AC	78.91 AC	78.91 AC	SAME
DISPLACED THRESHOLD	NONE	NONE	NONE	SAME	NONE	NONE	NONE	SAME

	RUNWAY 9		RUNWAY 27		RUNWAY 18		RUNWAY 36	
DECLARED DISTANCES	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE	EXISTING	ULTIMATE
TAKE OFF RUN AVAILABLE (TORA)				NONE				
TAKE OFF DISTANCE AVAILABLE (TODA)								
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)								
LANDING DISTANCE AVAILABLE (LDA)								

EXISTING MODIFICATION TO FAA DESIGN STANDARDS

DESCRIPTION	DESIGN STANDARD	AERONAUTICAL STUDY NUMBER	FAA APPROVAL
		NONE	

PROPOSED MODIFICATION TO FAA DESIGN STANDARDS

DESCRIPTION	DESIGN STANDARD	AERONAUTICAL STUDY NUMBER	FAA APPROVAL

AIRPORT DATA

CITY: TALLAHASSEE COUNTY: LEON STATE: FLORIDA

DESCRIPTION	EXISTING	ULTIMATE
SERVICE LEVEL (N.P.I.A.S.)	COMMERICAL	SAME
AIRPORT REFERENCE CODE (ARC)	C-IV	SAME
AIRPORT ELEVATION (M.S.L.)	81 FT	SAME
MEAN MAX. TEMP. (HOTTEST MONTH)	92° F	SAME
AIRPORT REFERENCE POINT (NAD 83) LATITUDE	30° 23' 47.51" N	30° 27' 04.63" N
AIRPORT REFERENCE POINT (NAD 83) LONGITUDE	84° 21' 01.25" W	84° 19' 50.69" W
MAGNETIC DECLINATION	3° 27' W	CHANGES
AIRPORT IDENTIFIER	TLH	SAME

NOTE:
BEARINGS, RUNWAY END COORDINATES, AND RUNWAY END ELEVATIONS PREPARED BY DIVERSIFIED DESIGN & DRAFTING SERVICE, INC. DATED MAY 19, 2003.

TALLAHASSEE REGIONAL AIRPORT
Tallahassee, Florida

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

NOTES

REVISIONS

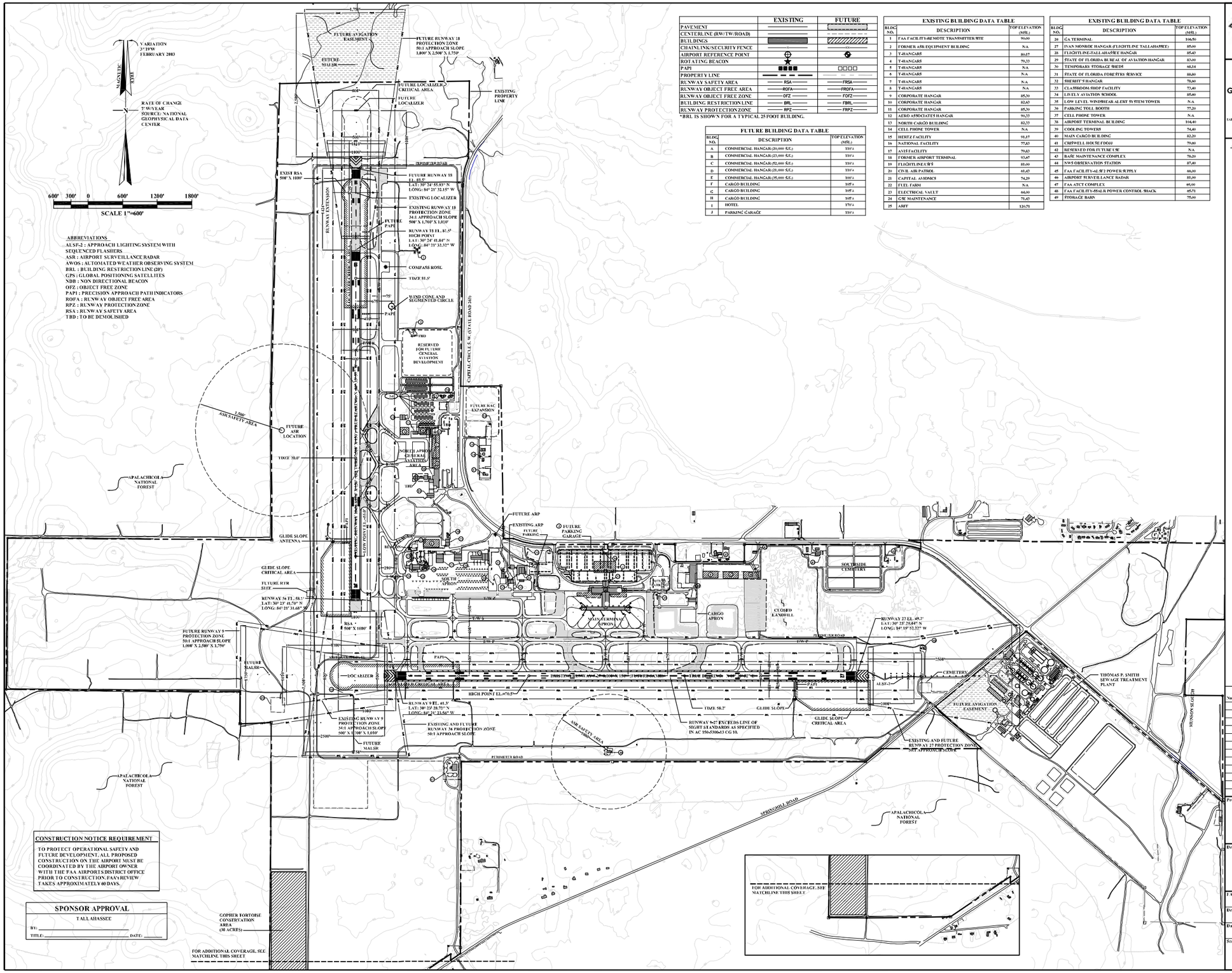
No.	Description	Date	By

Project Name:
MASTER PLAN UPDATE

Drawing Name:
AIRPORT LAYOUT PLAN DATA SHEET

FAA A.I.P. Project Number:

Drawn By: RWO
Checked By: PJ
Date: June, 2006
Scale:
Drawing Number: 2



	EXISTING	FUTURE
PAVEMENT		
CENTERLINE (RW/TW/ROAD)		
BUILDINGS		
CHAINLINK/SECURITY FENCE		
AIRPORT REFERENCE POINT		
ROTATING BEACON		
PAPI		
PROPERTY LINE		
RUNWAY SAFETY AREA	RSA	FRSA
RUNWAY OBJECT FREE AREA	ROFA	FOFA
RUNWAY OBJECT FREE ZONE	OFZ	FOFZ
BUILDING RESTRICTION LINE	BRL	FBRL
RUNWAY PROTECTION ZONE	RPZ	FRPZ

*BRL IS SHOWN FOR A TYPICAL 25 FOOT BUILDING.

FUTURE BUILDING DATA TABLE

BLDG NO.	DESCRIPTION	TOP ELEVATION (MSL)
A	COMMERCIAL HANGAR (20,000 S.F.)	110'±
B	COMMERCIAL HANGAR (23,000 S.F.)	110'±
C	COMMERCIAL HANGAR (52,000 S.F.)	110'±
D	COMMERCIAL HANGAR (31,000 S.F.)	110'±
E	COMMERCIAL HANGAR (35,000 S.F.)	110'±
F	CARGO BUILDING	105'±
G	CARGO BUILDING	105'±
H	CARGO BUILDING	105'±
I	HOTEL	170'±
J	PARKING GARAGE	110'±

EXISTING BUILDING DATA TABLE

BLDG NO.	DESCRIPTION	TOP ELEVATION (MSL)
1	FAA FACILITY-REMOTE TRANSMITTER SITE	90.00
2	FORMER ASR EQUIPMENT BUILDING	N.A.
3	T-HANGAR5	80.17
4	T-HANGAR5	79.33
5	T-HANGAR5	N.A.
6	T-HANGAR5	N.A.
7	T-HANGAR5	N.A.
8	T-HANGAR5	N.A.
9	CORPORATE HANGAR	85.30
10	CORPORATE HANGAR	82.03
11	CORPORATE HANGAR	85.30
12	AERO ASSOCIATES HANGAR	90.33
13	NORTH CARGO BUILDING	82.33
14	CELL PHONE TOWER	N.A.
15	HERTZ FACILITY	91.17
16	NATIONAL FACILITY	77.83
17	AVIS FACILITY	79.83
18	FORMER AIRPORT TERMINAL	93.67
19	FLIGHTLINE/AFS	81.00
20	CIVIL AIR PATROL	61.43
21	CAPITAL AVIONICS	74.20
22	FUEL FARM	N.A.
23	ELECTRICAL VAULT	64.00
24	GSE MAINTENANCE	71.43
25	ARFF	120.71

EXISTING BUILDING DATA TABLE

BLDG NO.	DESCRIPTION	TOP ELEVATION (MSL)
26	GA TERMINAL	106.50
27	IVAN MONROE HANGAR (FLIGHTLINE TALLAHASSEE)	85.00
28	FLIGHTLINE-TALLAHASSEE HANGAR	85.43
29	STATE OF FLORIDA BUREAU OF AVIATION HANGAR	83.00
30	TEMPORARY STORAGE SHED5	88.14
31	STATE OF FLORIDA FORESTRY SERVICE	88.80
32	SHERIFF'S HANGAR	78.00
33	CLASSROOM-SHOP FACILITY	73.40
34	LIVELY AVIATION SCHOOL	85.00
35	LOW LEVEL WINDSHEAR ALERT SYSTEM TOWER	N.A.
36	PARKING TOLL BOOTH	77.20
37	CELL PHONE TOWER	N.A.
38	AIRPORT TERMINAL BUILDING	104.40
39	COOLING TOWERS	74.40
40	MAIN CARGO BUILDING	82.20
41	CRISWELL HOUSE TODAY	79.00
42	RESERVED FOR FUTURE USE	N.A.
43	BASE MAINTENANCE COMPLEX	78.20
44	NWS OBSERVATION STATION	87.40
45	FAA FACILITY-ALSF2 POWER SUPPLY	66.00
46	AIRPORT SURVEILLANCE RADAR	81.00
47	FAA ATCT COMPLEX	95.00
48	FAA FACILITY-SSALR POWER CONTROL SHACK	85.71
49	STORAGE BARN	75.00

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NOTES

REVISIONS

No.	Description	Date	By

Project Name:

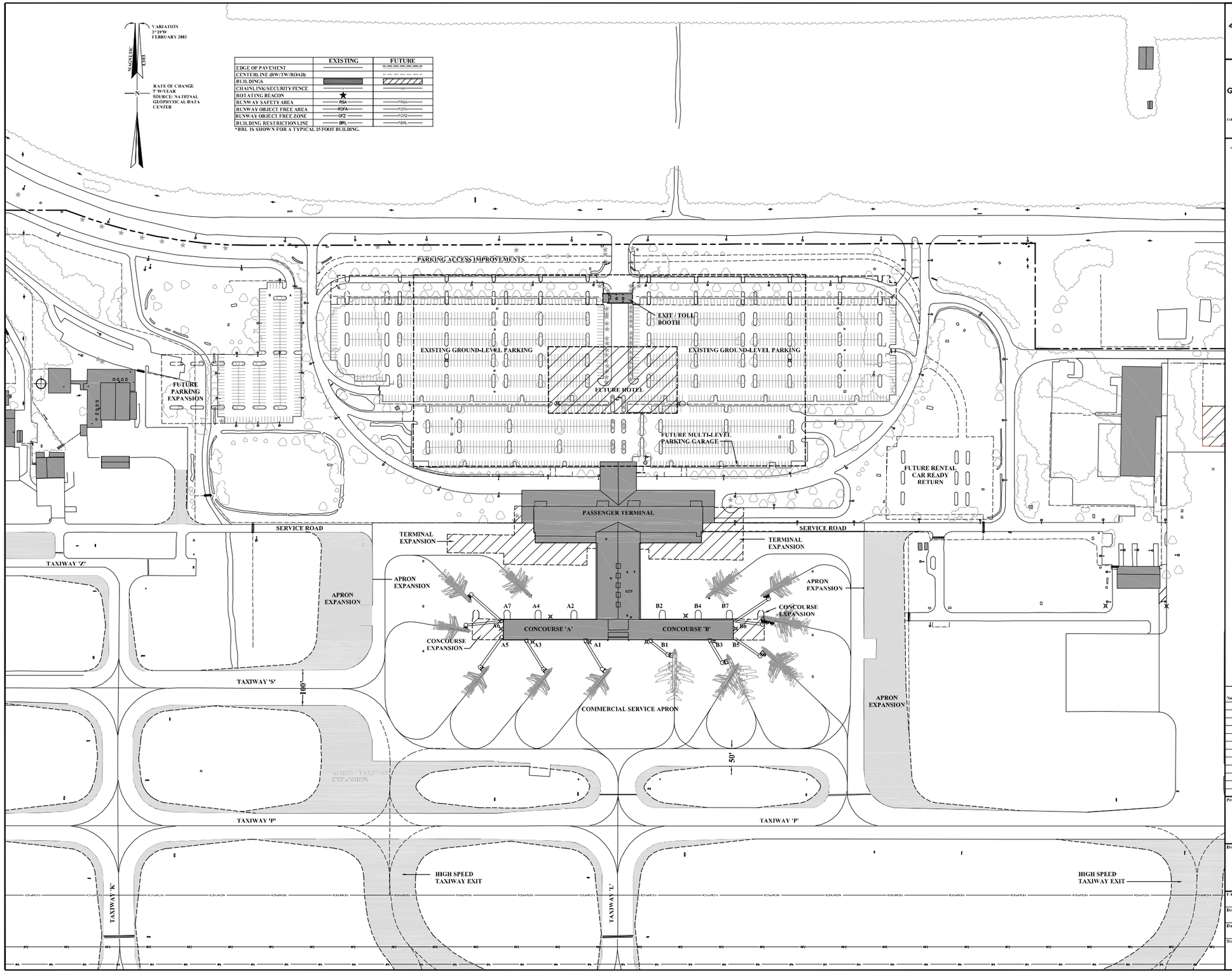
MASTER PLAN UPDATE

Drawing Name:

AIRPORT LAYOUT PLAN

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 3
Scale: 1" = 600'	



TALLAHASSEE REGIONAL AIRPORT

Tallahassee, Florida

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NOTES

REVISIONS

No.	Description	Date	By

Project Name:

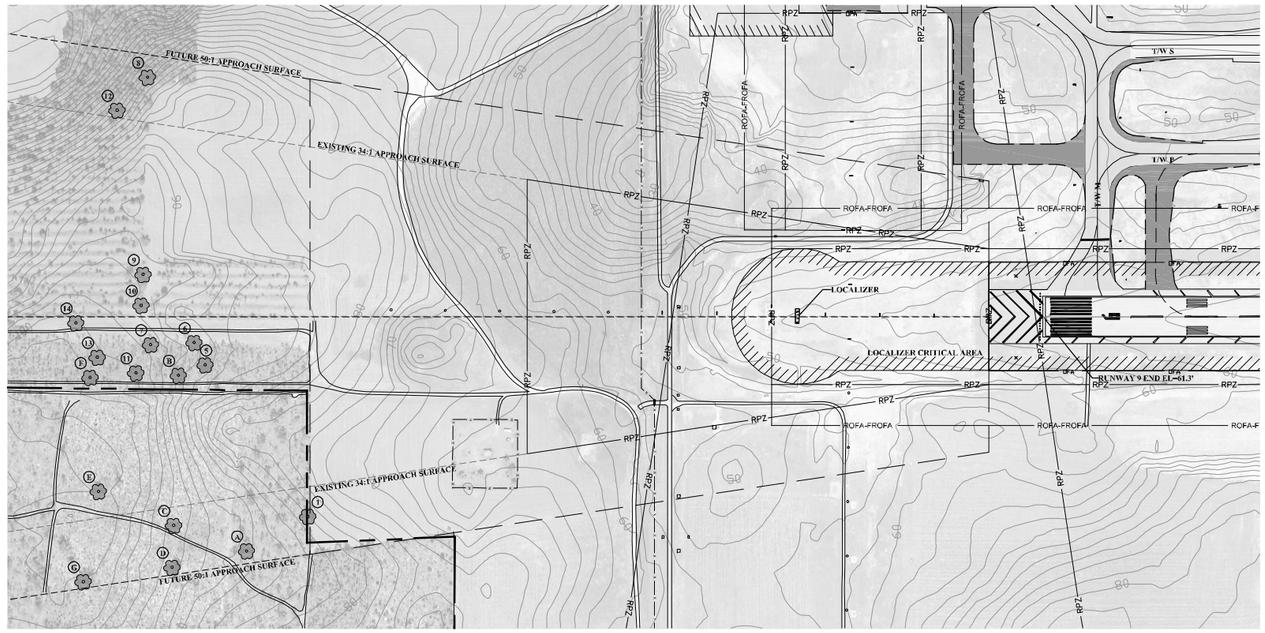
MASTER PLAN UPDATE

Drawing Name:

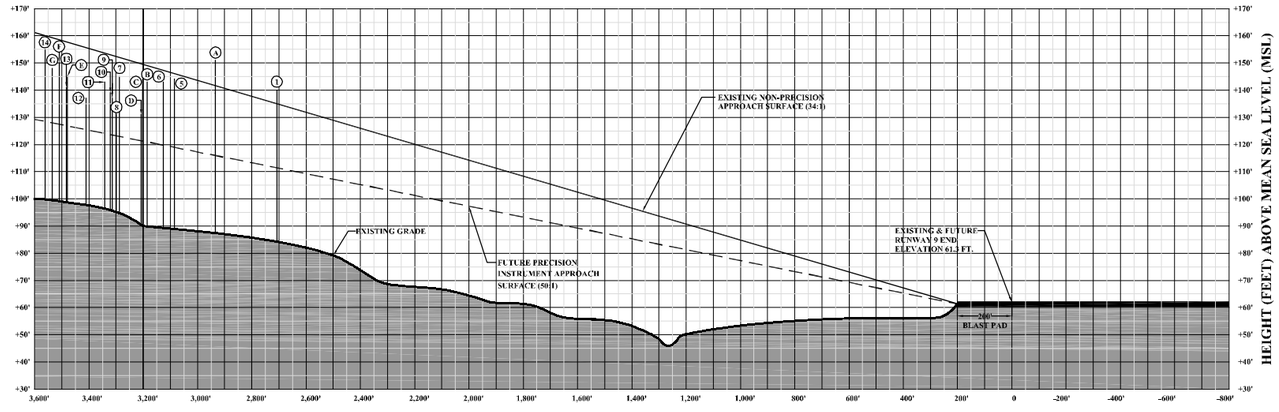
TERMINAL AREA PLAN

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 4
Scale: 1" = 100'	



RUNWAY 9 APPROACH - PLAN VIEW



RUNWAY 9 APPROACH - PROFILE VIEW

PART 77 INNER APPROACH SURFACE ON AIRPORT OBSTRUCTION TABLE - RUNWAY 9

OBSTRUCTION NO.	OBSTRUCTION TYPE	TOP OF OBJECT ELEV.	SURFACE PENETRATION	SURFACE AFFECTED	PROPOSED ACTION
1	TREE	139'	4'	34:1 / 50:1 APPROACH SURFACE	REMOVE
2	TREE	REMOVED DURING TREE REMOVAL PROJECT			
3	TREE	REMOVED DURING TREE REMOVAL PROJECT			
4	TREE	REMOVED DURING TREE REMOVAL PROJECT			
5	TREE	143'	23'	50:1 APPROACH SURFACE	REMOVE
6	TREE	143'	23'	50:1 APPROACH SURFACE	REMOVE
7	TREE	145'	22'	50:1 APPROACH SURFACE	REMOVE
8	TREE	131'	7'	50:1 APPROACH SURFACE	REMOVE
9	TREE	137'	14'	50:1 APPROACH SURFACE	REMOVE
10	TREE	139'	15'	50:1 APPROACH SURFACE	REMOVE
11	TREE	143'	19'	50:1 APPROACH SURFACE	REMOVE
12	TREE	137'	12'	50:1 APPROACH SURFACE	REMOVE
13	TREE	141'	14'	50:1 APPROACH SURFACE	REMOVE
14	TREE	155'	27'	50:1 APPROACH SURFACE	REMOVE

PART 77 INNER APPROACH SURFACE OFF AIRPORT OBSTRUCTION TABLE - RUNWAY 9

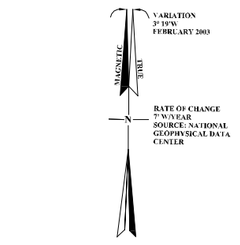
OBSTRUCTION NO.	OBSTRUCTION TYPE	TOP OF OBJECT ELEV.	SURFACE PENETRATION	SURFACE AFFECTED	PROPOSED ACTION
A	TREE	351'	9'	34:1 / 50:1 APPROACH SURFACE	TRIM OR REMOVE
B	TREE	143'	22'	50:1 APPROACH SURFACE	TRIM OR REMOVE
C	TREE	144'	23'	50:1 APPROACH SURFACE	TRIM OR REMOVE
D	TREE	131'	9'	50:1 APPROACH SURFACE	TRIM OR REMOVE
E	TREE	145'	18'	50:1 APPROACH SURFACE	TRIM OR REMOVE
F	TREE	148'	21'	50:1 APPROACH SURFACE	TRIM OR REMOVE
G	TREE	148'	28'	50:1 APPROACH SURFACE	TRIM OR REMOVE

ELEVATIONS AS INDICATED IN TABLES ABOVE ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 AND DISPLAYED IN U.S. FEET. HEIGHT ABOVE THE SLOPE AS INDICATED IN TABLES ABOVE ARE DISPLAYED IN FEET AS CALCULATED ABOVE THE THRESHOLD HEIGHT AND ARE ONLY APPROXIMATE.

