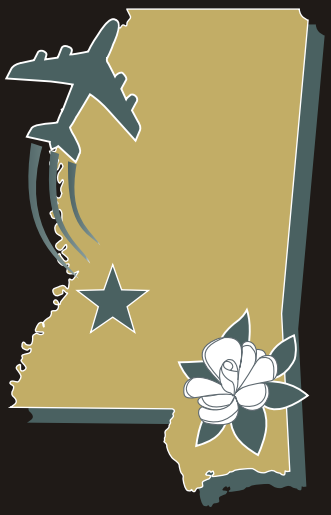
Jackson International Airport

MASTER PLAN UPDATE/PART 150



prepared for
Jackson Municipal Airport Authority

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Section One

INTRODUCTION

Jackson International Airport (JIA), located in the heart of Mississippi, is a vital link to the national airport system that provides air service to the surrounding areas in central Mississippi. It serves as a major economic catalyst for the City of Jackson and the surrounding counties of Hinds, Rankin, and Madison.

Dedicated in 1963, the airport formerly known as "Thompson Field" has sustained a gradual growth and remained an important asset to area economy. In September of 1992, *g.c.r. & associates* completed a Master Plan Update and Land Use Compatibility Study for Jackson International Airport outlining various objectives necessary to properly inventory the economic development potential of the airport and assess the airport's compatibility with surrounding land uses. The airport is know embarking on an aggressive strategy to update the airport's Master Plan due to economic changes within the local economy and increased air travel at the airport.

The Mission Statement of the Jackson Municipal Airport Authority:

> *"The role and importance of the airport in economic development and community service has been demonstrated and cannot be disputed. For a community to flourish, it must have an efficient, progressive, and successful airport."*

The airport, which is operated by the Jackson Municipal Airport Authority, is located in Rankin County six miles east of the downtown area. The authority also manages a general aviation facility known as Hawkins Airport, which is located in downtown Jackson. JIA covers approximately 3,900 acres of land within the city of Jackson. The airport is bounded by residential, commercial and industrial development on the northwest, northeast and south sides. The western and eastern sides are primarily undeveloped properties (see **Exhibit 1-1**).

Purpose of This Study

The first master plan update in 1992 documented recommended needed improvements to various facilities and properties located around the airport. This Master Plan Update addresses short-term, intermediate, and long-term needs through an evolutionary planning process with phased alternatives that accommodate projected increases in passengers, aircraft operations and related activities through the year 2020.

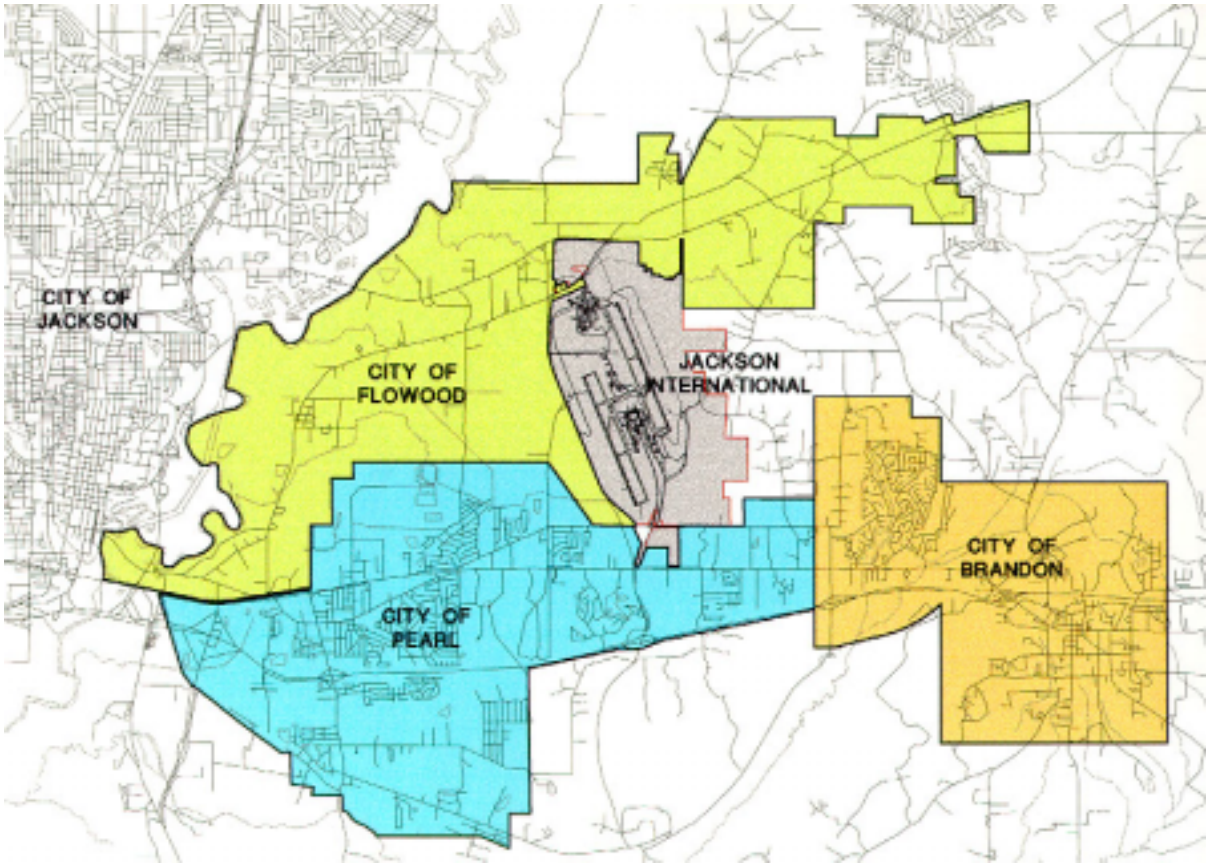


Exhibit 1-1 Airport Map

Goal

The goal of the Master Plan Update is to establish a planning framework to guide and integrate the on-going and future operational and developmental priorities of the air service program and land development at Jackson International Airport. The consultant team established the goal with input from the Airport staff, members of the Jackson Municipal Airport Authority and FAA representatives.

Objectives

Achieving the goal largely depends on the effectiveness of established objectives. The objectives link the technical response or "action agenda" of the planning alternatives and concepts to the defined goal. In general, the primary objectives provide a broad overview of the functional areas of the Airport complex. The objectives used for this study are more clearly defined by specific tasks that were performed by members of the consultant team. These tasks form the basis of the research and analysis of this study. The three primary objectives used to direct this study are outlined below:

Objective #1: Develop planning alternatives and concepts to establish a safe, reliable and convenient airport environment.

- Accommodate Forecasted Aviation Demand
- Identify Constraints
- Minimize Aircraft Delays
- Identify Funding Scenarios
- Identify Terminal Capacity
- Provide for Future Capacity

Objective #2: Develop planning alternatives and concepts to establish a safe, reliable and convenient landside area.

- Document Existing Facility Conditions
- Identify Airport Systems
- Accommodate Forecasted Passenger Demand
- Identify Constraints
- Improve Ground Access
- Identify Funding Scenarios

Objective #3: Develop planning alternatives and concepts to establish compatible airport development initiatives with local, state, and federal policies and plans.

- Minimize Environmental Incompatibility
- Enhance Airport/Community Relations
- Design and Support Noise Reduction Programs
- Stimulate Economic Development

Methodology

The methodology utilized in conducting this study follows the FAA guidelines established in *Advisory Circulars (AC) 150/5070-6A, Airport Master Plans, AC 150/5300-13, Airport Design, and AC 150/5360-13, Planning and Design Guidelines for Airport Terminal Facilities*. Planning techniques include analyzing the existing conditions of the two functional areas of the Airport complex: the landside and airside requirements.