ELEVATIONS SHOWN ARE MEAN SEA LEVEL
ALL TREE OBSTRUCTIONS TO RUNWAY 9 TO BE REMOVED OR TRIMED

GENERAL NOTES:

1. NO SURVEY WAS CONDUCTED AS PART OF THE UPDATE OF THIS DRAWING.
2. NUMEROUS SPECIES OF TREES EXIST WITHIN THE FUTURE APPROACH SURFACES. THOSE TREES SHOWN HEREON REPRESENT THE AVERAGE OF A GROUP OF SPECIFIC TREES. NOT ALL TREES WERE LOCATED THAT MIGHT IMPACT THE APPROACH SURFACES, RATHER JUST A FEW WERE VERIFIED.



Tallahassee Regional Airport
Tallahassee, Florida

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NOTES

REVISIONS

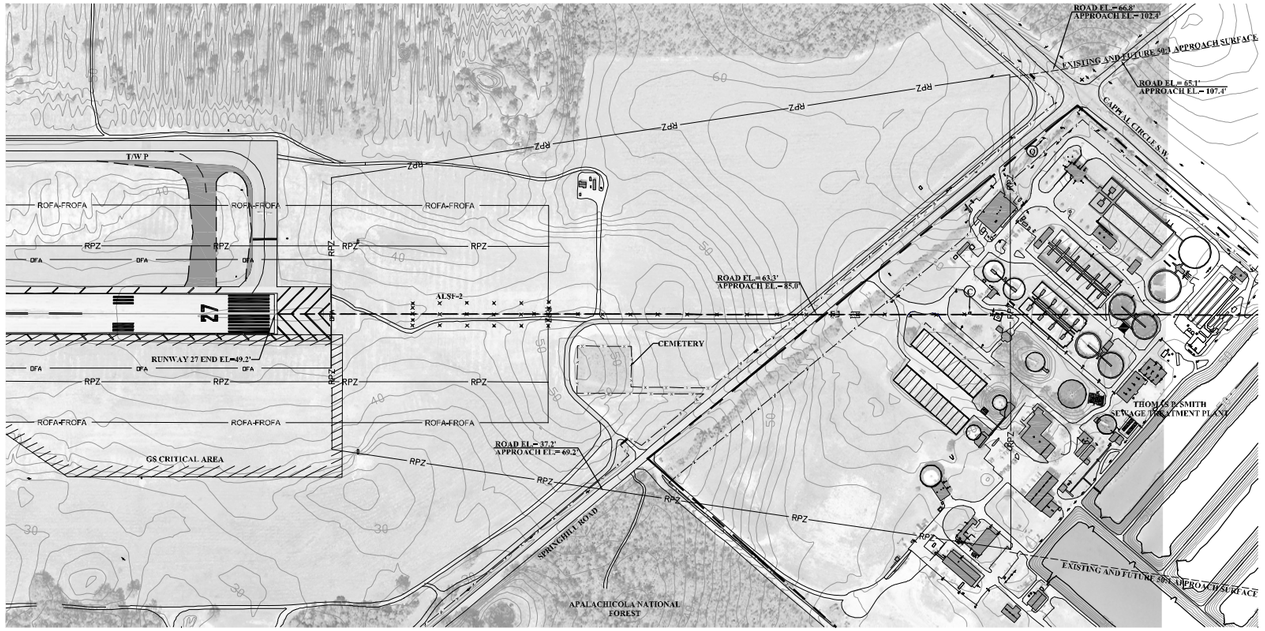
No.	Description	Date	By

Project Name:
MASTER PLAN UPDATE

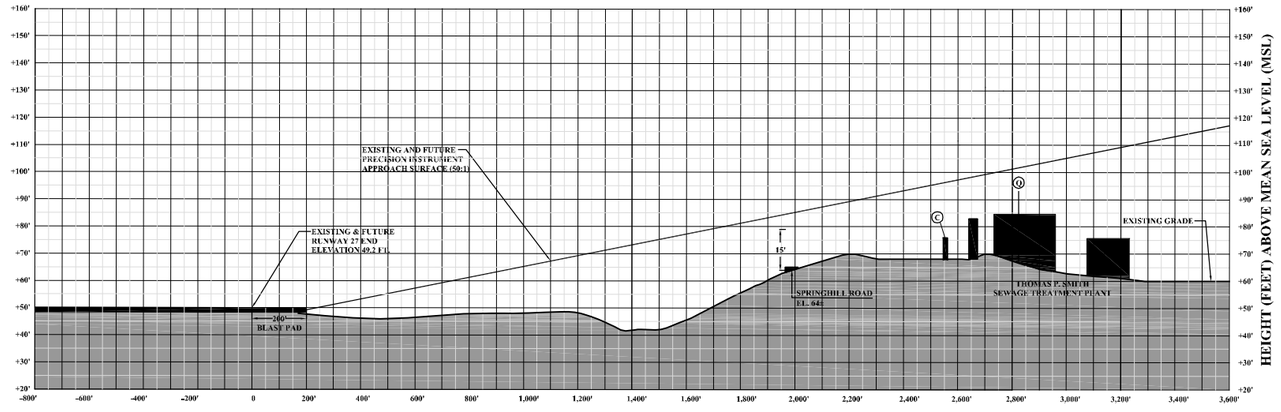
Drawing Name:
RUNWAY 9 INNER PORTION OF THE APPROACH SURFACE DRAWING

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 5
Scale: AS SHOWN	



RUNWAY 27 APPROACH - PLAN VIEW



RUNWAY 27 APPROACH - PROFILE VIEW

PART 77 INNER APPROACH SURFACE ON AIRPORT OBSTRUCTION TABLE - RUNWAY 27					
OBSTRUCTION NO.	OBSTRUCTION TYPE	TOP OF OBJECT ELEV.	SURFACE PENETRATION	SURFACE AFFECTED	PROPOSED ACTION
NONE					

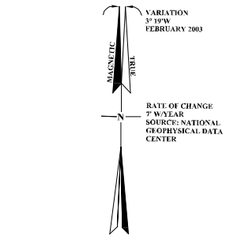
PART 77 INNER APPROACH SURFACE OFF AIRPORT OBSTRUCTION TABLE - RUNWAY 27					
OBSTRUCTION NO.	OBSTRUCTION TYPE	TOP OF OBJECT ELEV.	SURFACE PENETRATION	SURFACE AFFECTED	PROPOSED ACTION
A		REMOVED DURING FREE REMOVAL PROJECT			
B		REMOVED DURING FREE REMOVAL PROJECT			
C	INNER MARKER	76'	+28'	50:1 APPROACH SURFACE	NONE
D		REMOVED DURING FREE REMOVAL PROJECT			
E		REMOVED DURING FREE REMOVAL PROJECT			
F		REMOVED DURING FREE REMOVAL PROJECT			
G		REMOVED DURING FREE REMOVAL PROJECT			
H		REMOVED DURING FREE REMOVAL PROJECT			
I		REMOVED DURING FREE REMOVAL PROJECT			
J		REMOVED DURING FREE REMOVAL PROJECT			
K		REMOVED DURING FREE REMOVAL PROJECT			
L		REMOVED DURING FREE REMOVAL PROJECT			
M		REMOVED DURING FREE REMOVAL PROJECT			
N		REMOVED DURING FREE REMOVAL PROJECT			
O		REMOVED DURING FREE REMOVAL PROJECT			
P		REMOVED DURING FREE REMOVAL PROJECT			
Q	LIGHT POLE	93'	-9'	50:1 APPROACH SURFACE	NONE

ELEVATIONS AS INDICATED IN TABLES ABOVE ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 AND DISPLAYED IN U.S. FEET. HEIGHT ABOVE THE SLOPE AS INDICATED IN TABLES ABOVE ARE DISPLAYED IN FEET AS CALCULATED ABOVE THE THRESHOLD HEIGHT AND ARE ONLY APPROXIMATE.

ELEVATIONS SHOWN ARE MEAN SEA LEVEL
ALL TREE OBSTRUCTIONS TO RUNWAY 27 TO BE REMOVED OR TRIMED

GENERAL NOTES:

1. NO SURVEY WAS CONDUCTED AS PART OF THE UPDATE OF THIS DRAWING.
2. NUMEROUS SPECIES OF TREES EXIST WITHIN THE EXISTING AND FUTURE APPROACH SURFACE. THOSE TREES SHOWN HEREON REPRESENT THE AVERAGE OF A GROUP OF SPECIFIC TREES. NOT ALL TREES WERE LOCATED THAT MIGHT IMPACT THE APPROACH SURFACE, RATHER JUST A FEW WERE VERIFIED.



HORIZONTAL SCALE

200' 100' 0 200' 400' 600'

SCALE IN FEET

VERTICAL SCALE

20' 10' 0 20' 40' 60'

SCALE IN FEET

Tallahassee, Florida

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NOTES

REVISIONS

No.	Description	Date	By

Project Name:

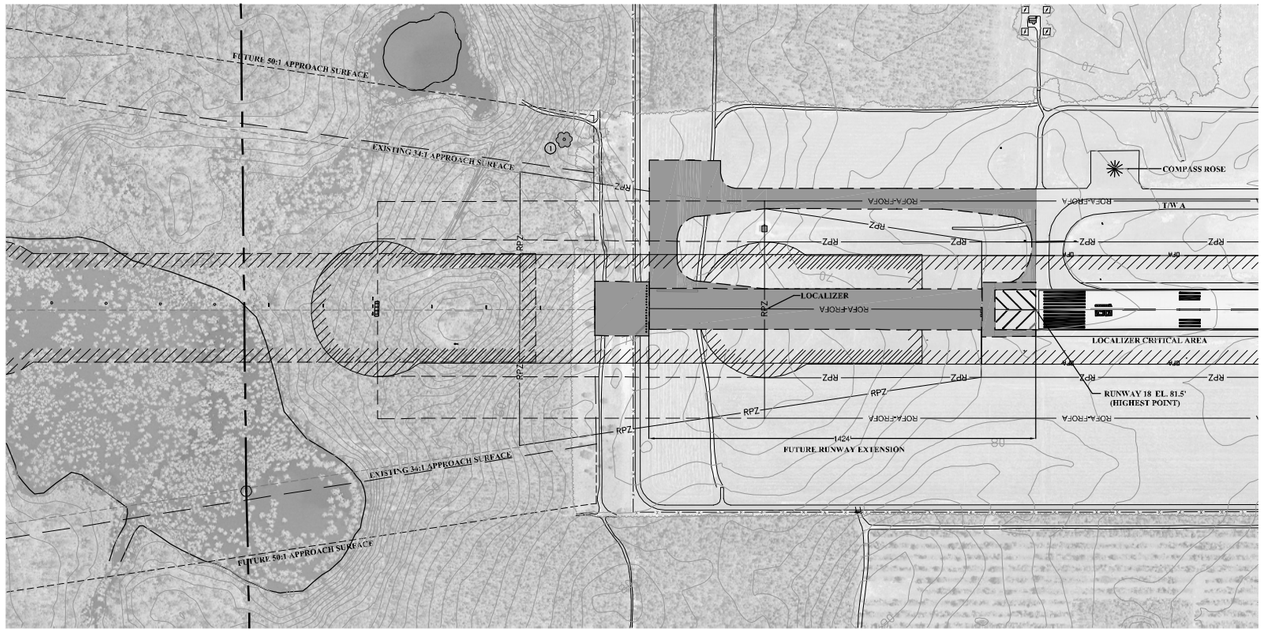
MASTER PLAN UPDATE

Drawing Name:

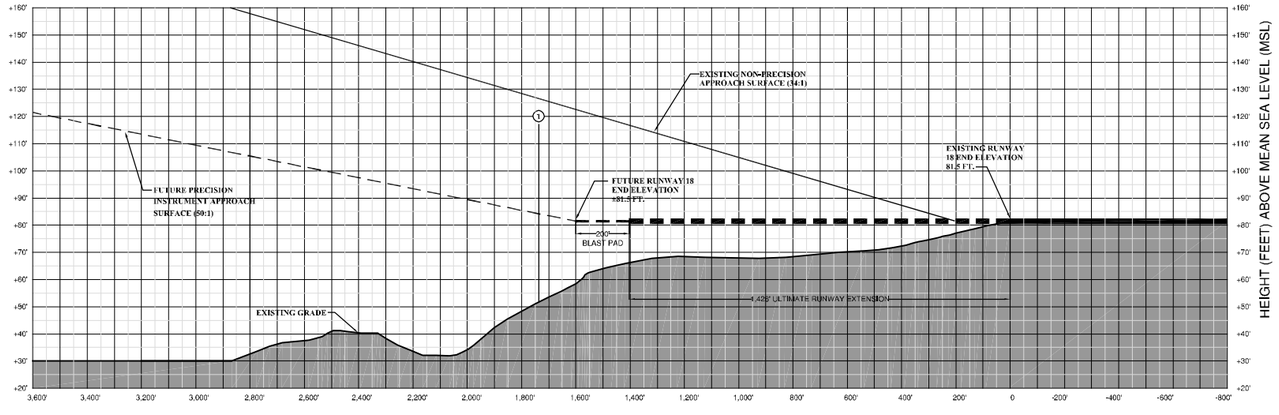
RUNWAY 27 INNER PORTION OF THE APPROACH SURFACE DRAWING

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 6
Scale: AS SHOWN	



RUNWAY 18 APPROACH - PLAN VIEW



RUNWAY 18 APPROACH - PROFILE VIEW

PART 77 INNER APPROACH SURFACE ON AIRPORT OBSTRUCTION TABLE - RUNWAY 18					
OBSTRUCTION NO.	OBSTRUCTION TYPE	TOP OF OBJECT ELEV.	SURFACE PENETRATION	SURFACE AFFECTED	PROPOSED ACTION
1	TREE	137'	5'	50:1 APPROACH SURFACE	REMOVE

PART 77 INNER APPROACH SURFACE OFF AIRPORT OBSTRUCTION TABLE - RUNWAY 18					
OBSTRUCTION NO.	OBSTRUCTION TYPE	TOP OF OBJECT ELEV.	SURFACE PENETRATION	SURFACE AFFECTED	PROPOSED ACTION
NONE					

ELEVATIONS AS INDICATED IN TABLES ABOVE ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 AND DISPLAYED IN U.S. FEET. HEIGHT ABOVE THE SLOPE AS INDICATED IN TABLES ABOVE ARE DISPLAYED IN FEET AS CALCULATED ABOVE THE THRESHOLD HEIGHT AND ARE ONLY APPROXIMATE.

ELEVATIONS SHOWN ARE MEAN SEA LEVEL
ALL TREE OBSTRUCTIONS TO RUNWAY 18 TO BE REMOVED OR TRIMED

GENERAL NOTES:

1. NO SURVEY WAS CONDUCTED AS PART OF THE UPDATE OF THIS DRAWING.
2. NUMEROUS SPECIES OF TREES EXIST WITHIN THE EXISTING AND FUTURE APPROACH SURFACE. THOSE TREES SHOWN HEREON REPRESENT THE AVERAGE OF A GROUP OF SPECIFIC TREES. NOT ALL TREES WERE LOCATED THAT MIGHT IMPACT THE APPROACH SURFACE, RATHER JUST A FEW WERE VERIFIED.