- *Performing an inventory of existing conditions, regulations, and other air service impact issues,*
- *Developing aviation activity demand forecasts to conduct demand-capacity analysis,*
- *Determining adequacy of existing facilities through identification of known deficiencies in areas incapable of servicing existing demand,*
- *Establishing development concepts and standards for level of service to accommodate projected growth,*
- *Reviewing environmental constraints and concerns relating to existing conditions and proposed development,*
- *Developing a financial plan with scheduled priorities and funding scenarios that anticipates short-term, intermediate, and long term development, and*
- *Creating a set of Airport Layout Plan (ALP) drawings that identifies the preferred airside and landside improvements.*

Section Two
MARKET ASSESSMENT AND AVIATION DEMAND FORECASTS

JMAA Market Assessment and Comparison

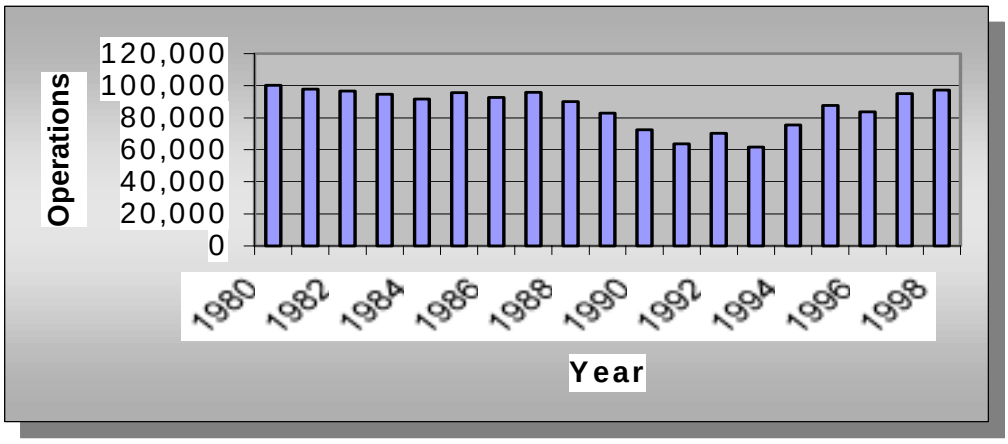
In order to compare the Jackson air service market to other key U.S. markets, the proper definition of the existing market was first established. For purposes of this analysis, the air service market has been defined by its facilities, operations, demographics, air service (passengers, city-pair markets, flights), and domestic cargo movements. These factors are detailed below.

Facilities

According to the FAA's National Plan of Integrated Airport System Plan of 1991-1999 Jackson International Airport is the primary commercial service airport for the metropolitan Jackson area (Hinds, Rankin, and Madison Counties) including the counties of: Leake, Scott, Smith, Simpson, Copiah, Claiborne, Warren, and Yazoo. Hawkins Field, in the City of Jackson, serves as the areas General Aviation airport.

Operations are defined as the number of aircraft arriving and departing the airport. One operation can either be an arrival or a departure, and can be by any type of aircraft. **Exhibit 2-1** illustrates the total operational level at Jackson International Airport between 1980 and 1998.

Exhibit 2-1
JMAA Total Aircraft Operations (1980-1998)



Source: Data provided by the Terminal Area Forecast – FAA/APO, 1998.
Analysis by g.c.r. & associates, inc.

As shown, total aircraft operations were higher during the early 1980's compared to 1994 and the several years proceeding. The high volume in the early eighties is mostly attributed to strong general aviation activity nationwide. The decrease in general aviation activity experienced at JIA over these years is indicative of trends experienced nationwide.

Air carrier activity in 1997 was approximately the same level as in the early 1980's, although 1996 was a record year for passenger enplanements. This apparent contradiction is the result of airlines operating much more efficiently than a decade ago, and thus load factors (the percentage of airline seats occupied by passengers) are considerably higher. This means that presently fewer aircraft are required to transport more passengers than a decade ago.

Load factors have stabilized over the last several years and are not expected to increase significantly in the near future. As a result, forecast passenger increases should result directly in air carrier operational increases, adjusted only by changes in the mix of the aircraft fleet serving the passengers.

Demographics

According to the 1990 U.S. Census, the Jackson Metropolitan Statistical Area (MSA), encompassing approximately 2,393 square miles, includes 395,396 residents living in Hinds, Rankin, and Madison counties, this area is classified by the Census Bureau as the contiguous metropolitan geographic region of Jackson. As of 1997, the U.S. Census statistics put the Jackson MSA population at 421,068.

For purposes of this analysis, a number of key demographic measures were selected to assess the strength of the Jackson air service market in comparison to other competing air service markets. The selected demographic factors include total persons in the MSA, to represent the primary market size; households, also representing the size of the market; income, to represent the relative strength of the market; education level less than ninth grade and level of bachelor and graduate/professional degrees, to represent the educational level of the market; health, educational, and professional services industries to represent the level of relatively high air travel industry employment; and executive and professional occupations, also to reflect the level of relatively high air travel demand occupations. The particular characteristics of the Jackson MSA are shown in **Table 2-1.**

Table 2-1: Jackson MSA Demographic Profile (1990)

Category	Count	% of Total
Persons	395,396	
Households	139,571	
Urban Persons	299,261	
Med. Family Income	$31,575	
Per Capita Income	$12,311	
Education Less than Grade 9	25,102	6.4%
Persons Holding Bachelors Degrees	43,673	11%
Persons Holding Graduate/Professional Degrees	20,864	5.3%
Persons Employed in Health Services	19,480	5.0%
Persons Employed in Educational Services	18,072	4.6%
Persons Employed in Professional Services	13,641	3.5%
Persons in Executive/Professional Positions	50,503	12.8%

Source: *1990 Census Statistics*, U.S. Census Bureau, U.S. Department of Commerce.

Using ArcView Geographical Information Systems (GIS) Software, a query of all counties within a 50-mile radius of the Jackson International Airport was conducted. This illustrates the population beyond the actual MSA geographic boundaries, which would be considered part of the primary air service market area for Jackson International Airport. The population, population density, and total housing units for all counties that are touched by the fifty-mile radius are as follows in **Table 2-2**:

Table 2-2: Demographics within 50 Miles of JIA (1990)

County Name	Population	Pop/Sq. Mi.	Housing Units
Attala	18,481	25.08	7,674
Claiborne	11,370	23.02	4,099
Copiah	27,592	35.42	10,260
Covington	16,527	39.73	6,535
Hinds	254,441	290.79	99,860
Holmes	21,604	28.46	7,972
Humphreys	12,134	28.22	4,231
Issaquena	1,909	4.7	698
Jefferson Davis	14,051	34.35	5,336
Lawerence	12,458	28.64	5,160
Leake	18,436	31.57	7,614
Lincoln	30,278	51.58	12,133
Madison	53,794	74.92	20,761
Rankin	87,161	111.46	31,872
Scott	24,137	39.57	9,488
Sharkey	7,066	16.24	2,290
Simpson	23,953	40.53	9,374

Smith		14,798	23.30	5,850
Warren		47,880	80.34	19,512
Yazoo		25,506	27.34	9,549
	Totals	**723,576**	**1,035**	**280,268**

Source: *1990 Census Statistics*, U.S. Census Bureau, U.S. Department of Commerce.

In order to assess the potential air service market of Jackson, a comparison of competing market areas was conducted. This comparison illustrates the relative strength of Jackson air service market in relation to other markets, which have both greater and lesser air services to that market. The markets were selected because their airports were considered non-hub airports. Hub airport markets, such as Dallas/Ft. Worth and Atlanta were excluded because the size of the hub rendered a comparison to Jackson less than significant.

Table 2-3 illustrates the markets selected for this comparison, the nature of the airport (hub or non-hub), and which airline is the dominant airline, if any.