VARIATION EPOCH FEBRUARY 2003

TRUE

MAGNETIC

RATE OF CHANGE 7'W YEAR SOURCE: NATIONAL GEOSPATIAL DATA CENTER

HORIZONTAL SCALE

200' 100' 0 200' 400' 600'

SCALE IN FEET

VERTICAL SCALE

20' 10' 0 20' 40' 60'

SCALE IN FEET

Tallahassee, Florida

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NOTES

REVISIONS

No.	Description	Date	By

Project Name:

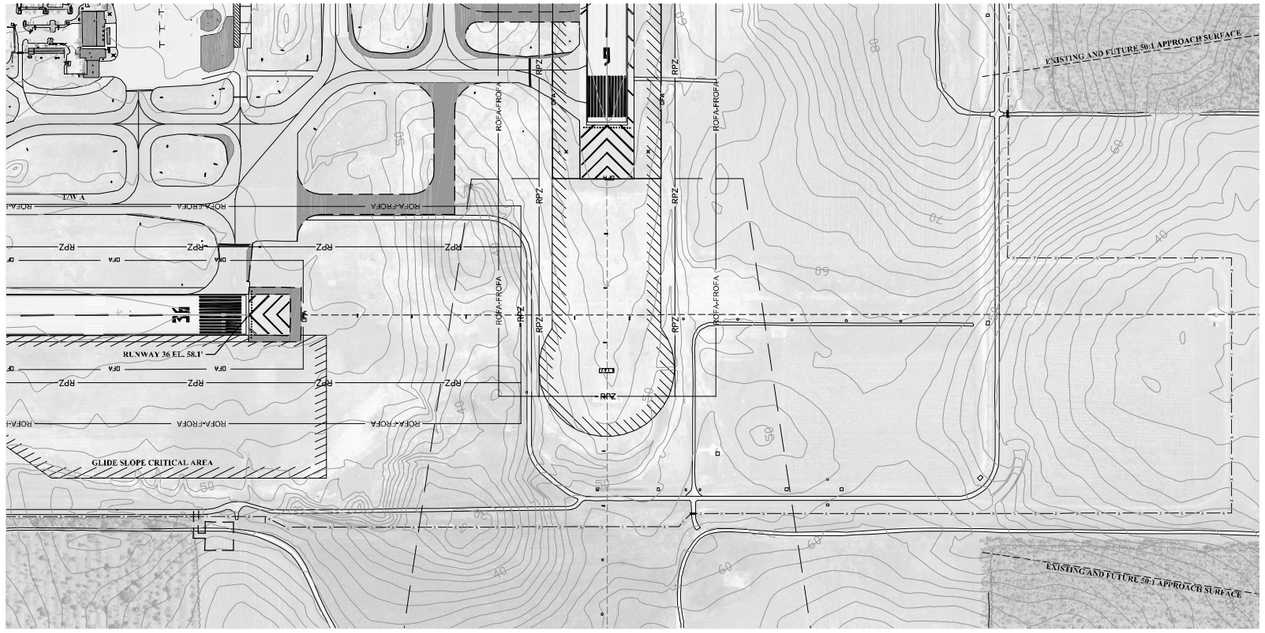
MASTER PLAN UPDATE

Drawing Name:

RUNWAY 18 INNER PORTION OF THE APPROACH SURFACE DRAWING

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 7
Scale: AS SHOWN	



RUNWAY 36 APPROACH - PLAN VIEW

PART 77 INNER APPROACH SURFACE ON AIRPORT OBSTRUCTION TABLE - RUNWAY 36					
OBSTRUCTION NO.	OBSTRUCTION TYPE	TOP OF OBJECT ELEV.	SURFACE PENETRATION	SURFACE AFFECTED	PROPOSED ACTION
NONE					

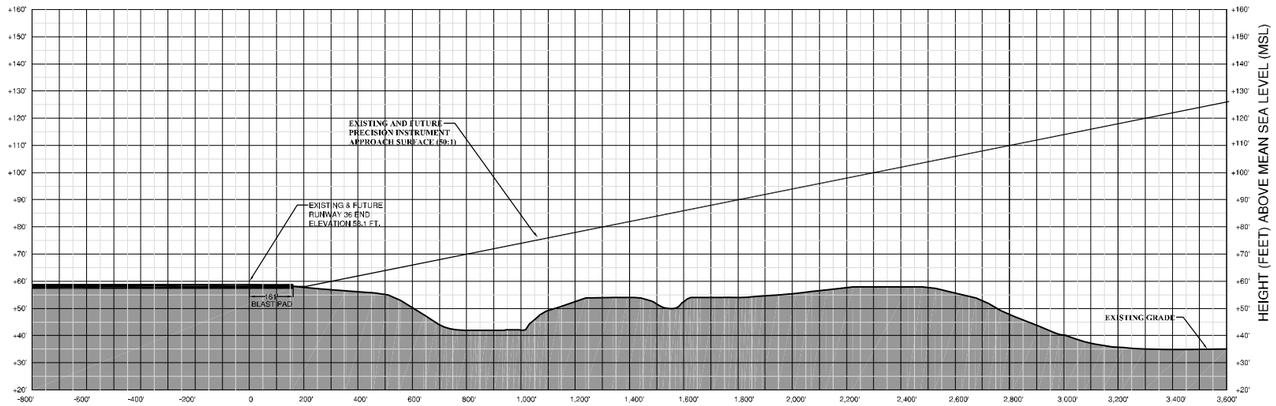
PART 77 INNER APPROACH SURFACE OFF AIRPORT OBSTRUCTION TABLE - RUNWAY 36					
OBSTRUCTION NO.	OBSTRUCTION TYPE	TOP OF OBJECT ELEV.	SURFACE PENETRATION	SURFACE AFFECTED	PROPOSED ACTION
NONE					

ELEVATIONS AS INDICATED IN TABLES ABOVE ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 AND DISPLAYED IN U.S. FEET. HEIGHT ABOVE THE SLOPE AS INDICATED IN TABLES ABOVE ARE DISPLAYED IN FEET AS CALCULATED ABOVE THE THRESHOLD HEIGHT AND ARE ONLY APPROXIMATE.

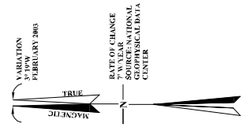
ELEVATIONS SHOWN ARE MEAN SEA LEVEL
ALL TREE OBSTRUCTIONS TO RUNWAY 36 TO BE REMOVED OR TRIMED

GENERAL NOTES:

1. NO SURVEY WAS CONDUCTED AS PART OF THE UPDATE OF THIS DRAWING.
2. NUMEROUS SPECIES OF TREES EXIST WITHIN THE EXISTING AND FUTURE APPROACH SURFACE. THOSE TREES SHOWN HEREON REPRESENT THE AVERAGE OF A GROUP OF SPECIFIC TREES. NOT ALL TREES WERE LOCATED THAT MIGHT IMPACT THE APPROACH SURFACE, RATHER JUST A FEW WERE VERIFIED.



RUNWAY 36 APPROACH - PROFILE VIEW



HORIZONTAL SCALE

200' 100' 0 200' 400' 600'

SCALE IN FEET

VERTICAL SCALE

20' 10' 0 20' 40' 60'

SCALE IN FEET

Tallahassee, Florida

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NOTES

REVISIONS

No.	Description	Date	By

Project Name:

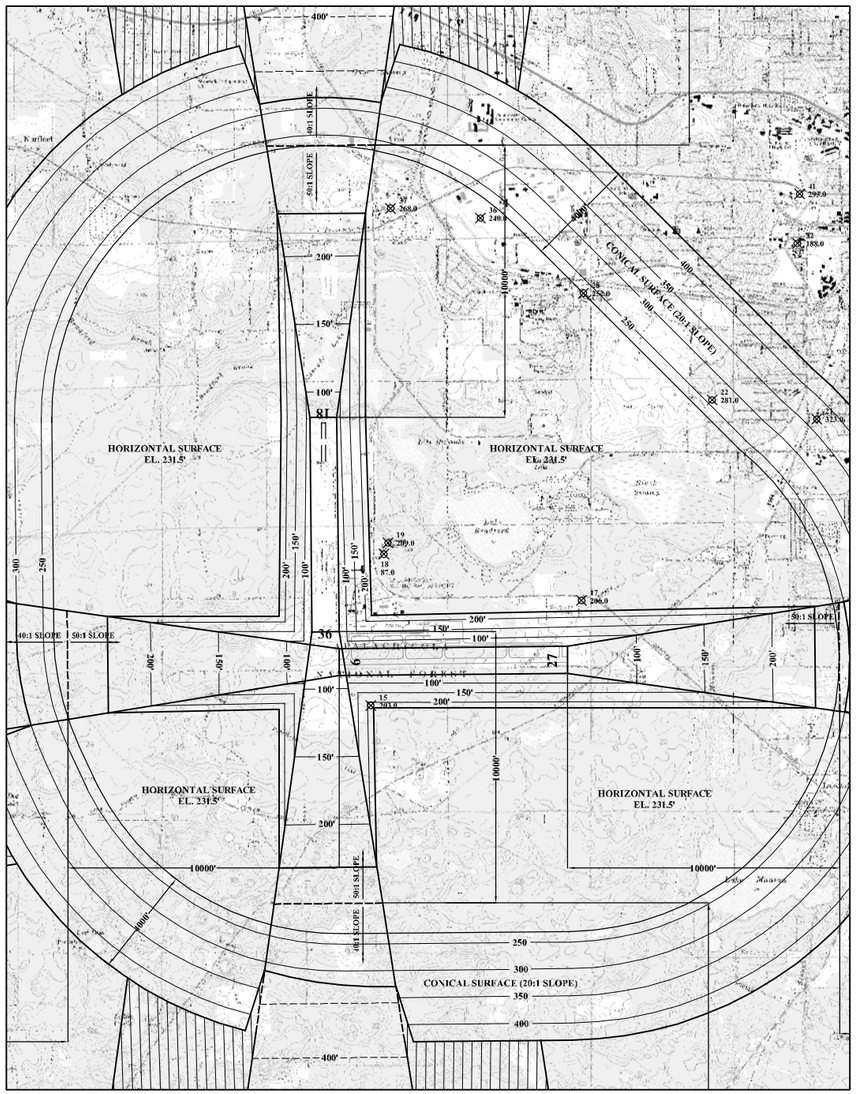
MASTER PLAN UPDATE

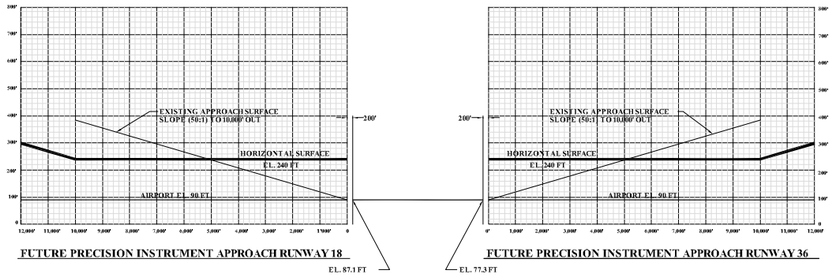
Drawing Name:

RUNWAY 36 INNER PORTION OF THE APPROACH SURFACE DRAWING

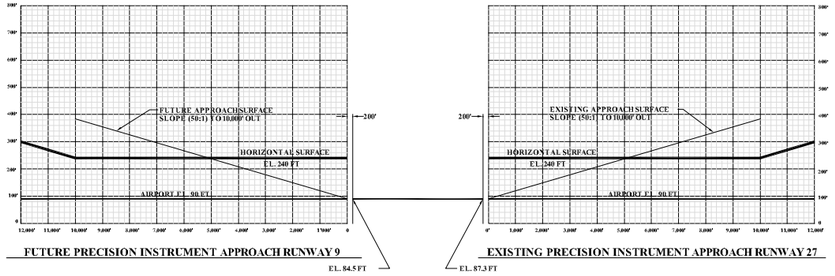
FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 8
Scale: AS SHOWN	

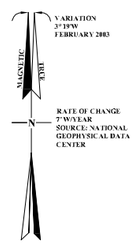




RUNWAY 18-36 PROFILE



RUNWAY 9-27 PROFILE



HORIZONTAL SCALE

2000' 1000' 0 2000' 4000' 6000'

SCALE 1"= 2000'

VERTICAL SCALE

200' 100' 0 200' 400' 600'

SCALE 1"= 200'

#	CITY	TYPE	AGL	AMSL	LIGHTING	MARKING	FAA STUDY NUMBER	PENETRATION	ACTION
15	TALLAHASSEE	CTRL TWR	133	283	RED LIGHTING	NO	99OC5845	-12.8	NONE
17	TALLAHASSEE	TOWER	142	286	RED LIGHTING	YES	94SO2670	-25.5'	NONE
18	TALLAHASSEE	BLDG	17	97	OTHER LIGHTING		01SO8834	-144.5	NONE
19	TALLAHASSEE	TOWER	143	289	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	86SO3888	-22.5	NONE
21	TALLAHASSEE	TOWER	267	323	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	02SO6816	-47	NONE
22	TALLAHASSEE	TOWER	286	281	RED LIGHTING	YES	97SO2335	23.8'	NONE
28	TALLAHASSEE	TOWERS 4	289	252	RED LIGHTING	YES	93SO8663	20.5'	NONE
32	TALLAHASSEE	TOWER	118	188				N/A	-
36	TALLAHASSEE	TOWER	375	240	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	05SO4361	8.5'	NONE
37	TALLAHASSEE	TOWER	167	268	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	98SO4467	38.5'	NONE
41	TALLAHASSEE	BLDG	223	293	RED LIGHTING	NO	01SO4932	N/A	-

TALLAHASSEE REGIONAL AIRPORT

Tallahassee, Florida

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NOTES

ALL OBJECT ELEVATIONS SHOWN ARE IN FEET ABOVE MEAN SEA LEVEL (AMSL).

REFER TO THE INNER PORTION OF THE PROTECTION ZONE PLANS AND PROFILES FOR CLOSE-IN OBSTRUCTIONS

NEGATIVE OBJECT PENETRATIONS INDICATE CLEARANCE TO NEAREST SURFACE

OBJECTS WITH N/A FOR PENETRATIONS SIGNIFY THAT THE OBJECT DOES NOT FALL UNDER THE AIRPORT'S APPLICABLE FAR PART 77 SURFACE

SOURCE: FEDERAL AVIATION ADMINISTRATION (FAA), DIGITAL OBSTACLE FILE (DOF) – April 8, 2007

REVISIONS

No.	Description	Date	By

Project Name:

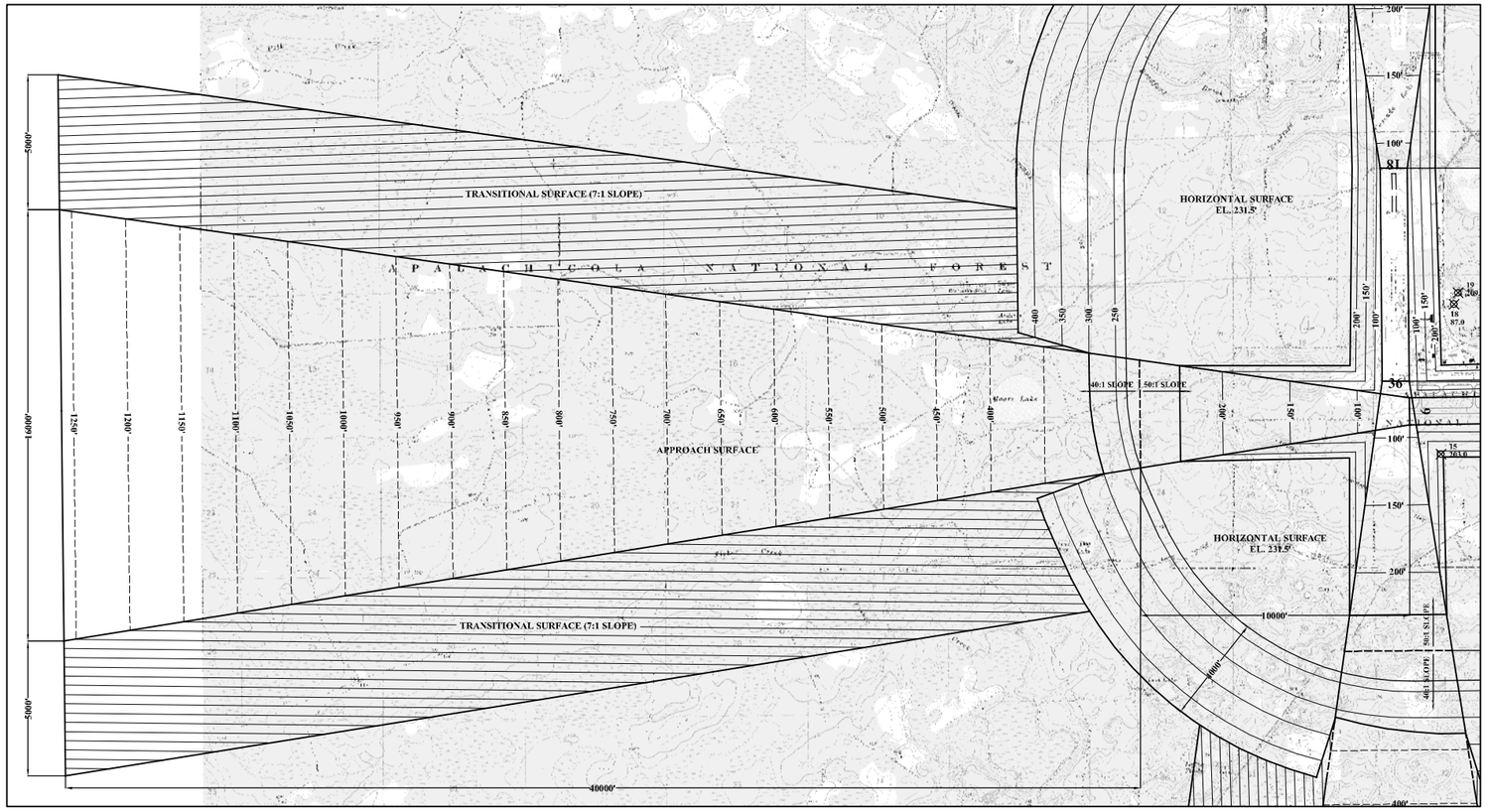
MASTER PLAN UPDATE

Drawing Name:

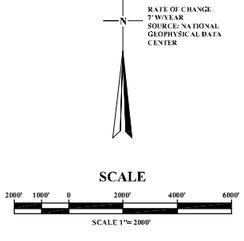
FAR PART 77 HORIZONTAL AND CONICAL SURFACE DRAWING

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 9
Scale: AS SHOWN	



#	CITY	TYPE	AGL	AMSL	LIGHTING	MARKING	FAA STUDY NUMBER	PENETRATION	ACTION
15	TALLAHASSEE	CTRL TWR	333	283	RED LIGHTING	NO	99GC5845	-32.8	NONE
18	TALLAHASSEE	BLDG	37	87	OTHER LIGHTING		01SO0834	-1445	NONE
19	TALLAHASSEE	TOWER	143	289	DUAL RED WITH MEDIUM INTENSITY WHITE STROBE	NO	01SO3888	-22.5	NONE



SCALE

2000' 1000' 0 2000' 4000' 6000'

SCALE 1"= 2000'

Tallahassee, Florida

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NOTES

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REFER TO THE INNER PORTION OF THE PROTECTION ZONE PLANS AND PROFILES FOR CLOSE-IN OBSTRUCTIONS

NEGATIVE OBJECT PENETRATIONS INDICATE CLEARANCE TO NEAREST SURFACE

OBJECTS WITH N/A FOR PENETRATIONS SIGNIFY THAT THE OBJECT DOES NOT FALL UNDER THE AIRPORT'S APPLICABLE FAR PART 77 SURFACE

SOURCE: FEDERAL AVIATION ADMINISTRATION (FAA), DIGITAL OBSTACLE FILE (DOF) – April 8, 2007

REVISIONS

No.	Description	Date	By

Project Name:

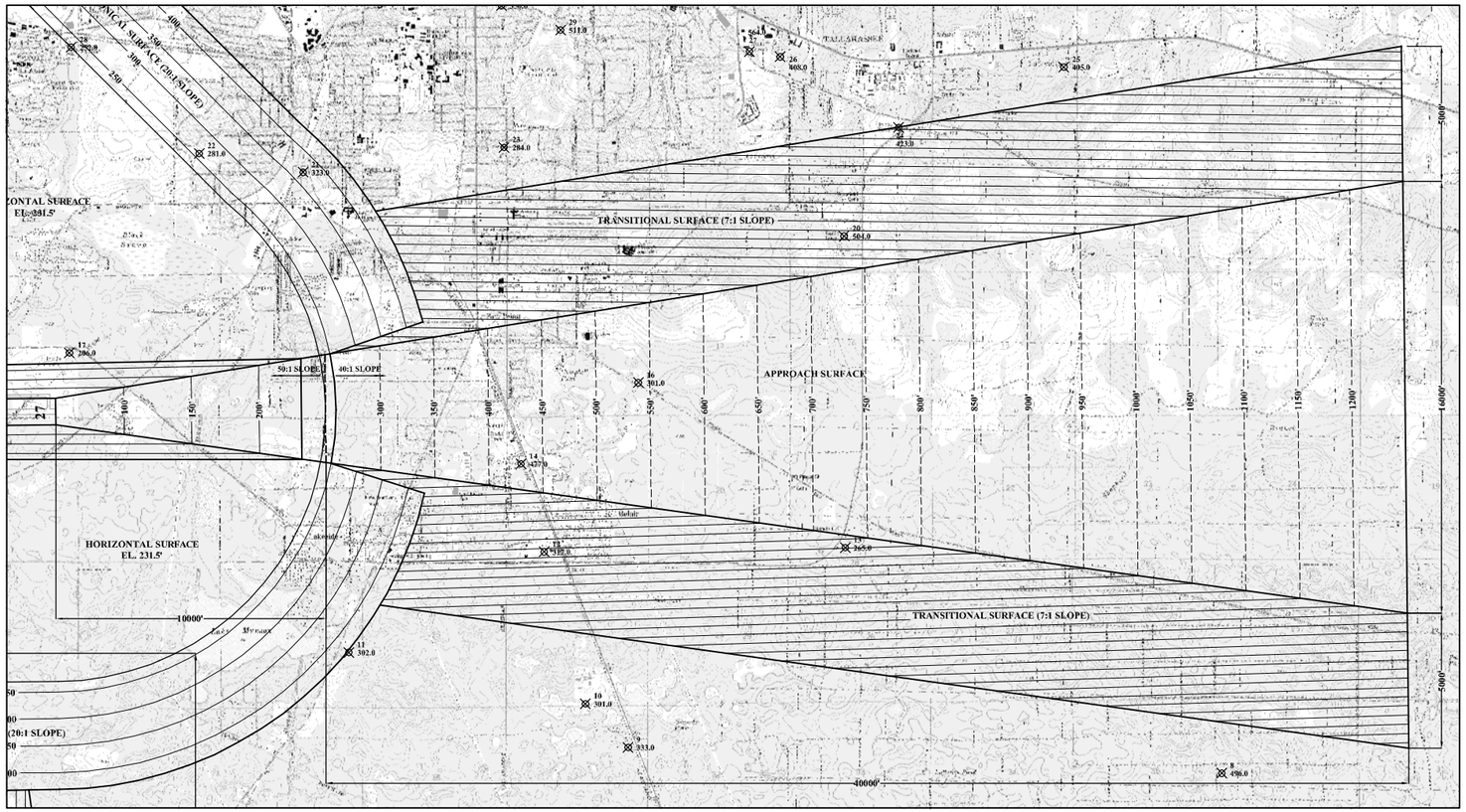
MASTER PLAN UPDATE

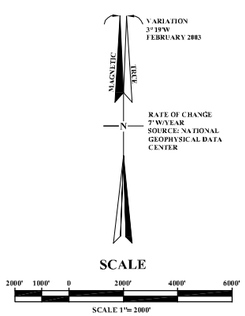
Drawing Name:

FAR PART 77 IMAGINARY SURFACES RUNWAY 9 APPROACH

FAA A.I.P. Project Number:

Drawn By: RWO	Checked By: PJ
Date: June, 2006	Drawing Number: 10
Scale: 1" = 2000'	





SCALE

2000' 1000' 0 2000' 4000' 6000'

SCALE 1"= 2000'

#	CITY	TYPE	AGL	AMSL	LIGHTING	MARKING	FAA STUDY NUMBER	PENETRATION	ACTION
5	TALLAHASSEE	TOWER	458	496	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	99SO3784	N/A	-
9	TALLAHASSEE	TOWER	383	333	RED LIGHTING	YES	76SO1057	N/A	-
10	TALLAHASSEE	TOWER	270	301	RED LIGHTING	YES	92SO1766	N/A	-
11	TALLAHASSEE	TOWER	268	302	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	88SO7737	N/A	-
12	TALLAHASSEE	TOWER	262	317	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	85SO8421	-455	NONE
13	TALLAHASSEE	TOWER	235	265	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	98SO5160	-535	NONE
14	TALLAHASSEE	TOWER	424	477	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	82SO3818	47.8'	NONE
16	TALLAHASSEE	TOWER	256	301	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	86SO3535	-239	NONE
17	TALLAHASSEE	TOWER	142	286	RED LIGHTING	YES	94SO2678	+25.5'	NONE
20	TALLAHASSEE	TOWER	324	504	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	86SO3297	-421	NONE
21	TALLAHASSEE	TOWER	267	323	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	82SO4016	-47	NONE
22	TALLAHASSEE	TOWER	286	293	RED LIGHTING	YES	97SO2315	21.8'	NONE
23	TALLAHASSEE	TOWER	194	284				N/A	-
24	LAFAYETTE	TOWER	219	423	RED LIGHTING	YES	87SO8256	-1057	NONE
25	TALLAHASSEE	TOWER	270	405	RED LIGHTING	YES	94SO2783	N/A	-
26	TALLAHASSEE	TOWER	198	408	NO LIGHTS	NO	86SO8374	N/A	-
27	TALLAHASSEE	TOWER	368	564	RED LIGHTING	YES	97SO3171	N/A	-
28	TALLAHASSEE	TOWERS 4	289	252	RED LIGHTING	YES	93SO8661	28.5'	NONE
29	TALLAHASSEE	TOWER	380	511	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	73SO8876	N/A	-

Tallahassee, Florida

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NOTES

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REFER TO THE INNER PORTION OF THE PROTECTION ZONE PLANS AND PROFILES FOR CLOSE-IN OBSTRUCTIONS

NEGATIVE OBJECT PENETRATIONS INDICATE CLEARANCE TO NEAREST SURFACE

OBJECTS WITH N/A FOR PENETRATIONS SIGNIFY THAT THE OBJECT DOES NOT FALL UNDER THE AIRPORT'S APPLICABLE FAR PART 77 SURFACE

SOURCE: FEDERAL AVIATION ADMINISTRATION (FAA), DIGITAL OBSTACLE FILE (DOF) – April 8, 2007

REVISIONS

No.	Description	Date	By

Project Name:

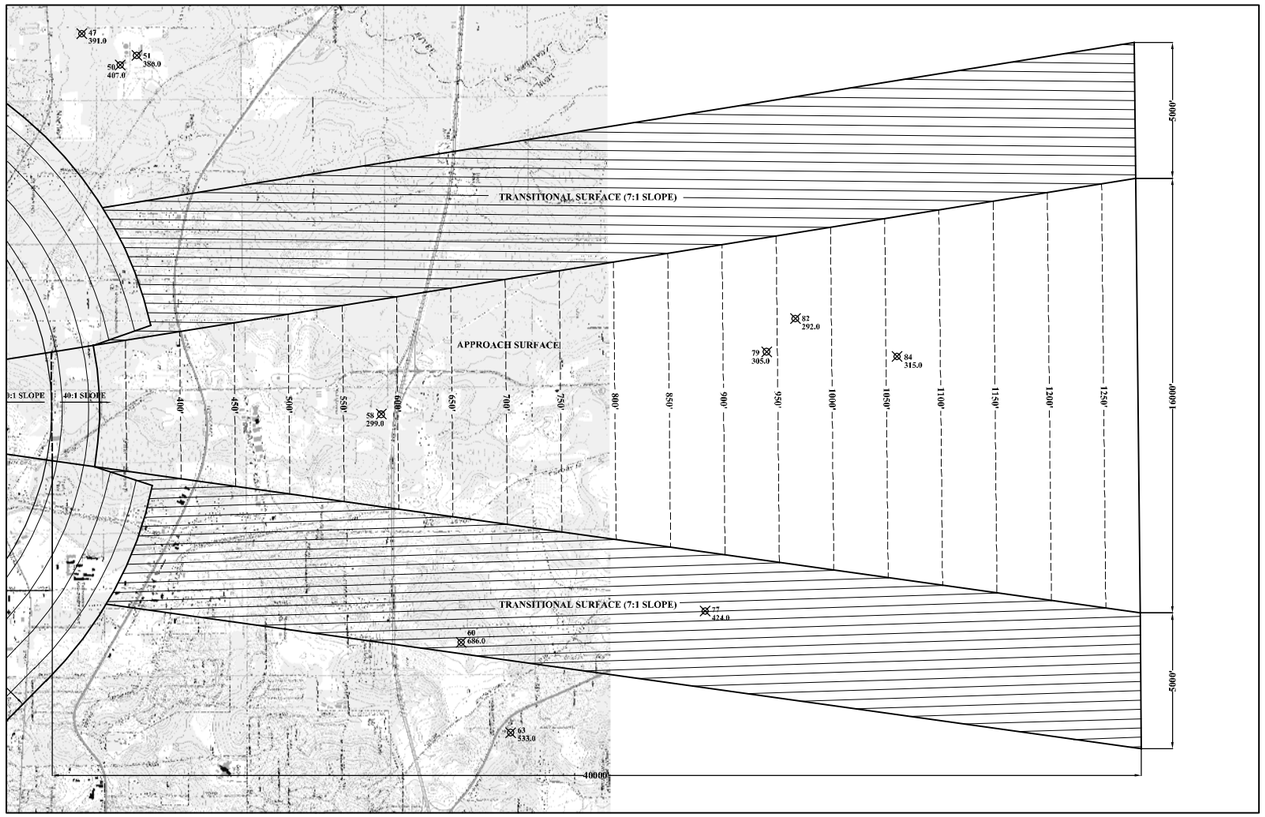
MASTER PLAN UPDATE

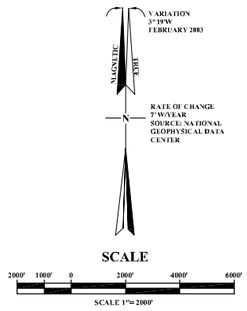
Drawing Name:

FAR PART 77 IMAGINARY SURFACES RUNWAY 27 APPROACH

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 11
Scale: 1" = 2000'	





#	CITY	TYPE	AGL	AMSL	LIGHTING	MARKING	FAA STUDY NUMBER	PENETRATION	ACTION
47	MIDWAY	TOWER	258	391	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	03SO6041	N/A	-
58	TALLAHASSEE	TOWER	270	407	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	93SO6137	N/A	-
51	TALLAHASSEE	STACK	258	386	MEDIUM INTENSITY WHITE STROBE LIGHTING	NO	97SO2685	N/A	-
58	TALLAHASSEE	BLDG	147	299			73SO3184	-283	NONE
68	TALLAHASSEE	TOWERS 2	508	686	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	94SO4321	-639	NONE
63	TALLAHASSEE	TOWER	288	533			87SO2281	N/A	-
79	TALLAHASSEE	TOWER	197	305	NO LIGHTS	NO	04SO5928	-635'	NONE
82	LAKE JACKSON	TOWER	188	292	RED LIGHTING	YES	93SO0798	-678	NONE
84	LAKE JACKSON	TOWER	199	315	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	97SO0684	-745	NONE

Tallahassee, Florida

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NOTES

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NEGATIVE OBJECT PENETRATIONS INDICATE CLEARANCE TO NEAREST SURFACE

OBJECTS WITH N/A FOR PENETRATIONS SIGNIFY THAT THE OBJECT DOES NOT FALL UNDER THE AIRPORT'S APPLICABLE FAR PART 77 SURFACE

SOURCE: FEDERAL AVIATION ADMINISTRATION (FAA), DIGITAL OBSTACLE FILE (DOF) – April 8, 2007

REVISIONS

No.	Description	Date	By

Project Name:

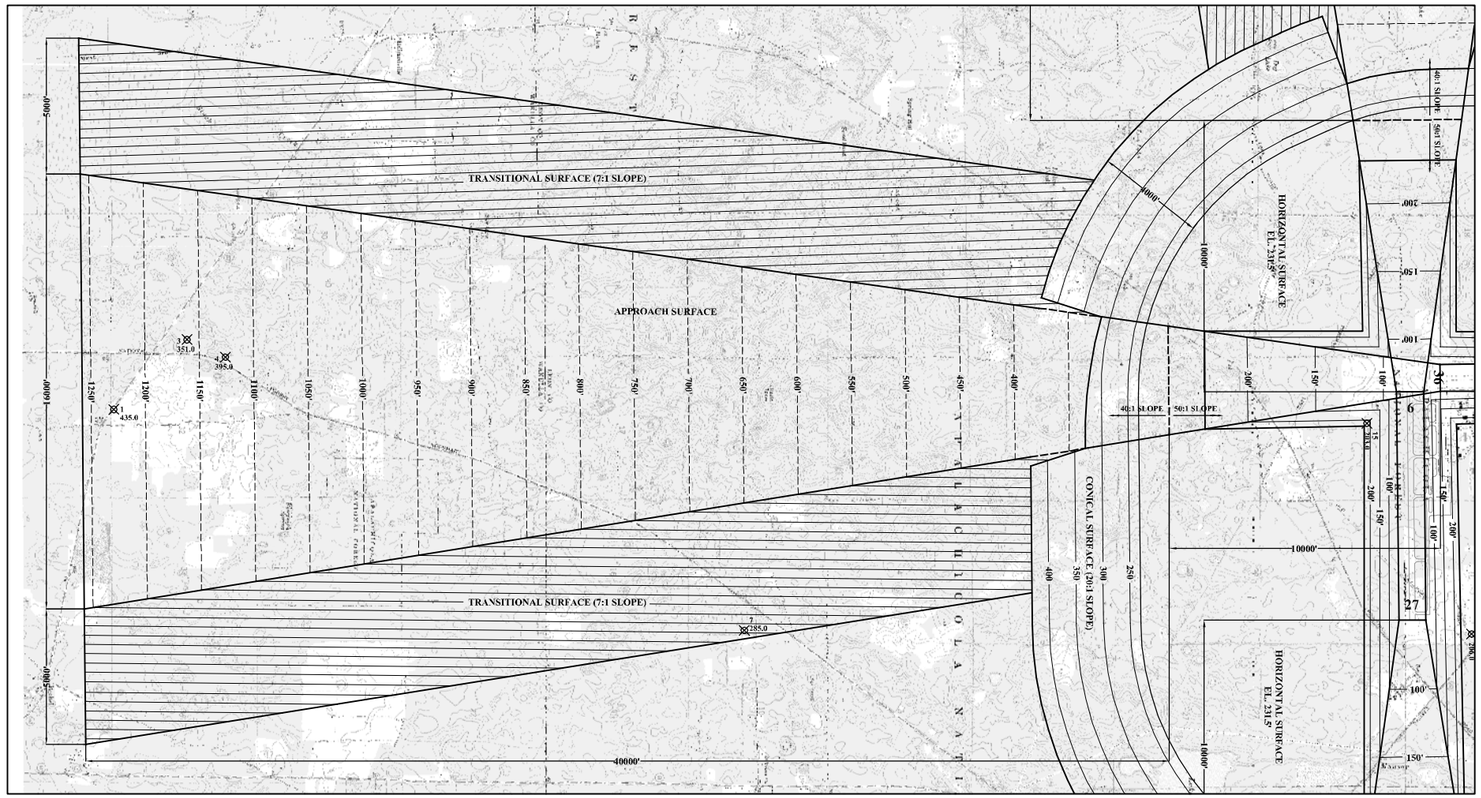
MASTER PLAN UPDATE

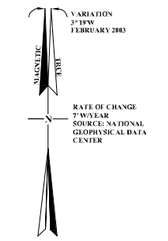
Drawing Name:

FAR PART 77 IMAGINARY SURFACES RUNWAY 18 APPROACH

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 12
Scale: 1" = 2000'	





SCALE

2000' 1000' 0 2000' 4000' 6000'

SCALE 1"= 2000'

#	CITY	TYPE	AGL	AMSL	LIGHTING	MARKING	FAA STUDY NUMBER	PENETRATION	ACTION
1	CRAWFORDVILLE	TOWER	415	435	RED LIGHTING	YES	92SO0624	-795	NONE
3	CRAWFORDVILLE	TOWER	339	353	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	94SO5534	-889	NONE
4	CRAWFORDVILLE	TOWER	378	395	RED LIGHTING	YES	83SO2166	-728	NONE
7	TALLAHASSEE	TOWER	268	285	DUAL, RED WITH MEDIUM INTENSITY WHITE STROBE	NO	01SO8979	-1055	NONE
15	TALLAHASSEE	CTRL TWR	133	283	RED LIGHTING	NO	99OC5048	-32.0	NONE

Tallahassee, Florida

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NOTES

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OBJECTS WITH N/A FOR PENETRATIONS SIGNIFY THAT THE OBJECT DOES NOT FALL UNDER THE AIRPORT'S APPLICABLE FAR PART 77 SURFACE

SOURCE: FEDERAL AVIATION ADMINISTRATION (FAA), DIGITAL OBSTACLE FILE (DOF) – April 8, 2007

REVISIONS

No.	Description	Date	By

Project Name:

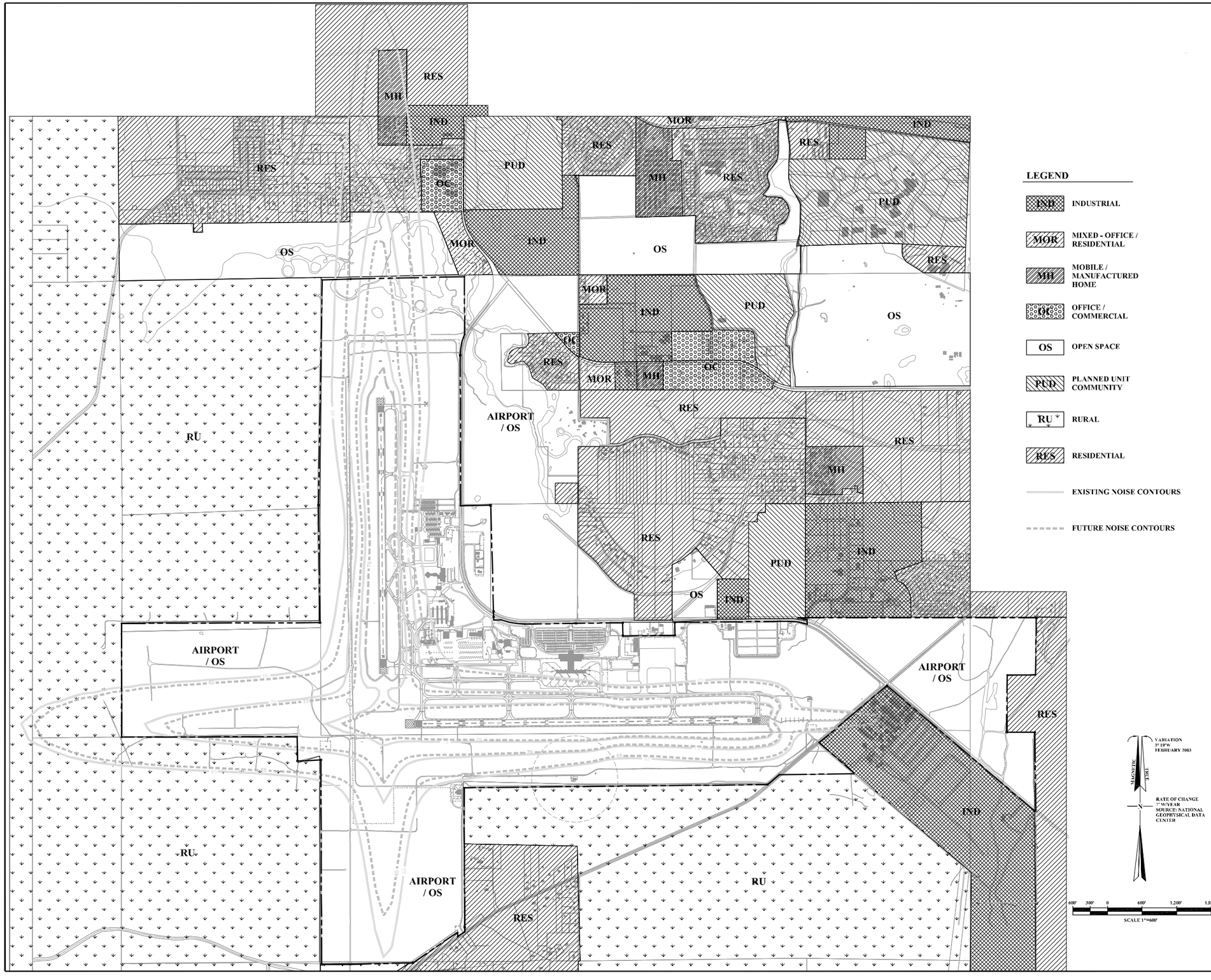
MASTER PLAN UPDATE

Drawing Name:

FAR PART 77 IMAGINARY SURFACES RUNWAY 36 APPROACH

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 13
Scale: 1" = 2000'	



Tallahassee Regional Airport

Tallahassee, Florida

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NOTES

REVISIONS

No.	Description	Date	By

Project Name:

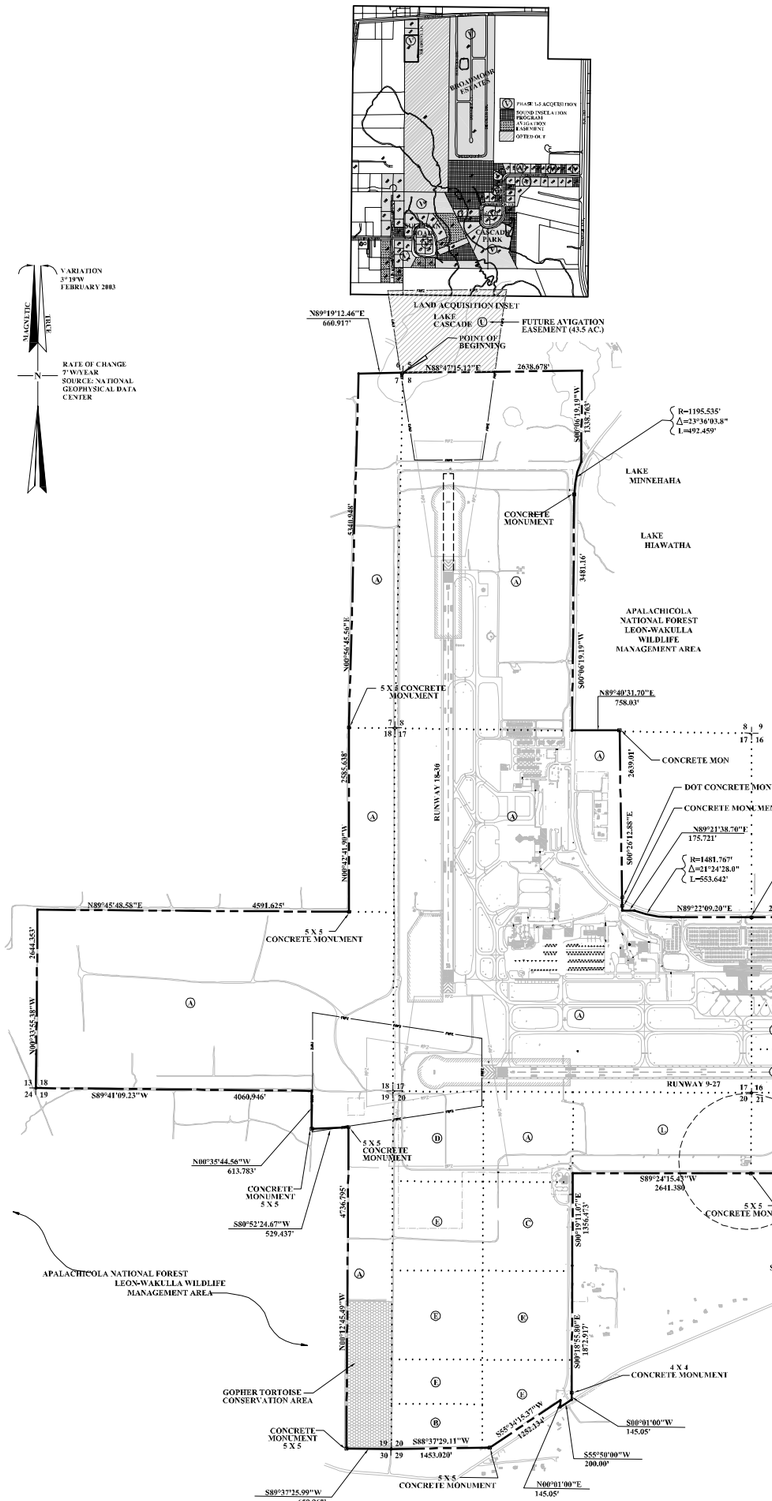
MASTER PLAN UPDATE

Drawing Name:

AIRPORT LAND USE PLAN

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number:
Scale: 1" = 2000'	14



PROPERTY HISTORY					
PARCEL IDENTIFIER	ACQUIRED FROM	DATE ACQUIRED	ACRES ACQUIRED	FAA PROJECT NUMBER	TYPE OF OWNERSHIP
(A)	U.S.A.	10/16/56	1411.38	N/A	FEE SIMPLE
(B)	LILLA ASHMORE		20	9-08-045-6002	FEE SIMPLE
(C)	THOMAS A. YON		40	"	FEE SIMPLE
(D)	MARY E. S. PARKER ET. AL.		40	"	FEE SIMPLE
(E)	M. LEROY GRAY ET. AL.		175	"	FEE SIMPLE
(F)	T. H. BATEMAN ET. AL.	7/3/57	40	"	FEE SIMPLE
(G)	C.L. & F.F. SMITH	2/11/57	0.70	"	FEE SIMPLE
(H)	C.W. & E.C. ATKINSON		10	"	FEE SIMPLE
(J)	F. H. BRITT	12/16/57	243.91	"	FEE SIMPLE
(K)	H.S. & A.H. BERNSTEIN		18.32	"	FEE SIMPLE
(L)	U.S.A.		289.72	8-12-0077-06 07	FEE SIMPLE
*(M)	U.S.A.	9/8/66	256	SEE NOTES	FEE SIMPLE
(N)	FLOYD H. SEARCY	12/5/78	0.64	8-12-0077-06 07	FEE SIMPLE
(O)	U.S.A.	3/14/85	0.99	3-12-0077-03	FEE SIMPLE
(P)	U.S.A.	3/14/85	65.15	"	FEE SIMPLE
(Q)	U.S.A.	3/14/85	188.62	"	FEE SIMPLE
(R)	U.S.A.	3/14/85	13.49	"	FEE SIMPLE

FUTURE PROPERTY EASEMENTS / ACQUISITIONS				
PARCEL IDENTIFIER	TO BE ACQUIRED FROM	ACRES TO BE ACQUIRED	FAA PROJECT NUMBER	TYPE OF OWNERSHIP
(S)	CITY OF TALLAHASSEE - FUTURE AVIGATION ESMT	23.78 AC.±	TO BE ACQUIRED	AVIGATION EASEMENT
(T)	CITY OF TALLAHASSEE - FUTURE FACILITIES-USE ESMT	0.25+-	TO BE ACQUIRED	FACILITIES USE EASEMENT
(U)	CITY OF TALLAHASSEE - FUTURE FACILITIES-USE ESMT	43.5 AC. ±	TO BE ACQUIRED	AVIGATION EASEMENT
(V)	PRIVATE OWNERS	6.85 AC. ±	TO BE ACQUIRED	FEE SIMPLE

AIRPORT ACREAGE		
	EXISTING	FUTURE
EASEMENTS:	NONE	NONE
AVIGATION	NONE	300.7+ AC.
FACILITIES USE	NONE	0.25+- AC.
FEE SIMPLE:	2,490+- AC.	2,496.85+- AC.

NOTES

*PARCEL (M) IS OWNED AND MANAGED BY THE CITY OF TALLAHASSEE BUT IS NOT CURRENTLY CONSIDERED AIRPORT PROPERTY. NO FAA FUNDS WERE USED IN THE ACQUISITION OF THIS PROPERTY. ACQUISITION OF AVIGATION AND FACILITIES-USE EASEMENTS ARE RECOMMENDED. CURRENT METES AND BOUNDS ARE NOT AVAILABLE FOR PARCEL (M) PENDING A FUTURE SURVEY.

THE CITY OF TALLAHASSEE SHOULD CONSIDER ACQUIRING SURROUNDING PROPERTY FOR FUTURE AVIATION USE AS IT BECOMES AVAILABLE FOR PURCHASE, WITH POTENTIAL FUNDING FROM FAA AND FDOT.

TALLAHASSEE REGIONAL AIRPORT

Tallahassee, Florida

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NOTES

REVISIONS			
No.	Description	Date	By

Project Name:

MASTER PLAN UPDATE

Drawing Name:

AIRPORT PROPERTY MAP

FAA A.I.P. Project Number:

Drawn By: RWO	Checked By: PJ
Date: June, 2006	Drawing Number: 15
Scale: 1" = 800'	

TALLAHASSEE REGIONAL AIRPORT :

BOUNDARY DESCRIPTION BEGINS AT THE NORTHWEST CORNER OF SECTION 8, TOWNSHIP 1 SOUTH, RANGE 1 WEST, LEON COUNTY, FLORIDA; THENCE NORTH 88 DEGREES 47 MINUTES 15 SECONDS EAST ALONG THE NORTH LINE OF SAID SECTION 8, A DISTANCE OF 2638.68 FEET TO THE NORTH QUARTER-CORNER OF SAID SECTION 8; THENCE SOUTH 00 DEGREES 06 MINUTES 19 SECONDS WEST 1338.76 FEET TO AN INTERSECTION WITH THE WESTERLY RIGHT-OF-WAY BOUNDARY OF CAPITAL CIRCLE SOUTHWEST (S.R. S-263), SAID INTERSECTION BEING ON A CURVE CONCAVE TO THE EASTERLY HAVING A RADIUS OF 1195.53 FEET; THENCE SOUTHEASTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 23 DEGREES 36 MINUTES 04 SECONDS FOR AN ARC DISTANCE OF 492.46 FEET TO A POINT OF TANGENCY; THENCE CONTINUE ALONG SAID WESTERLY RIGHT-OF-WAY BOUNDARY, SOUTH 00 DEGREES 06 MINUTES 19 SECONDS WEST 3,481.16 FEET; THENCE, LEAVING SAID WESTERLY RIGHT-OF-WAY BOUNDARY AND CROSSING SAID CAPITAL CIRCLE SOUTHWEST, NORTH 89 DEGREES 40 (SIC) MINUTES 32 (SIC) SECONDS EAST 758.03 FEET TO THE NORTHEAST CORNER OF THE WEST 660 FEET OF THE NORTHEAST QUARTER OF SECTION 17, TOWNSHIP 1 SOUTH, RANGE 1 WEST OF SAID LEON COUNTY; THENCE SOUTH 00 DEGREES 26 MINUTES 12 SECONDS EAST ALONG THE EAST LINE OF THE WEST 660 FEET OF THE NORTHEAST QUARTER OF SAID SECTION 17, AND CROSSING SAID CAPITAL CIRCLE SOUTHWEST, A DISTANCE OF 2639.01 FEET; THENCE, LEAVING THE EAST LINE OF THE WEST 660 FEET OF THE NORTHEAST QUARTER OF SAID SECTION 17, NORTH 89 DEGREES 21 MINUTES 39 SECONDS EAST 175.72 FEET TO AN INTERSECTION WITH THE SOUTHERLY RIGHT-OF-WAY BOUNDARY OF SAID CAPITAL CIRCLE SOUTHWEST, SAID INTERSECTION BEING ON A CURVE CONCAVE TO THE NORTHEAST HAVING A RADIUS OF 1481.77 FEET; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 21 DEGREES 24 MINUTES 28 SECONDS FOR A DISTANCE OF 553.64 FEET TO A POINT OF TANGENCY; THENCE CONTINUE ALONG SAID SOUTHERLY RIGHT-OF-WAY BOUNDARY, NORTH 89 DEGREES 22 MINUTES 09 SECONDS EAST 2018.40 FEET TO THE NORTHWEST CORNER OF THE CRISWELL PROPERTY; THENCE, LEAVING SAID SOUTHERLY RIGHT-OF-WAY BOUNDARY, SOUTH 00 DEGREES 38 MINUTES 58 SECONDS EAST 299.97 FEET TO THE SOUTHWEST CORNER OF THE CRISWELL PROPERTY; THENCE NORTH 89 DEGREES 21 MINUTES 56 SECONDS EAST 1452.21 FEET TO THE SOUTHEAST CORNER OF SAID CRISWELL PROPERTY; THENCE NORTH 00 DEGREES 38 MINUTES 59 SECONDS WEST 299.81 FEET TO THE NORTHEAST CORNER OF SAID CRISWELL PROPERTY BEING ON THE SOUTHERLY RIGHT-OF-WAY BOUNDARY OF SAID CAPITAL CIRCLE SOUTHWEST; THENCE NORTH 89 DEGREES 22 (SIC) MINUTES 44 (SIC) SECONDS EAST ALONG SAID SOUTHERLY RIGHT-OF-WAY BOUNDARY A DISTANCE OF 2628.42 FEET TO THE BEGINNING OF A CURVE CONCAVE TO THE SOUTHWESTERLY HAVING A RADIUS OF 1382.63 FEET; THENCE SOUTHEASTERLY ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 18 DEGREES 14 MINUTES 20 SECONDS FOR A DISTANCE OF 440.13 FEET; THENCE, LEAVING SAID CURVE AND SAID SOUTHERLY RIGHT-OF-WAY BOUNDARY AND CROSSING SAID CAPITAL CIRCLE SOUTHWEST, NORTH 00 DEGREES 35 MINUTES 41 SECONDS WEST 104.89 FEET TO AN INTERSECTION WITH THE NORTHERLY RIGHT-OF-WAY BOUNDARY OF SAID CAPITAL CIRCLE SOUTHWEST, SAID INTERSECTION BEING ON A CURVE CONCAVE TO THE SOUTHERLY HAVING A RADIUS OF 1482.63 FEET; THENCE NORTHWESTERLY ALONG SAID NORTHERLY RIGHT-OF-WAY BOUNDARY THROUGH A CENTRAL ANGLE OF 8 DEGREES 00 MINUTES 11 SECONDS FOR AN ARC DISTANCE OF 207.09 FEET TO AN INTERSECTION WITH THE NORTH LINE OF THE SOUTH HALF OF SECTION 16, TOWNSHIP 1 SOUTH, RANGE 1 WEST, LEON COUNTY, FLORIDA; THENCE ALONG SAID NORTH LINE NORTH 89 DEGREES 42 MINUTES 56 SECONDS EAST 201.67 FEET TO THE NORTHEAST CORNER OF THE SOUTH HALF OF SAID SECTION 16; THENCE NORTH 89 DEGREES 59 MINUTES 41 SECONDS EAST ALONG THE NORTH LINE OF THE SOUTH HALF OF SECTION 15, TOWNSHIP 1 SOUTH, RANGE 1 WEST, A DISTANCE OF 5,305.05 FEET TO THE NORTHEAST CORNER OF THE SOUTH HALF OF SAID SECTION 15; THENCE SOUTH 00 DEGREES 40 MINUTES 31 SECONDS WEST ALONG THE EAST LINE OF THE SOUTH HALF OF SAID SECTION 15, A DISTANCE OF 1323.69 FEET; THENCE, LEAVING SAID EAST LINE, SOUTH 89 DEGREES 54 MINUTES 55 SECONDS WEST 659.45 FEET; THENCE SOUTH 00 DEGREES 30 MINUTES 57 SECONDS WEST 1324.57 FEET TO AN INTERSECTION WITH THE NORTH LINE OF SECTION 22, TOWNSHIP 1 SOUTH, RANGE 1 WEST, LEON COUNTY, FLORIDA; THENCE NORTH 89 DEGREES 50 MINUTES 07 SECONDS EAST ALONG THE NORTH LINE OF SAID SECTION 22, A DISTANCE OF 655.78 FEET TO THE NORTHEAST CORNER OF SAID SECTION 22; THENCE SOUTH 00 DEGREES 41 MINUTES 28 SECONDS EAST ALONG THE EAST LINE OF SAID SECTION 22 AND CROSSING SAID CAPITAL CIRCLE SOUTHWEST, A DISTANCE OF 2684.58 FEET; THENCE SOUTH 00 DEGREES 39 (SIC) MINUTES 16 SECONDS EAST 1293.06 FEET TO THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 22; THENCE NORTH 89 DEGREES 51 MINUTES 56 SECONDS WEST ALONG THE SOUTH LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 22, A DISTANCE OF 1361.81 FEET TO THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 22; THENCE NORTH 00 DEGREES 00 MINUTES 34 SECONDS WEST ALONG THE WEST LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 22, A DISTANCE OF 603.81 FEET; THENCE, LEAVING SAID WEST LINE, NORTH 49 DEGREES 49 MINUTES 57 SECONDS WEST 3,732.04 FEET; THENCE SOUTH 89 DEGREES 24 MINUTES 15 SECONDS WEST, CROSSING SPRINGHILL ROAD (S.R. 373), A DISTANCE OF 1,747.43 FEET TO THE NORTHWESTERLY RIGHT-OF-WAY BOUNDARY OF SAID SPRINGHILL ROAD; THENCE SOUTH 49 DEGREES 42 MINUTES 53 SECONDS WEST ALONG SAID NORTHWESTERLY RIGHT-OF-WAY BOUNDARY, A DISTANCE OF 357.09 FEET; THENCE, LEAVING SAID NORTHWESTERLY RIGHT-OF-WAY BOUNDARY, SOUTH 89 DEGREES 24 MINUTES 15 SECONDS WEST 7,024.97 FEET; THENCE SOUTH 00 DEGREES 19 MINUTES 11 SECONDS EAST 1356.47 FEET; THENCE SOUTH 00 DEGREES 18 MINUTES 55 SECONDS EAST 1872.92 FEET TO A POINT ON THE NORTHWESTERLY BOUNDARY OF THE OLD ABANDONED GEORGIA, FLORIDA AND ALABAMA RAILROAD RIGHT-OF-WAY, SAID POINT BEING THE NORTHEASTERLY CORNER OF THAT 0.55 ACRE PARCEL DESCRIBED IN OFFICIAL RECORD BOOK 576, PAGE 721 OF THE PUBLIC RECORDS OF LEON COUNTY, FLORIDA; THENCE, CROSSING SAID RAILROAD RIGHT-OF-WAY, SOUTH 00 DEGREES 01 MINUTE WEST 145.05 FEET TO A POINT ON THE NORTHWESTERLY RIGHT-OF-WAY BOUNDARY OF SPRINGHILL ROAD; THENCE SOUTH 55 DEGREES 50 MINUTES WEST ALONG SAID NORTHWESTERLY RIGHT-OF-WAY BOUNDARY, A DISTANCE OF 200 FEET; THENCE NORTH 00 DEGREES 01 MINUTE EAST, CROSSING SAID RAILROAD RIGHT-OF-WAY, A DISTANCE OF 145.05 FEET TO THE NORTHWESTERLY RIGHT- OF-WAY BOUNDARY OF SAID RAILROAD RIGHT-OF-WAY, ALSO BEING THE NORTHWESTERLY CORNER OF SAID 0.55 ACRE PARCEL; THENCE SOUTH 55 DEGREES 34 MINUTES 15 SECONDS WEST ALONG THE NORTHWESTERLY BOUNDARY OF SAID OLD ABANDONED RAILROAD RIGHT-OF-WAY, A DISTANCE OF 1,252.13 FEET TO ITS INTERSECTION WITH THE SOUTH BOUNDARY OF SECTION 20, TOWNSHIP 1 SOUTH, RANGE 1 WEST; THENCE SOUTH 88 DEGREES 37 MINUTES 29 SECONDS WEST ALONG THE SOUTH BOUNDARY OF SAID SECTION 20, A DISTANCE OF 1,453.02 FEET TO THE SOUTHWEST CORNER OF SAID SECTION 20 AND THE SOUTHEAST CORNER OF SECTION 19, TOWNSHIP 1 SOUTH, RANGE 1 WEST; THENCE SOUTH 89 DEGREES 37 MINUTES 26 (SIC) SECONDS WEST ALONG THE SOUTH BOUNDARY OF SAID SECTION 19, A DISTANCE OF 659.97 FEET TO THE SOUTHWEST CORNER OF THE EAST 660 FEET OF SAID SECTION 19; THENCE NORTH 00 DEGREES 12 MINUTES 45 SECONDS WEST ALONG THE WEST BOUNDARY OF THE EAST 660 FEET OF SAID SECTION 19, A DISTANCE OF 4,736.80 FEET; THENCE, LEAVING SAID BOUNDARY, SOUTH 80 DEGREES 52 MINUTES 25 SECONDS WEST A DISTANCE OF 529.44 FEET; THENCE NORTH 00 DEGREES 35 MINUTES 44 SECONDS WEST 613.78 FEET TO A POINT ON THE SOUTH BOUNDARY OF SECTION 18, TOWNSHIP 1 SOUTH, RANGE 1 WEST; THENCE SOUTH 89 DEGREES 41 MINUTES 09 SECONDS WEST ALONG THE SOUTH BOUNDARY OF SAID SECTION 18, A DISTANCE OR 4,060.95 FEET TO THE SOUTHWEST CORNER OF SAID SECTION 18; THENCE NORTH 00 DEGREES 33 MINUTES 55 SECONDS WEST ALONG THE WEST BOUNDARY OF SAID SECTION 18, A DISTANCE OF 2,644.35 FEET TO THE NORTHWEST CORNER OF THE SOUTH HALF OF SAID SECTION 18; THENCE NORTH 89 DEGREES 45 MINUTES 49 SECONDS EAST ALONG THE NORTH BOUNDARY OF THE SOUTH HALF OF SAID SECTION 18, A DISTANCE OF 4,591.63 FEET TO THE SOUTHWEST CORNER OF THE EAST 660 FEET OF THE NORTH HALF OF SAID SECTION 18; THENCE NORTH 00 DEGREES 42 MINUTES 42 SECONDS WEST ALONG THE WEST BOUNDARY OF THE EAST 660 FEET OF THE NORTH HALF OF SAID SECTION 18, A DISTANCE OF 2,585.64 FEET TO THE NORTHWEST CORNER OF THE EAST 660 FEET OF SAID SECTION 18 AND THE SOUTHWEST CORNER OF THE EAST 660 FEET OF SECTION 7, TOWNSHIP 1 SOUTH, RANGE 1 WEST; THENCE NORTH 00 DEGREES 56 MINUTES 46 SECONDS EAST ALONG THE WEST BOUNDARY OF THE EAST 660 FEET OF SAID SECTION 7, A DISTANCE OF 5,340.95 FEET TO THE NORTHWEST CORNER OF THE EAST 660 FEET OF SAID SECTION 7; THENCE NORTH 89 DEGREES 19 MINUTES 10 SECONDS EAST ALONG THE NORTH BOUNDARY IF SAID SECTION 7 A DISTANCE OF 660.91 FEET TO THE POINT OF BEGINNING. LESS AND EXCEPT: THE RIGHT-OF-WAY LIMITS FOR SPRINGHILL ROAD (S.R. NO. S-373) AND CAPITAL CIRCLE SOUTHWEST (S.R. NO. S-263) THAT FALLS WITHIN THE ABOVE DESCRIPTION; AND FROM THE NORTHWEST CORNER OF SECTION 22, TOWNSHIP 1 SOUTH, RANGE 1 WEST, RUN NORTH 89 DEGREES 58 MINUTES EAST ALONG THE NORTH BOUNDARY LINE OF SAID SECTION 22, 575.70 FEET TO A POINT ON THE SOUTHEASTERN BOUNDARY LINE OF 66 FOOT RIGHT-OF-WAY OF THE SPRINGHILL ROAD WHICH IS THE POINT OF BEGINNING. FROM SAID POINT OF BEGINNING RUN NORTH 49 DEGREES 45 MINUTES EAST ALONG THE SOUTHEASTERN BOUNDARY LINE OF THE RIGHT-OF-WAY OF SAID SPRINGHILL ROAD, 1,632.62 FEET TO ITS INTERSECTION WITH THE SOUTHWESTERN BOUNDARY LINE OF THE RIGHT-OF-WAY OF STATE ROAD NO. 261; THEN RUN SOUTH 49 DEGREES 27 MINUTES EAST ALONG THE SOUTHWESTERN BOUNDARY LINE OF SAID STATE ROAD NO. 261, A DISTANCE OF 1,829.10 FEET; THEN SOUTH 49 DEGREES 47 MINUTES EAST ALONG THE SOUTHWESTERN BOUNDARY LINE OF SAID STATE ROAD NO. 261, 2,694.42 FEET TO A POINT ON THE EAST BOUNDARY LINE OF SAID SECTION 22; THEN SOUTH 00 DEGREES 37 MINUTES EAST ALONG THE EAST BOUNDARY LINE OF SAID SECTION 22, 2,095.05 FEET TO A P.R.M. MARKING THE SOUTHEAST CORNER OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION 22; THEN NORTH 89 DEGREES 49 MINUTES WEST ALONG THE SOUTH BOUNDARY LINE OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION 22, 1,362.6 FEET TO A P.R.M. MARKING THE SOUTHWEST CORNER OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION 22, THENCE NORTH 00 DEGREES 03 MINUTES EAST ALONG THE WEST BOUNDARY LINE OF THE NORTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SAID SECTION 22, 603.97 FEET; THEN NORTH 49 DEGREES 48 MINUTES WEST, 4,797.55 FEET TO A POINT ON THE SOUTHEASTERN BOUNDARY LINE OF THE 66 FOOT RIGHT- OF-WAY OF SAID SPRINGHILL ROAD; THEN NORTH 49 DEGREES 45 MINUTES EAST ALONG THE SOUTHEASTERN BOUNDARY LINE OF THE RIGHT-OF-WAY OF THE SAID SPRINGHILL ROAD: THEN NORTH 49 DEGREES 45 MINUTES EAST ALONG THE SOUTHEASTERN BOUNDARY LINE OF THE RIGHT-OF-WAY OF THE SAID SPRINGHILL ROAD, 405.83 FEET TO THE POINT OF BEGINNING. CONTAINING 256 ACRES AND BEING IN SECTIONS 15 AND 22, TOWNSHIP 1 SOUTH, RANGE 1 WEST. THE ABOVE DESCRIPTION CONTAINS A NET AREA OF 2,490* ACRES MORE OR LESS. * 2490 ACRES DOES NOT INCLUDE 256 ACRES CONTAINING THE THOMAS P. SMITH SEWAGE TREATMENT PLANT. THIS PROPERTY IS CITY-OWNED AND NOT CONSIDERED AIRPORT PROPERTY. INFORMATION FOR THE ABOVE DESCRIPTION IS BASED SOLELY ON AND IS COMPILED FROM THE GOODLING SURVEY OF THE TALLAHASSEE MUNICIPAL AIRPORT BOUNDARY FOR THE CITY OF TALLAHASSEE UNDER JOB NO. 85068 AND DATED SEPTEMBER 16, 1985. NO CURRENT FIELD SURVEY HAS BEEN PERFORMED. THE INTENT OF THE ABOVE DESCRIPTION IS TO FACILITATE AIRPORT EXPANSION THROUGH THE REVIEW PROCESS BY GOVERNMENT AGENCIES. NO OTHER USE IS IMPLIED.