Table 2-3: Airports Selected for Comparison

MSA		Airport Type	Dominant Airline
Mid-Continent	KS	Non-Hub	United, American
Savannah Intl	GA	Non-Hub	Delta
Portland	ME	Non-Hub	US Airways
Lubbock Intl	TX	Non-Hub	Southwest
Madison	WI	Non-Hub	Northwest
Palm Springs	CA	Non-Hub	American, Alaska
Columbia Metro	SC	Non-Hub	Delta
Pensacola Reg	FL	Non-Hub	Delta
Manchester	NH	Non-Hub	U.S. Airways
Westchester County	NY	Non-Hub	United, U.S. Airways
Midland Intl	YX	Non-Hub	Southwest
Islip (MacArthur)	NY	Non-Hub	N/A
Lexington	KY	Non-Hub	Delta
Fresno Air Term	CA	Non-Hub	Delta, Reno Air
South Bend	IN	Non-Hub	Delta, United
Madison County	AL	Non-Hub	American
Myrtle Beach Intl	SC	Non-Hub	U.S. Airways

Source: ***Origin and Destination Database*****, U.S Department of Transportation.**

Table 2-4 illustrates the total population, households, housing units, and urban population of the Jackson MSA compared to the competing markets. As shown, Jackson MSA ranks fifth in total population out of the fourteen markets selected.

Table 2-4: Person and Housing Demographics Comparison (1990)

MSA	Persons	Households	Housing Units	Urban Persons
Fresno, CA	667,490	221,133	235,563	554,298
Baton-Rouge, LA	528,261	188,297	212,078	384,326
Wichita, KS	485,270	187,099	202,521	403,565
Columbia, SC	453,331	163,407	177,120	341,040
Jackson, MS	395,396	139,571	152,229	299,261
Madison, WI	367,085	142,321	147,851	293,308
Lexington, KY	348,428	134,039	145,229	282,146
South Bend, IN	247,052	92,171	97,956	214,194
Pensacola, FL	344,406	128,776	145,061	262,066
Savannah, GA	242,622	89,701	100,670	208,581
Huntsville, AL	238,912	91,361	97,855	186,609
Midland/Odessa, TX	225,545	81,363	93,170	205,675
Lubbock, TX	222,636	81,362	91,770	194,810
Manchester, NH	147,867	56,645	61,475	119,078

Source: *1990 Census Statistics*, U.S. Census Bureau, U.S. Department of Commerce.

Table 2-5 illustrates the level of education attained for the population of the MSA's selected for comparison. The total persons with bachelor degrees and graduate/professional degrees, along with a total of both, are shown. The percentage of each category in relation to the total population of the MSA is also shown. As shown, the Jackson MSA ranks fifth in terms of percent with completed college education.

Table 2-5: Advanced Education Level Comparison (1990)

MSA	Bachelors	%	Grad./Prof.	%	Total College	%
Madison, WI	53,667	14.6%	30,871	8.4%	109,186	29.7%
Huntsville, AL	33,727	14.12%	14,656	6.1%	59,315	24.8%
Columbia, SC	53,240	11.7%	24,671	5.4%	102,481	22.6%
Lexington, KY	38,738	11.1%	21,906	6.2%	73,815	21.1%
Jackson, MS	43,673	11.05%	20,864	5.3%	82,881	20.9%
Manchester, NH	15,431	10.44%	6,731	4.6%	30,862	20.9%
Lubbock, TX	23,001	10.3%	10,591	4.7%	41,055	18.4%
Pensacola, FL	29,996	8.7%	12,881	3.7%	62,320	18%
Wichita, KS	48,657	10.03%	20,383	4.2%	86,498	17.8%
South Bend, IN	20,102	8.1%	12,706	5.1%	42,120	17%
Baton-Rouge, LA	49,261	9.3%	24,886	4.7%	84,850	16%
Fresno, CA	49,100	7.4%	19,499	3%	100,581	15%
Savannah, GA	18,752	7.73%	8,975	3.7%	35,861	14.8%
Midland/Odessa, TX	18,771	8.3%	6,826	3%	32,918	14.6%

Source: *1990 Census Statistics*, U.S. Census Bureau, U.S. Department of Commerce.

In addition to the percentage of persons in each MSA who have completed college education, the percentage of persons who have completed less than a ninth grade education is also an indicator of market demand for air travel. As shown in **Table 2-6**, Jackson MSA is ranked seventh highest, in terms of percent of the population with less than a ninth grade education, out of the fourteen selected markets.

Table 2-6: Secondary Education Level Comparison (1990)

MSA	< Grade 9	%
Fresno, CA	79,657	11.93%
Baton-Rouge, LA	56,262	10.65%
Midland/Odessa, TX	18,773	8.32%
Lubbock, TX	15,899	7.14%
Lexington, KY	24,546	7.04%
Manchester, NH	10,118	6.84%
Jackson, MS	25,102	6.4%
Savannah, GA	14,935	6.16%
Pensacola, FL	17,722	5.15%
Columbia, SC	23,102	5.1%
Huntsville, AL	12,021	5.03%
South Bend, IN	11,965	4.84%
Wichita, KS	18,568	3.83%
Madison, WI	10,676	2.91%

Source: *1990 Census Statistics*, U.S. Census Bureau, U.S. Department of Commerce.

Table 2-7 illustrates the percentage of the population for each MSA working in health, educational, and professional services industries, as well as a total of all three industries. This factor provides a comparison between markets of employment bases, which have relatively high demands for air travel. As shown, the Jackson market is ranked fifth out of the selected fourteen markets, in terms of percent of total population working in these industries.

Table 2-7: High Technology Employment Levels (1990)

MSA	Health Serv.	%	Edu. Serv.	%	Prof. Serv.	%	Total Professional Related	%
Madison, WI	20,385	5.55%	28,219	7.69%	17,354	4.73%	65,958	17.97%
Lubbock, TX	10,947	4.92%	14,400	6.47%	6,924	3.11%	32,271	14.49%
Lexington, KY	17,321	4.97%	20,471	5.88%	11,663	3.35%	49,455	14.19%
Columbia, SC	21,293	4.70%	22,219	4.90%	16,069	3.54%	59,581	13.14%
Jackson, MS	19,480	4.93%	18,072	4.57%	13,641	3.45%	51,193	12.95%
Baton-Rouge, LA	16,537	3.13%	28,348	5.37%	17,688	3.35%	62,573	11.85%

Table 2-7 (Continued): High Technology Employment Levels (1990)

MSA	Health Serv.	%	Edu. Serv.	%	Prof. Serv.	%	Total Professional Related	%
South Bend, IN	9,543	3.86%	12,810	5.19%	6,552	2.65%	28,905	11.70%
Manchester, NH	6,109	4.13%	5,673	3.84%	5,299	3.58%	17,081	11.55%
Huntsville, AL	7,842	3.28%	9,585	4.01%	9,800	4.10%	27,227	11.40%
Wichita, KS	21,167	4.36%	18,375	3.79%	14,697	3.03%	54,239	11.18%
Savannah, GA	10,794	4.45%	8,334	3.43%	6,581	2.71%	25,709	10.60%
Pensacola, FL	13,759	3.99%	12,829	3.72%	8,456	2.46%	35,044	10.18%
Fresno, CA	23,387	3.50%	25,728	3.85%	16,562	2.48%	65,677	9.84%
Midland/Odessa, TX	6,080	2.70%	8,469	3.75%	6,097	2.70%	20,646	9.15%

Source: *1990 Census Statistics*, U.S. Census Bureau, U.S. Department of Commerce.

In addition to the high technology base of the MSA, the occupation of workers provides a further comparison of the market strength. **Table 2-8** illustrates the level of executive and professional occupations and a total of both. These occupations generally have a high demand for air travel. As shown, the Jackson MSA is ranked seventh out of the fourteen selected markets.