TALLAHASSEE REGIONAL AIRPORT

Tallahassee, Florida

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NOTES

REVISIONS

No.	Description	Date	By

Project Name:

MASTER PLAN UPDATE

Drawing Name:

AIRPORT PROPERTY MAP DATA SHEET

FAA A.I.P. Project Number:

Drawn By:	Checked By:
RWO	PJ
Date: June, 2006	Drawing Number: 16
Scale:	

Chapter 8 – Implementation Plan

INTRODUCTION

An implementation plan for Tallahassee Regional Airport (TLH) has been prepared based upon the facility needs identified in the Facility Requirements and the Alternatives Analysis of possible solutions to meet these needs. The implementation plan presented herein describes the staging of proposed improvements, provides the basic financial requirements of each, and identifies various means of funding these improvements. It is the intent of this implementation plan to provide general financial guidance to the City of Tallahassee's Aviation Department and Airport staff in making policy decisions regarding the recommended development of the Airport over the 20-year planning period.

PROGRAM PHASING AND COST ESTIMATING

An initial development schedule for the proposed improvements was prepared based upon facility requirements, which were determined by the levels of passenger enplanements and operational forecasts. Therefore, since actual activity levels realized at the Airport may vary, it is important that the staging of these proposed improvement projects remain sensitive to such variation. Given that some time has passed between the development of the aviation forecasts and this implementation plan, the staging of projects begins with 2005 instead of the first year (2002) of the aviation forecasts. Some projects may take precedence over other projects, depending on changes in priority and demand. Thus, a list of prioritized improvements was established based on the urgency of need, ease of implementation, logic of project sequencing, and Airport staff input. The objective was to establish an efficient order for project development and implementation that satisfied the forecasted aviation activity for TLH and the needs expressed by Airport staff. The development schedule is divided into three general stages: the short-term (2004-2008), the mid-term (2009-2013), and the long-term (2014-2023).

Cost estimates were developed for each project from 2005 through 2023. The projected costs were based on the preliminary layouts developed as a part of the Alternatives Analysis. Estimated quantities of major items, such as pavement or fill material, were used in conjunction with unit cost values to determine a construction cost. A final project cost was then determined by adding set percentages of the construction cost for mobilization, drainage (where applicable), and engineering services. Additionally, a contingency amount of 30 percent of the estimated construction cost was added to account for items that were unknown at the time.

CAPITAL IMPROVEMENT PROGRAM

The projects and their estimated costs for each period are discussed in the following sections. The Capital Improvement Program (CIP), which includes the development schedule and project cost summaries, are presented in the following sections which discuss each development phase. The CIP for each period presents the improvements required during that period, but it does not assume how financially feasible it will be for the City of Tallahassee's Aviation Department to undertake these projects. A subsequent section of this chapter will address in general terms the financial feasibility of this development program. Cost projections are based on constant 2005 dollars and include estimated engineering fees and contingencies. The projections, however, should be used for planning purposes only and do not imply that funding for these will necessarily be available. Each year indicates the initiation of design and/or environmental efforts as identified in these tables. It is assumed that construction would be undertaken either in that same year or the next.

Short-Term Developments

Table 8-1 shows the short-term CIP program for TLH. Many of the projects listed below are currently in the Airport's work program and have already received an allocation of grant funding. The projects listed below are shown in order by timeline rather than by priority. A graphic showing the short-term phasing plan of project improvements is shown on **Exhibit 8-1**.

Table 8-1
SHORT-TERM CIP (2004-2008)

Phasing / Identifier	Year	Development Items	Total
S-01	2004	New Central GA Apron	1,820,735
S-02	2004	Runway & Taxiway Stormwater Management Project	1,514,868
S-03	2004	Taxiway P Overlay	1,495,708
S-04	2004	GA Taxiways Overlay	1,580,633
S-05	2005	Construct Cargo Apron	7,003,751
S-06	2005	Construct Cargo Apron Access	499,120
S-07	2005	Terminal Building Rehab	2,140,000
S-08	2005	Bulk Hangar Rehab	200,000
S-09	2005	Hangar Development	750,000
S-10	2005	Interactive TV Training Program	250,000
S-11	2005	Maintenance Complex Improvements	300,000
S-12	2006	Construct Canopy above fuel storage facility	78,000
S-13	2006	Terminal Building Rehab	1,740,000
S-14	2006	ADA Lift	30,000
S-15	2006	Terminal Security Improvements	1,050,000
S-16	2006	Terminal/Cargo Apron Lighting	164,000
S-17	2006	Expand Air Cargo Facility	1,450,000
S-18	2007	Construct Wash Rack and Fuel Truck Parking	247,000
S-19	2007	Terminal Building Rehab	3,090,000
S-20	2007	Parking Facility Improvements	500,000
S-21	2007	Airfield Improvements Design	1,750,000
S-22	2007	GA Access Road Improvements	1,500,000
S-23	2007	Wayfinding Signage	500,000
S-24	2008	South Apron Rehab	1,000,000
S-25	2008	Terminal Building Rehab - Ph II	1,100,000
S-26	2008	Hangar Development	1,000,000
S-27	2008	Parking Facility Improvements	1,200,000
S-28	2008	Airport Security System Update	1,250,000
S-29	2008	Runway 18-36 Extension EA and Preliminary Design	2,800,000
S-30	2008	Terminal Apron Access	1,200,000
S-31	2008	ARFF Vehicle Replacement	1,500,000
S-32	2008	Runway Vacuum Truck Procurement	200,000
S-33	2008	Expand Air Cargo Facility	870,000
S-34	2008	Electronic "Smart" ALP	500,000
		Total Short-Term Projects	**42,273,815**

SHORT-TERM PHASING PLAN (2004-2008)

LEGEND

- Proposed Airfield Improvements
- Existing Hangars/Terminal/Structures
- Proposed Buildings/Terminal Expansion

0 1000' 2000'

1"=1000' Approx.

S-29 S-04 S-26 S-07 S-25 S-13 S-15 S-19 S-01 S-18 S-22 S-12 S-09 S-08 S-20 S-27 S-06 S-11 S-24 S-30 S-16 S-05 S-17 S-33 S-34 S-03

CAPITAL CIRCLE S.W. (STATE ROAD 263)

NORTH GA APRON

SOUTH GA APRON

MAIN TERMINAL APRON

SOUTHSIDE CEMETERY

EXISTING RUNWAY 9-27 8,000' X 150'

FUTURE RUNWAY 9-27 8,900' X 150'

TRUE BEARING: N 90° 00' 00" E

T/W A T/W B T/W C T/W D T/W E T/W F T/W G T/W H T/W J T/W K T/W L T/W M T/W N T/W P T/W S T/W W T/W Z

RPZ

8-1

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Intermediate-Term Developments

A CIP for the period of 2009 through 2013 was also developed, projects were assigned a year for their planned completion. It is assumed that priorities for these developments could change as this timeframe draws near, especially since another master plan update will be undertaken during this period. **Table 8-2** lists the planned improvements for the intermediate-term. A graphic showing the intermediate-term phasing plan of project improvements is shown on **Exhibit 8-2**.

Long-Term Developments

As with the intermediate-term CIP, needed developments were identified for the long-term period, as with the intermediate-term projects, actual planning years were assigned to each project. A full listing of projects needed from 2014 until 2023 is given in **Table 8-3**. A graphic showing the long-term phasing plan of project improvements is shown on **Exhibit 8-3**.

Table 8-2
INTERMEDIATE-TERM CIP (2009-2013)

Phasing / Identifier	Year	Development Items	Total
I-01	2009	Hangar Infrastructure and Taxilane Development	1,560,000
I-02	2009	Extend Lively Apron	322,377
I-03	2009	Terminal Building Rehab - Ph II	1,100,000
I-04	2009	ATCT Improvements	800,000
I-05	2009	Blast Fence	500,000
I-06	2009	North Apron Rehabilitation	810,500
I-07	2009	Old Terminal Apron Rehabilitation	1,210,750
I-08	2009	Terminal Apron Expansion	1,250,000
I-09	2009	In-Line Baggage Handling System	5,000,000
I-10	2010	Terminal Building Rehab - Ph II	1,100,000
I-11	2010	Air Carrier Apron Rehabilitation	920,000
I-12	2010	Stormwater Master Plan	1,000,000
I-13	2011	Terminal Building Rehab - Ph II	1,100,000
I-14	2011	Taxiway S Improvements	1,122,000
I-15	2011	Taxiway P to A Bypass connector	1,326,000
I-16	2011	Taxiway Z Improvements	562,500
I-17	2011	GA Access Road Improvements	500,000
I-18	2011	South GA Apron Expansion	2,025,000
I-19	2011	Master Plan Update	500,000
I-20	2011	Airfield Lighting Improvements	612,500
I-21	2011	Airfield Signage Improvements	612,500
I-22	2011	Loading Bridge and Gate Additions	3,000,000
I-23	2012	Terminal Rehabilitation - Phase II	1,100,000
I-24	2012	Runway 18-36 Extension	12,000,000
I-25	2012	Runway 18-36 Rehabilitation	1,683,000
I-26	2012	Crisis/Command Center	300,000
I-27	2012	Expand New Terminal Building	1,200,000
I-28	2012	Foreign Trade Zone	177,000
I-29	2012	Relocate Remote Transmitter / Receiver	750,000
I-30	2012	Runway 9-27 Reconstruction (Permitting and Design)	700,000
I-31	2012	Airport Stormwater Improvements	1,000,000
I-32	2013	Install MITL along Taxiway P	457,080
I-33	2013	Terminal Rehabilitation - Phase II	1,100,000
I-34	2013	Runway 9-27 Reconstruction	5,800,000
I-35	2013	Runway 9-27 Reconstruction (Taxiway Improvements)	500,000
		Total Intermediate-Term Projects	**53,701,207**

INTERMEDIATE-TERM PHASING PLAN (2009-2013)

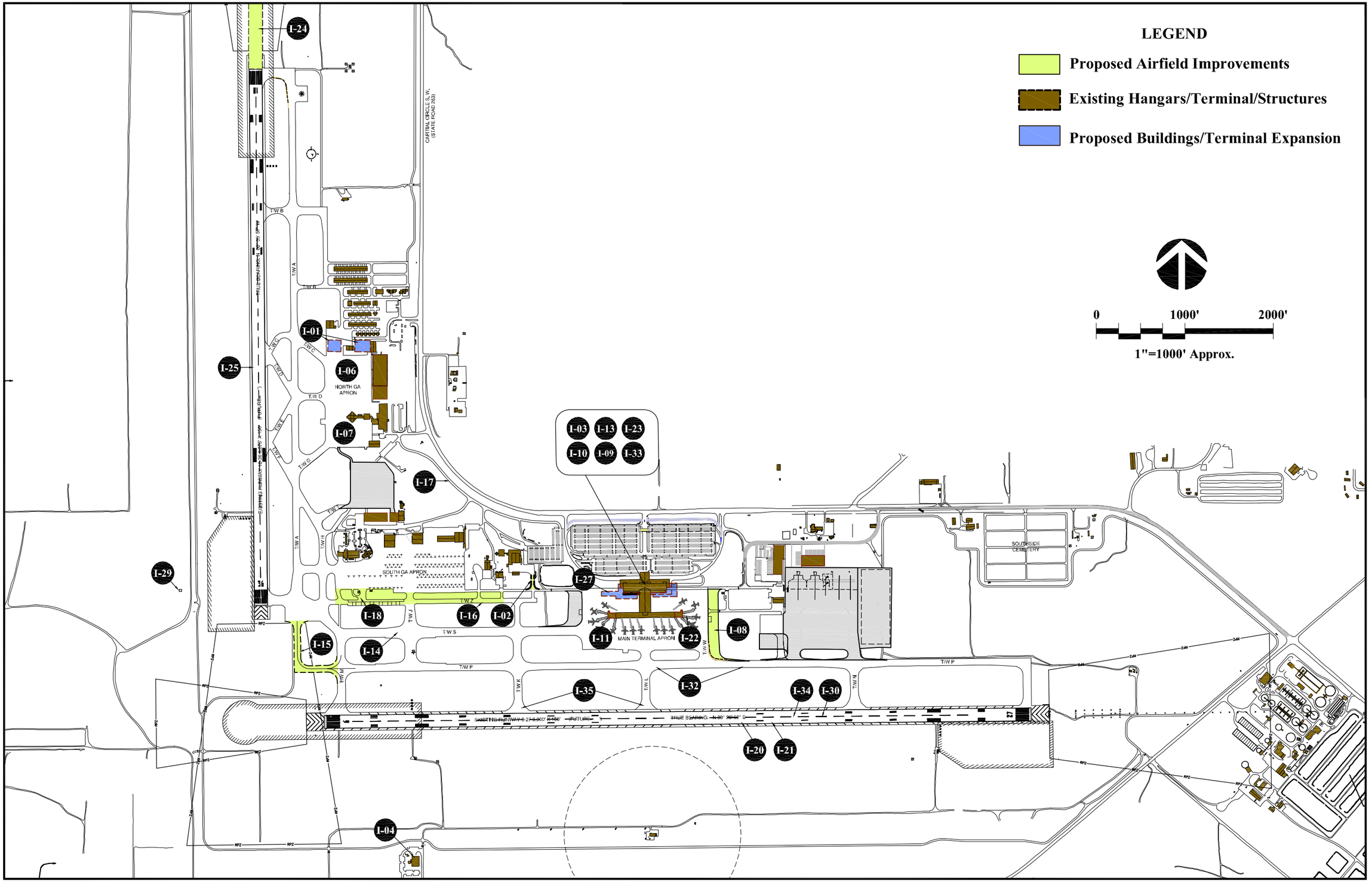

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Table 8-3
LONG-TERM CIP (2014-2023)