Table 2-8: Occupational Comparison (1990)

MSA	Executive	%	Professional	%	Total Exec./Prof.	%
Huntsville, AL	17211	7.20%	26607	11.14%	43818	18.34%
Madison, WI	28203	7.68%	38592	10.51%	66795	18.20%
Columbia, SC	30986	6.84%	35849	7.91%	66835	14.74%
Lexington, KY	21816	6.26%	28919	8.30%	50735	14.56%
Manchester, NH	10180	6.88%	10575	7.15%	20755	14.04%
Wichita, KS	28147	5.80%	35727	7.36%	63874	13.16%
Jackson, MS	22207	5.62%	28296	7.16%	50503	12.77%
Lubbock, TX	11435	5.14%	15832	7.11%	27267	12.25%
Baton-Rouge, LA	28168	5.33%	36446	6.90%	64614	12.23%
South Bend, IN	14070	5.70%	15904	6.44%	29974	12.13%
Midland/Odessa, TX	11722	5.20%	13649	6.05%	25371	11.25%
Savannah, GA	11122	4.58%	14287	5.89%	25409	10.47%
Pensacola, FL	15558	4.52%	19531	5.67%	35089	10.19%
Fresno, CA	29891	4.48%	36146	5.42%	66037	9.89%

Source: *1990 Census Statistics*, U.S. Census Bureau, U.S. Department of Commerce.

The final demographic factor selected to illustrate the relative strength of the air service market is income. Income reflects the relative depth and breadth of the local economy, as well as the probable level of disposable or discretionary spending for leisure travel. As indicated in **Table 2-9**, the Jackson MSA ranks eleventh out of fourteen of the selected markets in terms of median family income and in terms of per capita income.

Table 2-9: Family and Per Capita Income (1990)

MSA	Med. Family Income	Per Capita Income
Manchester, NH	42255	16278
Madison, WI	41529	15542
Huntsville, AL	39264	15443
Columbia, SC	35732	13618
Wichita, KS	35391	14303
South Bend, IN	34206	13277
Lexington, KY	33792	13945
Baton-Rouge, LA	32466	12305
Savannah, GA	31894	12759
Midland/Odessa, TX	31695	13157
Jackson, MS	31575	12311
Lubbock, TX	30380	12008
Pensacola, FL	29922	12278
Fresno, CA	29970	11824

Source: *1990 Census Statistics*, U.S. Census Bureau, U.S. Department of Commerce.

As shown in **Tables 2-4** through **2-9**, the Jackson MSA is not a particularly strong economic market, when compared to the competing markets referenced in Table 2-3. This must be considered when developing forecasts of activity and comparing passenger levels and airline services from JIA.

Jackson Air Service

Available air service can be gauged by several key indicators, including the level of passengers traveling through the airport, the number of airlines serving the airport, and the flights served by the airport.

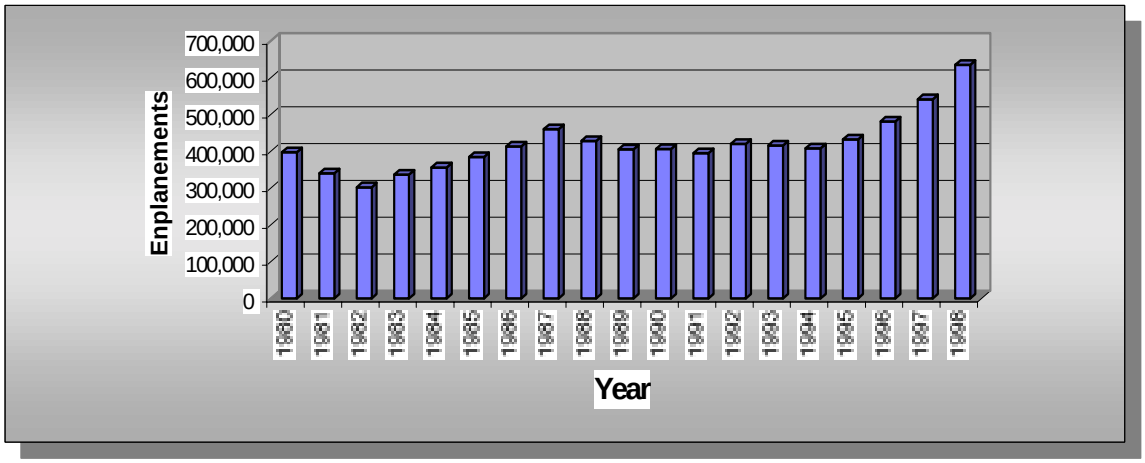
Passengers

The number of enplaned passengers at an airport is the most common measure of the level of activity at an airport. It accurately indicates demand on the airport's terminal facilities, as well as the overall activity level at the airport. The enplanement level is a good measure for ranking and comparing airports, provided they are of similar types. Comparing the enplanement levels of hubs to non-hubs, although very common, is not necessarily an accurate comparison. For non-hub airports, each enplaned passenger creates a demand on all airport facility components, including airside and terminal facilities, parking and ground transportation systems, roadways, rental car facilities, baggage claim facilities, and all other