Phasing / Identifier	Year	Development Items	Total
L-01	2014	Establish RNAV approaches and Install MALSR	650,000
L-02	2014	Hangar Development	450,000
L-03	2014	Install inner fence around AOA to improve security	1,419,600
L-04	2014	Terminal Rehabiliation - Phase II	1,100,000
L-05	2015	Master Plan Update	600,000
L-06	2015	Refurbish all runway and taxiway lighting	2,600,000
L-07	2015	Construct new electrical vault	520,000
L-08	2015	Terminal Rehabiliation - Phase II	1,100,000
L-09	2016	Construct Helicopter Pads	662,337
L-10	2016	Taxiway connector improvements (N of 9-27 and E of 18-36)	1,693,072
L-11	2017	Terminal Rehabiliation - Phase III	1,100,000
L-12	2017	Add Taxiway Fillets at S,M,K, L, & N	1,006,282
L-13	2018	Terminal Rehabiliation - Phase III	1,100,000
L-14	2019	Terminal Rehabiliation - Phase III	1,100,000
L-15	2019	Taxiway Rehabilitation	1,300,000
L-16	2020	Terminal Rehabiliation - Phase III	1,100,000
L-17	2020	Master Plan Update	600,000
L-18	2020	Widen Taxiways C,D,E, and F to 75' (additional 15')	803,088
L-19	2020	Straighten Taxiway C to create high-speed exit	328,900
L-20	2021	Terminal Rehabiliation - Phase III	1,100,000
L-21	2021	Construct by-pass taxiway for runway 9 and 27 (ADG-II, 75')	1,222,580
		Total Long-Term Projects	**21,555,859**

LONG-TERM PHASING PLAN (2014-2023)

LEGEND

- Proposed Airfield Improvements
- Existing Hangars/Terminal/Structures
- Proposed Buildings/Terminal Expansion

0 1000' 2000'

1"=1000' Approx.

L-03 L-19 L-02 L-18 L-10 (TYP.) L-07 L-06 L-09 L-21 L-01 L-06 L-12 L-21 L-04 L-11 L-16 L-08 L-13 L-20 L-14

CAPITAL CIRCLE S.W. (STATE ROAD 263)

NORTH GA APRON

SOUTH GA APRON

MAIN TERMINAL APRON

SOUTHSIDE CEMETERY

T/W B T/W A T/W C T/W D T/W E T/W F T/W G T/W H T/W K T/W J T/W Z T/W S (TYP.) T/W W T/W P T/W L T/W N

EXISTING RUNWAY 9-27 9,000' X 150' (FUTURE) TRUE BEARING: N 90° 00' 00" E

EXISTING PARALLEL RUNWAY 18-36 8,000' X 150'

RPZ

8-3

TALLAHASSEE REGIONAL AIRPORT

MASTER PLAN UPDATE

CIP Summary

Having presented the highlights of each of these development periods, a summary of the related financial needs for these projects is presented in **Table 8-4**. This combined development program will provide the facilities needed at TLH to meet the forecasted demands through the end of the 20-year planning period. This 20-year CIP is estimated to cost $113 million. These estimated costs were determined in 2005 dollars; thus, as time goes by these values should be adjusted for the annual inflation rate, which can be accomplished by converting the interim change in the National Consumer Price Index (CPI) into a multiplier ratio as shown by the formula:

CPI Multiplier Ratio = X / CPI

where: X = CPI in any given future year
CPI = National CPI in 2005

Multiplying the change ratio times any 2005 based cost or income figure presented in this study will yield the adjusted dollar amounts appropriate in any future year re-evaluation. However, only National CPI data should be used, as local or regional measures may vary. This information is available from the economic research departments of most banks.

Table 8-4
20-YEAR CAPITAL IMPROVEMENT PROGRAM

Development period	Project Costs
Short-Term	$ 42,273,815
Intermediate-Term	$ 53,701,207
Long-Term	$ 21,555,859
Total For 20 year CIP	$ 117,530,880

Source: LPA Group 2005

FUNDING SOURCES

To meet the anticipated need of $117 million in improvements, the City of Tallahassee's Aviation Department is able to draw from several funding sources in addition to Airport operating revenue. Given the high cost of Airport infrastructure improvements, the federal government has instituted several funding mechanisms to assist airports in meeting their facility needs. The other major source of funding available to airports is through the public agency operating the Airport to undertake debt, through either traditional bank loans or through the issuance of bonds. The availability of funds from these funding mechanisms, as well as others, is presented below.

Airport Improvement Program

The Airport Improvement Program (AIP) provides funding for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems (NPIAS). As mentioned previously, Tallahassee Regional Airport is classified in the NPIAS as a primary commercial service airport. This classification defines the funding category set up by Congress within which the Airport will be placed and

compete for federal funds to assist in Airport development. The goal of this funding is to develop and maintain a nationwide system of public-use airports adequate to meet current and projected growth of civil aviation.

The Airport and Airway Trust Fund, originally established by the Airport and Airway Revenue Act of 1970, generates funds through various aviation taxes, including a domestic passenger ticket tax, a passenger flight segment tax, a passenger ticket tax at rural airports, general aviation fuel tax, commercial fuel tax, international flight tax, and frequent flyer taxes, among others and apportions these revenues based on airport type. The current AIP legislation apportions both entitlement funds and discretionary funds. The distribution of entitlement funding at a primary airport, such as TLH, is apportioned based upon the number of enplanements, or passenger boardings, at the Airport. The base for the normal disbursement of funds are calculated as follows:

- ✈ $7.80 for each of the first 50,000 passenger boardings;
- ✈ $5.20 for each of the next 50,000 passenger boardings;
- ✈ $2.60 for each of the next 400,000 passenger boardings;
- ✈ $0.65 for each of the next 500,000 passenger boardings; and
- ✈ $0.50 for each passenger boarding in excess of 1 million.

Vision 100 – Century of Flight Authorization Act of 2003, which was signed into law on December 14, 2003, increased AIP funding from $3.4 billion to $3.7 billion through fiscal year 2007. Essentially, this legislation continued a doubling of the apportionment funding under a "Special Rule" for primary airports. Therefore, the following revenues per passenger enplanement were used as applicable to project anticipated funding at TLH through 2007.

- ✈ $15.60 for each of the first 50,000 passenger boardings;
- ✈ $10.40 for each of the next 50,000 passenger boardings;
- ✈ $5.20 for each of the next 400,000 passenger boardings;
- ✈ $1.30 for each of the next 500,000 passenger boardings; and
- ✈ $1.00 for each passenger boarding in excess of 1 million.

Additionally, airports with service by all-cargo carriers, which are defined as air carriers that only transport cargo, are awarded cargo entitlements through the AIP program. These funds are given out to airports based upon what percent the airport's activity is of the national total landed weight of cargo aircraft operations at all eligible airports.

Thus, in projecting AIP funding over the 20-year planning period, only passenger entitlements were assumed. According to AIP program guidance, entitlement determinations are based upon the enplaned passenger levels for the calendar year two years prior to the then current federal fiscal year. For example, calendar year 2002 levels are used to determine AIP entitlements for federal fiscal year 2004. As a measure of conservatism, it was assumed that the AIP would be authorized below the $3.2 billion minimum threshold required for the "Special Rule" to affect the doubling of AIP entitlements. As a result, the Airport's AIP entitlements from 2008 through the end of the Long-Term CIP were estimated based on the "normal" disbursement formula set forth above and are presented in **Table 8-5**.

Table 8-5
PROJECTED AIP/PFC REVENUE TOTALS (2005-2023)

Year	Enplanements *	AIP Total	PFC Total	Total
2005	538,289	$3,429,775.70	$2,422,300.50	$5,852,076.20
2006	558,158	$3,455,605.40	$2,511,711.00	$5,967,316.40
2007	565,401	$3,465,021.30	$2,544,304.50	$6,009,325.80
2008	572,643	$1,737,217.95	$2,576,893.50	$4,314,111.45
2009	579,885	$1,741,925.25	$2,609,482.50	$4,351,407.75
2010	587,127	$1,746,632.55	$2,642,071.50	$4,388,704.05
2011	604,361	$1,757,834.65	$2,719,624.50	$4,477,459.15
2012	621,596	$1,769,037.40	$2,797,182.00	$4,566,219.40
2013	638,830	$1,780,239.50	$2,874,735.00	$4,654,974.50
2014	656,065	$1,791,442.25	$2,952,292.50	$4,743,734.75
2015	673,299	$1,802,644.35	$3,029,845.50	$4,832,489.85
2016	695,154	$1,816,850.10	$3,128,193.00	$4,945,043.10
2017	717,008	$1,831,055.20	$3,226,536.00	$5,057,591.20
2018	738,863	$1,845,260.95	$3,324,883.50	$5,170,144.45
2019	760,717	$1,859,466.05	$3,423,226.50	$5,282,692.55
2020	782,572	$1,873,671.80	$3,521,574.00	$5,395,245.80
2021	804,426	$1,887,876.90	$3,619,917.00	$5,507,793.90
2022	826,281	$1,902,082.65	$3,718,264.50	$5,620,347.15
2023	848,135	$1,916,287.75	$3,816,607.50	$5,732,895.25
	2005-2023 FAA Revenues Total	**$39,409,927.70**	**$57,459,645.00**	**$96,869,572.70**

* Enplaned passengers given for the calendar year two years prior to the fiscal year. For example, for fiscal year 2005, the enplaned passengers are given for the calendar year of 2003.

Source: THE LPA GROUP INCORPORATED, 2005

In addition to entitlement funds, the FAA also distributes discretionary funding. Discretionary funding is made up of two types: "set-aside" funds and "remaining" funds. The "set-aside" funds are allocated for noise compatibility programs and the military airport program. The "remaining" discretionary funds are used primarily for projects that enhance capacity, safety, security, and noise compatibility programs at primary and reliever airports; however, a portion of these remaining discretionary funds are purely discretionary, which may be used for any eligible project at any airport.

Project eligibility for FAA AIP funding is based on guidelines set forth in FAA Order 5100.38B, which is entitled "The Airport Improvement Handbook." Generally, all airport improvement and development projects qualify for funding except for those facilities that generate revenues or those projects associated with revenue-producing facilities. Under most circumstances, projects at small and non-hub airports that qualify for AIP funding (except terminal development) are eligible for up to 90 percent of total project costs. The latest AIP authorizing legislation, Vision 100, raised the eligibility cap to 95 percent for airports classified as "small hub" or smaller through federal fiscal year 2007. In determining the eligible project costs, FAA eligibility rules were observed as well as a 95 percent federal share for all AIP projects. **Table 8-6** shows a detailed

listing of projects anticipated during the planning period and includes federal grant eligibility amounts as applicable.

Passenger Facility Charges

The Aviation Safety and Capacity Expansion Act of 1990 and Part 158 of the Federal Aviation Regulations sets forth the guidelines of the Passenger Facility Charge (PFC) Program, which authorizes commercial service airports to collect a PFC, which at that time was capped at $3.00 per revenue enplanement. PFCs are revenues generated from a charge imposed on enplaning revenue passengers, who have paid for their ticket instead of redeeming various flight vouchers or frequent flier points. These PFC funds are then used to finance capital improvements that have been identified by the City of Tallahassee's Aviation Department and approved by the FAA prior to PFC implementation. Current legislation allows up to a $4.50 PFC to be imposed on revenue passengers enplaning at an airport. The airline collecting the PFC is allowed to keep a handling fee to cover their program administration costs. This rate had initially been set at $0.08 per PFC collected; however, effective May 1, 2004, the airline handling fee was raised to $0.11 per PFC collected by the airline.

For the PFC projections in this study, calculations estimate revenue passengers equal to 95 percent of the Airport's projected enplanements as well as assuming a $0.12 airline handling fee per revenue passenger. Taking a somewhat conservative approach, a one-cent increase was added to the airline-handling fee used in this analysis to account for the unknown variable of refunded tickets. The anticipated levels of PFC revenues have been projected for TLH over the 20-year planning period and are shown in **Table 8-5**. These funds can be used to pay the annual debt service related to PFC eligible projects when approved by the FAA. In its PFC Application, the City of Tallahassee's Aviation Department anticipates collecting PFCs at the $4.50 level through the remainder of the planning period. The projected PFC collections shown in **Table 8-5** use enplanement numbers shown in the PFC applications through the year 2010. Estimated PFC collections beyond 2010 were estimated to illustrate the potential PFC funding available to City of Tallahassee's Aviation Department.

Local funding for projects is typically paid through airport reserves, project allocations, or through the City of Tallahassee's general fund. Although PFC revenues are often eligible as a source for local project funding, these funds are often not received until a project is either under construction or has been completed. Therefore, as PFC reimbursements are realized, local funding sources are reimbursed by the PFC collections.

Other Funding Options

As shown in **Table 8-4**, the City of Tallahassee's Aviation Department needs approximately $117 million to cover capital developments from 2004 through the end of the planning period, with over 75% of that amount (about $99.6 million) being needed within the first 10 years. It is prudent for the City of Tallahassee's Aviation Department to continue to seek other sources of funding in order to provide the necessary facilities in a timely manner. Other potential sources of funds, other than undertaking a greater debt burden amount, include non-conventional federal, state, and local government programs as well as private capital investments, some of which are identified below:

- ***State Agencies:*** In support of the State airport system, the Florida Department of Transportation (FDOT) also participates in the development of airport improvements. Presently, the State will contribute as much as 50 percent of the local share on federal eligible projects for airports in the State. The State will also provide up to 100% funding for security

projects and generally up to 50% funding for the development of revenue-generating facilities at commercial service airports that are otherwise ineligible for FAA AIP grants such as: hangar development, pay-parking areas, and fuel tanks/farms. Nearly $11 million in State participation is anticipated through the analysis projection period. With respect to discretionary grants, it is very difficult to predict reasonable levels that can be applied to the CIP given today's status concerning federal funding of airport-related capital projects. To the extent that projected discretionary grants are not received, the Airport may have to reevaluate the phasing of the CIP in the future.

- ***Private Sources:*** This group of potential funds could include private businesses as well as non-profit grant agencies. While private funding may not be available to make terminal or airfield improvements, private funds may be used to cover some development costs associated with larger corporate hangars or with the development of a business park. Funding in this category is likely to be limited, but the City of Tallahassee's Aviation Department should seek to identify potential funding sources.

Table 8-6 shows a detailed breakdown of all projects expected to occur during the planning period at TLH and includes the various grants and other funding sources that are anticipated from each sector.

Table 8-6

Tallahassee Regional Airport - Capital Improvement Program

Phasing / Identifier	Year	Development Items	Total Costs	Eligible Share of Development Costs*					
			Development Cost + Contingencies (30%)	Federal	State	PFC	Local	Private / Other Sources	Total
Short-Term Projects (2005-2008)									
S-01	2004	New Central GA Apron	1,820,735	1,729,698	45,518	45,518			1,820,735
S-02	2004	Runway & Taxiway Stormwater Management Project	1,514,868	1,439,125	37,872	37,872			1,514,868
S-03	2004	Taxiway P Overlay	1,495,708	1,420,923	37,393	37,393			1,495,708
S-04	2004	GA Taxiways Overlay	1,580,633	1,501,601	39,516	39,516			1,580,633
		Total 2004	**6,411,944**	**6,091,347**	**160,299**	**160,299**			**6,411,944**
S-05	2005	Construct Cargo Apron	7,003,751	6,653,563	175,094	175,094			7,003,751
S-06	2005	Construct Cargo Apron Access	499,120	474,164	12,478	12,478			499,120
S-07	2005	Terminal Building Rehab	2,140,000		800,000	1,140,000	200,000		2,140,000
S-08	2005	Bulk Hangar Rehab	200,000		100,000			100,000	200,000
S-09	2005	Hangar Development	750,000		375,000			375,000	750,000
S-10	2005	Interactive TV Training Program	250,000			250,000			250,000
S-11	2005	Maintenance Complex Improvements	300,000				300,000		300,000
		Total 2005	**11,142,871**	**7,127,727**	**1,462,572**	**1,577,572**	**500,000**	**475,000**	**11,142,871**
S-12	2006	Construct Canopy above fuel storage facility	78,000					78,000	78,000
S-13	2006	Terminal Building Rehab	1,740,000		400,000	1,140,000	200,000		1,740,000
S-14	2006	ADA Lift	30,000			30,000			30,000
S-15	2006	Terminal Security Improvements	1,050,000	997,500	26,250	26,250			1,050,000
S-16	2006	Terminal/Cargo Apron Lighting	164,000		82,000	82,000			164,000
S-17	2006	Expand Air Cargo Facility	1,450,000		725,000			725,000	1,450,000
		Total 2006	**4,512,000**	**997,500**	**1,233,250**	**1,278,250**	**200,000**	**803,000**	**4,512,000**
S-18	2007	Construct Wash Rack and Fuel Truck Parking	247,000					247,000	247,000
S-19	2007	Terminal Building Rehab	3,090,000		400,000	2,340,000	350,000		3,090,000
S-20	2007	Parking Facility Improvements	500,000		250,000			250,000	500,000
S-21	2007	Airfield Improvements Design	1,750,000			1,750,000			1,750,000
S-22	2007	GA Access Road Improvements	1,500,000			1,500,000			1,500,000
S-23	2007	Wayfinding Signage	500,000			500,000			500,000
		Total 2007	**7,587,000**		**650,000**	**6,090,000**	**350,000**	**497,000**	**7,587,000**
S-24	2008	South Apron Rehab	1,000,000	900,000	50,000	50,000			1,000,000
S-25	2008	Terminal Building Rehab - Ph II	1,100,000		110,000	990,000			1,100,000
S-26	2008	Hangar Development	1,000,000		500,000			500,000	1,000,000
S-27	2008	Parking Facility Improvements	1,200,000		600,000			600,000	1,200,000
S-28	2008	Airport Security System Update	1,250,000	981,250	18,750	250,000			1,250,000
S-29	2008	Runway 18-36 Extension EA and Preliminary Design	2,800,000			2,800,000			2,800,000

Table 8-6

Tallahassee Regional Airport - Capital Improvement Program

			Total Costs	Eligible Share of Development Costs*					
Phasing / Identifier	**Year**	**Development Items**	**Development Cost + Contingencies (30%)**	**Federal**	**State**	**PFC**	**Local**	**Private / Other Sources**	**Total**
S-30	2008	Terminal Apron Access	1,200,000	1,080,000	60,000	60,000			1,200,000
S-31	2008	ARFF Vehicle Replacement	1,500,000			1,500,000			1,500,000
S-32	2008	Runway Vacuum Truck Procurement	200,000			200,000			200,000
S-33	2008	Expand Air Cargo Facility	870,000			435,000		435,000	870,000
S-34	2008	Electronic "Smart" ALP	500,000			500,000			500,000
		Total 2008	**12,620,000**	**2,961,250**	**1,338,750**	**6,785,000**		**1,535,000**	**12,620,000**
Intermediate-Term Projects (2009-2013)									
I-01	2009	Hangar Infrastructure and Taxilane Development	1,560,000	1,404,000	78,000	78,000			1,560,000
I-02	2009	Extend Lively Apron	322,377					322,377	322,377
I-03	2009	Terminal Building Rehab - Ph II	1,100,000		110,000	990,000			1,100,000
I-04	2009	ATCT Improvements	800,000	720,000	40,000	40,000			800,000
I-05	2009	Blast Fence	500,000	450,000	25,000	25,000			500,000
I-06	2009	North Apron Rehabilitation	810,500	729,450	40,525	40,525			810,500
I-07	2009	Old Terminal Apron Rehabilitation	1,210,750	1,089,675	60,538	60,538			1,210,750
I-08	2009	Terminal Apron Expansion	1,250,000	1,125,000	62,500	62,500			1,250,000
I-09	2009	In-Line Baggage Handling System	5,000,000			5,000,000			5,000,000
		Total 2009	**12,553,627**	**5,518,125**	**416,563**	**6,296,563**		**322,377**	**12,553,627**
I-10	2010	Terminal Building Rehab - Ph II	1,100,000		110,000	990,000			1,100,000
I-11	2010	Air Carrier Apron Rehabilitation	920,000	828,000	46,000	46,000			920,000
I-12	2010	Stormwater Master Plan	1,000,000	950,000	25,000	25,000			1,000,000
		Total 2010	**3,020,000**	**1,778,000**	**181,000**	**1,061,000**			**3,020,000**
I-13	2011	Terminal Building Rehab - Ph II	1,100,000		110,000	990,000			1,100,000
I-14	2011	Taxiway S Improvements	1,122,000	1,009,800	56,100	56,100			1,122,000
I-15	2011	Taxiway P to A Bypass connector	1,326,000	1,193,400	66,300	66,300			1,326,000
I-16	2011	Taxiway Z Improvements	562,500	506,250	28,125	28,125			562,500
I-17	2011	GA Access Road Improvements	500,000	475,000	12,500	12,500			500,000
I-18	2011	South GA Apron Expansion	2,025,000	1,822,500	101,250	101,250			2,025,000
I-19	2011	Master Plan Update	500,000		250,000	250,000			500,000
I-20	2011	Airfield Lighting Improvements	612,500	551,250	30,625	30,625			612,500
I-21	2011	Airfield Signage Improvements	612,500	551,250	30,625	30,625			612,500
I-22	2011	Loading Bridge and Gate Additions	3,000,000			3,000,000			3,000,000
		Total 2011	**11,360,500**	**6,109,450**	**685,525**	**4,565,525**			**11,360,500**
I-23	2012	Terminal Rehabilitation - Phase II	1,100,000		110,000	990,000			1,100,000
I-24	2012	Runway 18-36 Extension	12,000,000		300,000	11,700,000			12,000,000
I-25	2012	Runway 18-36 Rehabilitation	1,683,000	1,514,700	84,150	84,150			1,683,000
I-26	2012	Crisis/Command Center	300,000	270,000	15,000	15,000			300,000
I-27	2012	Expand New Terminal Building	1,200,000		450,000	750,000			1,200,000
I-28	2012	Foreign Trade Zone	177,000		88,500			88,500	177,000
I-29	2012	Relocate Remote Transmitter / Receiver	750,000	675,000	37,500	37,500			750,000

Table 8-6

Tallahassee Regional Airport - Capital Improvement Program

			Total Costs	Eligible Share of Development Costs*					
Phasing / Identifier	**Year**	**Development Items**	**Development Cost + Contingencies (30%)**	**Federal**	**State**	**PFC**	**Local**	**Private / Other Sources**	**Total**
I-30	2012	Runway 9-27 Reconstruction (Permitting and Design)	700,000	630,000	35,000	35,000			700,000
I-31	2012	Airport Stormwater Improvements	1,000,000	900,000	50,000	50,000			1,000,000
		Total 2012	**18,910,000**	**3,989,700**	**1,170,150**	**13,661,650**		**88,500**	**18,910,000**
I-32	2013	Install MITL along Taxiway P	457,080	411,372	22,854	22,854			457,080
I-33	2013	Terminal Rehabilitation - Phase II	1,100,000		110,000	990,000			1,100,000
I-34	2013	Runway 9-27 Reconstruction	5,800,000	5,220,000	290,000	290,000			5,800,000
I-35	2013	Runway 9-27 Reconstruction (Taxiway Improvements)	500,000	450,000	25,000	25,000			500,000
		Total 2013	**7,857,080**	**6,081,372**	**447,854**	**1,327,854**			**7,857,080**
Long-Term Projects (2014-2023)									
L-01	2014	Establish RNAV approaches and Install MALSR	650,000	585,000	32,500	32,500			650,000
L-02	2014	Hangar Development	450,000		225,000			225,000	450,000
L-03	2014	Install inner fence around AOA to improve security	1,419,600		1,419,600				1,419,600
L-04	2014	Terminal Rehabiliation - Phase II	1,100,000		110,000	990,000			1,100,000
L-05	2015	Master Plan Update	600,000	540,000	30,000	30,000			600,000
L-06	2015	Refurbish all runway and taxiway lighting	2,600,000	2,340,000	130,000	130,000			2,600,000
L-07	2015	Construct new electrical vault	520,000	468,000	26,000	26,000			520,000
L-08	2015	Terminal Rehabiliation - Phase II	1,100,000		110,000	990,000			1,100,000
L-09	2016	Construct Helicopter Pads	662,337	596,103	33,117	33,117			662,337
L-10	2016	Taxiway connector improvements (N of 9-27 and E of 18-36)	1,693,072	1,523,765	84,654	84,654			1,693,072
L-11	2017	Terminal Rehabiliation - Phase III	1,100,000		110,000	990,000			1,100,000
L-12	2017	Add Taxiway Fillets at S,M,K, L, & N	1,006,282	905,654	50,314	50,314			1,006,282
L-13	2018	Terminal Rehabiliation - Phase III	1,100,000		110,000	990,000			1,100,000
L-14	2019	Terminal Rehabiliation - Phase III	1,100,000		110,000	990,000			1,100,000
L-15	2019	Taxiway Rehabilitation	1,300,000	1,170,000	65,000	65,000			1,300,000
L-16	2020	Terminal Rehabiliation - Phase III	1,100,000		110,000	990,000			1,100,000
L-17	2020	Master Plan Update	600,000	540,000	30,000	30,000			600,000
L-18	2020	Widen Taxiways C,D,E, and F to 75' (additional 15')	803,088	722,779	40,154	40,154			803,088
L-19	2020	Straighten Taxiway C to create high-speed exit	328,900	296,010	16,445	16,445			328,900
L-20	2021	Terminal Rehabiliation - Phase III	1,100,000		110,000	990,000			1,100,000
L-21	2021	Construct by-pass taxiway for runway 9 and 27 (ADG-II, 75')	1,222,580	1,100,322	61,129	61,129			1,222,580
		Total (2014-2023)	**21,555,859**	**10,787,633**	**3,013,913**	**7,529,313**		**225,000**	**21,555,859**

FINANCIAL FEASIBILITY ASSESSMENT

The previous discussion has focused on the needed developments at TLH over the 20-year planning period. Several sources of funding are being considered to cover the expense of Airport capital development costs. Although a cash flow assessment was conducted for the entire planning period, the financial feasibility component focuses primarily on the initial 10 years of the planning period. The purpose of this assessment was to generally assess the Airport's ability to fund the previously discussed CIP through 2013. This assessment assumes that the maximum discretionary AIP funds are received for those projects meeting FAA AIP eligibility requirements, except as noted above for the initial short-term period. Therefore, the City of Tallahassee's Aviation Department would only be responsible for those amounts related to the local share match for AIP projects and for non-AIP eligible project costs.

CASH FLOW ANALYSIS

The first step in this financial assessment was to compile information related to historical income and expenditures at TLH. Using this data as a starting point, future revenue and expenditures were then estimated through 2023. The data reflects TLH's fiscal year, which runs from October 1 of the prior year to September 30 of the current fiscal year. The starting values for 2004 were obtained from City of Tallahassee staff and were based upon the budget adopted by the City Commission. Descriptions of each category as well as the assumptions that were made regarding each category's future growth are discussed below.

Operating Revenue

There are a variety of businesses located at TLH that pay rent based upon either building or land area occupied, or commissions based upon the amount of gross revenue the company collects. Key items under this heading include FBO's, rental car, fuel flowage, public parking, interest income and terminal concessions. General aviation revenue for land rentals, hangar rentals, and aircraft parking are collected from the fixed base operator (FBO). Airport staff originally provided a worksheet showing forecasted operational revenues through the year 2010. In order to anticipate increased revenues and to account for inflation, a growth rate of 2% was applied to the existing forecast through the year 2023.

Operating Expenses

Operating and maintenance (O&M) expenses relate to the general day-to-day operational costs and the necessary maintenance that is required to keep Airport facilities in good operating order. For budgetary purposes, these expenses are spread among the operating departments of the Airport. These departments include administration, Airport services, janitorial/maintenance, operations and public safety. Over the historical period, these expenses were increased at a rate of 2 percent annually. Future projections begin in 2011 and continue through the remainder of the planning period.

Distribution of Remaining Funds

The distribution of remaining funds group consists of funds that are being transferred to and from various accounts within the budget program. The recently amended Airline/Airport Use Agreement specifies that 40% of the operating fund's remaining balance be transferred to the RR&I (Renewal, Replacement, and Improvement) fund, and the remaining 60% be transferred to the prepaid fees

credit account. The recently amended Airline Use Agreement was revised to help resolve any deficits that would otherwise require contribution from the airlines. For this reason, the prepaid fees credit account denotes a zero through the remainder of the planning period. Prior year RR&I funds in the distribution are transferred into the following year RR&I fund (transfers in from operating account).

Renewal, Replacement, and Improvement Fund (RR&I Fund)

The RR&I Fund is an allocation used to pay for unanticipated expenditures that may occur throughout the fiscal year. These expenditures include unplanned projects, faulty equipment, emergency repairs, or other types of repairs and improvements that are perhaps not eligible for federal funding assistance. The prior year RR&I balance rolls over to the following year beginning balance. As pointed out earlier, 40% of the prior year operating fund balance is transferred into the current year RR&I fund. If required, a portion of these funds may also be used to cover operating expense deficits or to cover the local match portion of capital improvement projects.

Capital Funds

The Capital Funds category includes the various funding sources used to pay for the mixture capital projects that have been previously identified in this chapter. A majority of the sources indicated consist of grant funding obtained from both federal and state sources. However, private investment and transfers from the RR&I account are allocated in this category as well. Due to the Airport's stable financial position, future Airport debt was not anticipated and is therefore not shown.

Capital Projects

Another major category of annual expenditures pertains to the development and purchase of capital items. At TLH, these costs are related to major facility improvements to existing structures or to the construction of new buildings as well as the purchase of higher priced equipment, such as ARFF vehicles. The capital projects total from each year was taken from Capital Improvement Program shown in **Table 8-6**.

Debt

Although many projects listed in the CIP program are eligible to receive grant funding from state and/or federal agencies, almost all projects require a portion of funding to be provided through one of the airport's local funding mechanisms. During times when the airport lacks the required capital, local funds may be obtained from alternate sources such as the City's general fund or through revenue bonds. Similar to other types of loans, both the City's general fund and revenue bonds require repayment including accrued interest charges. Larger projects that require substantial local contributions will likely favor bond financing in order to prevent a strain on local government's finances. General Airport Revenue Bonds (GARBs) are the typical instrument used during these circumstances. The GARBs rely on revenues generated by the airport and/or PFCs to pay the debt service and interest on bonds.

As pointed out earlier, the various projects listed in **Table 8-6** show the total project costs along with the respective amount of funding anticipated from each agency during each year. The remaining balances, those not eligible for grants or PFCs, are paid for by local or private funding sources. In order to obtain a vision of

what impact future CIP projects have on airport finances, revenues obtained from state, local, and private sources were incorporated into the Capital Funds Sources column of the Cash Flow Analysis Worksheet, **Table 8-7**. Local funds, if required, were transferred from the Airport RR&I account to cover the remainder of CIP program sources. An evaluation of the Cash Flow Analysis Worksheet reveals that the Airport can pursue all planned projects shown in the CIP without experiencing a negative balance. Conversely, the ending balance will continue to grow from $4,080,486 in 2005 to $12,552,911 by the year 2023. Thus, despite the many projects necessary to meet demand projections, the Airport finances will remain stable and growing throughout the planning period. **Table 8-7** shows a detailed view of Airport finances through the year 2023.

Table 8-7
CIP Cash Flow Analysis Worksheet (FY 2005 - FY 2023)
Tallahassee Regional Airport

	Actual 2004	Forecast Period 2005	2006	2007	2008	2009	2010	2011	2012	2013	2014-2023
ENPLANEMENTS	584,714	555,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000	560,000
OPERATING REVENUE											
Airline Fees	4,860,240	5,294,838	4,762,105	4,874,072	4,935,663	4,936,382	4,898,810	$ 4,996,786	$ 5,096,722	$ 5,198,656	$ 57,705,086
Fuel Flowage	237,518	283,000	300,000	300,500	301,000	301,500	302,000	308040	314201	320485	$ 3,557,381
Rents, Fees and Concessions	5,451,654	4,940,403	5,584,678	5,660,817	5,711,814	5,763,670	5,712,033	5,826,274	5,942,799	6,061,655	$ 67,284,372
Interest Income	44,135	70,000	45,000	45,000	45,000	50,000	50,000	50,000	50,000	55,000	$ 610,500
Other Income	109,061	0	9,415	2,575	2,575	2,575	6,439	6,568	6,699	6,833	69,698
Total Operating Revenue	**10,702,608**	**10,588,241**	**10,701,198**	**10,882,964**	**10,996,052**	**11,054,127**	**10,969,282**	**11,187,668**	**11,410,421**	**11,642,629**	**129,227,037**
OPERATING EXPENSES											
Personnel Services	3,603,702	3,748,609	4,041,300	4,176,059	4,285,255	4,398,028	4,517,147	4,607,490	4,699,640	4,793,633	48,895,052
Operating & Maintenance Expenses	4,101,675	4,592,829	4,527,602	4,601,580	4,740,044	4,821,972	4,891,490	4,989,320	5,089,106	5,190,888	52,947,061
Debt Service [Bonds; Notes, etc.]	1,388,762	1,276,363	1,273,238	1,274,738	1,275,738	1,272,338	1,271,338	1,273,959	1,273,959	1,273,959	12,735,484
Total Operating Expenses	**9,094,139**	**9,617,801**	**9,842,140**	**10,052,377**	**10,301,037**	**10,492,338**	**10,679,975**	**10,870,769**	**11,062,705**	**11,258,480**	**114,577,597**
Net Operating Income/(Loss)	**1,608,469**	**970,440**	**859,058**	**830,587**	**695,015**	**561,789**	**289,307**	**316,899**	**347,716**	**384,150**	**14,649,440**
Distribution of Remaining Funds:											
RR & I Fund	669,886	388,176	343,623	332,235	278,006	224,716	115,723	126,760	139,086	153,660	5,859,776
Prepaid Fees Credit	938,583	582,264	515,435	498,352	417,009	337,073	173,584	190,139	208,630	230,490	8,789,664
Total Distribution	**1,608,469**	**970,440**	**859,058**	**830,587**	**695,015**	**561,789**	**289,307**	**316,899**	**347,716**	**384,150**	**14,649,440**
RR & I Fund:											
Beginning Balance - Undesignated	2,880,227	3,576,225	4,080,486	4,603,038	4,931,036	5,597,646	6,210,028	6,734,743	7,150,466	7,577,226	8,016,312
Transfers In - Reimbursements [TSA]	0	34,375	34,375	34,375	34,375	34,375	0	0	0	0	0
Transfers In - from Operating Fund	395,998	669,886	388,176	343,623	332,235	278,006	224,716	115,723	126,760	139,086	1,536,599
Transfers Out - to Operating Fund	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,000,000
Transfers Out - to Capital Programs	0	-500,000	-200,000	-350,000	0	0	0	0	0	0	0
Ending Balance - Undesignated	**3,576,225**	**4,080,486**	**4,603,038**	**4,931,036**	**5,597,646**	**6,210,028**	**6,734,743**	**7,150,466**	**7,577,226**	**8,016,312**	**12,552,911**
CAPITAL FUNDS - SOURCES											
Passenger Facility Charge Draws	160,299	1,577,572	1,278,250	6,090,000	6,785,000	6,296,563	1,061,000	$ 4,565,525	$ 13,661,650	$ 1,327,854	$ 7,529,313
FAA Grant Draws	6,091,347	7,127,727	997,500	0	2,961,250	5,518,125	1,778,000	$ 6,109,450	$ 3,989,700	$ 6,081,372	$ 10,787,633
FL/DOT - Grant Draws	160,299	1,462,572	1,233,250	650,000	1,338,750	416,563	181,000	$ 685,525	$ 1,170,150	$ 447,854	$ 3,013,913
Private Investment	0	475,000	803,000	497,000	1,535,000	322,377	0	$ -	$ 88,500	$ -	$ 225,000
Airport Future Debt	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Airport RR&I - Transfers (Local funds)		500,000	200,000	350,000	0	0	0	$ -	$ -	$ -	$ -
Total - CIP Program Sources	**6,411,944**	**11,142,871**	**4,512,000**	**7,587,000**	**12,620,000**	**12,553,627**	**3,020,000**	**11,360,500**	**18,910,000**	**7,857,080**	**21,555,859**
CAPITAL PROJECTS											
Total - CIP Program Uses	**6,411,944**	**11,142,871**	**4,512,000**	**7,587,000**	**12,620,000**	**12,553,627**	**3,020,000**	**11,360,500**	**18,910,000**	**7,857,080**	**$ 21,555,859**

Assumptions:

Data Source: FY2006 Proposed Operating & CIP
Enplanements are held constant during Forecast Period.
The proposed budget is at current service levels with no inflationary increase applied except where contractual obligations require adjustments.
Salary Enhancements are recommended at 4% for FY 2006 and at 3% for FY07 through FY10
Revenue reflects actual projections based on lease contracts currently in place.
Distribution of remaining operating funds [in accordance with amended Airline/Airport Use Agreement] is at 40% to RR&I and 60% to Prepaid Fee Credit through FY 2009
CIP financed through FAA, FDOT, and PFC funds with minimal contribution from Airport RR&I Fund.

CONCLUSION

TLH is a significant economic catalyst for the panhandle of Florida and surrounding areas and provides essential aviation service to meet community demand; therefore, it is important that the City of Tallahassee be able to undertake the CIP discussed herein so that it can continue to provide these necessary services to the community. Based on the general financial assessment presented in this section, TLH is in a financially stable position regarding operating revenue and expenditures and will actually accrue a surplus of funds by the end of the planning period. As discussed earlier, the actual implementation schedule for the capital projects identified in the CIP may need to be adjusted according to development triggers and the actual demand experienced. As the Airport seeks to move forward with these developments, more detailed financial analyses will be required to take into account the actual financial situation of the Airport at that time. The actual funding for specific projects will be determined as implementation becomes more imminent, and will depend on the Airport's development schedule, its financial health, and the overall local economic conditions.