landside facilities. Transferring passengers (such as with hubbing operations) create only a demand on airside and terminal facilities. The enplaned passengers using hub facilities for transferring from flight to flight do not use baggage claim facilities, parking, rental cars, or any of the ground transportation facilities on the airport. As a result, the average operating cost per enplaned passenger for non-hubbing operations is relatively higher than for hubbing operations.

Exhibit 2-2 illustrates the level of enplaned passengers at the Jackson International Airport between 1980 and 1998. As illustrated, the Airport has experienced significant growth during this period, particularly between 1982 and 1987, rising from 302,626 enplanements in 1982 to 460,675 in 1987. Enplanements have risen more steadily during the mid 1990's to an all-time high of 635,256 enplanements in 1998.

Exhibit 2-2
Jackson International Airport Enplaned Passengers, 1980-1998



Source: Data provided by JMAA - 1998.
Analysis by g.c.r. & associates, inc.

In 1997, Jackson International Airport was ranked 104th in the U.S. in total enplanements out of a total of 431 primary commercial airports. **Table 2-10** on the following page, illustrates the nearest 40 airports to JIA as a comparison, based on actual counts for 1997.

Table 2-10: Top 40 Airport Enplanements (1997)

Rank	Airport Name	Community	Passengers Enplaned
85	Kent County Int'l	Grand Rapids, MI	873,670
86	Sarasota/Bradenton Int'l	Sarasota/Bradenton, FL	819,983
87	Des Moines Int'l	Des Moines, IA	817,815
88	Charleston Int'l	Charleston, SC	788,384
89	Hilo Int'l	Hilo, HI	779,302
90	Harrisburg Int'l	Harrisburg, PA	736,296
91	Greenville-Spartenburg	Greer, SC	723,983
92	Saipan Int'l	Saipan Island, MP	723,081
93	Mc Ghee Tyson	Knoxville, TN	718,885
94	Wichita Mid-Continent	Wichita, KS	683,678
95	Savannah Int'l	Savannah, GA	619,878
96	Dane County Regional	Madison, WI	607,091
97	Portland Int'l Jetport	Portland, ME	602,886
98	Lubbock Int'l	Lubbock, TX	592,101
99	Palm Springs Regional	Palm Springs, CA	577,306
100	Columbia Metropolitan	Columbia, SC	574,591
101	Pensacola Regional	Pensacola, FL	571,237
102	Blue Grass	Lexington, KY	549,405
103	Manchester	Manchester, NH	542,247
104	Jackson International	Jackson, MS	541,839
105	Grand Canyon National Park	Grand Canyon, AZ	533,867
106	Midland International	Midland, TX	527,760
107	Westchester County	White Plains, NY	526,737
108	Long Island Mac Arthur	Islip, NY	510,225
109	Fresno Yosemite Int'l	Fresno, CA	507,720
110	Michiana Regional	South Bend, IN	505,725
111	Myrtle Beach Int'l	Myrtle Beach, SC	502,576
112	Orlando Sanford	Orlando, FL	500,969
113	Hunstville Int'l	Huntsville, AL	498,229
114	Bangor Int'l	Bangor, ME	493,215
115	Cyril E King	Charlotte Amalie, VI	476,986
116	Tallahassee Regional	Tallahassee, FL	474,165
117	Corpus Christi Int'l	Corpus Christi, TX	471,914
118	Lehigh Valley Int'l	Allenton, PA	470,960
119	Baton Rouge Metropolitan	Baton Rouge, LA	461,770
120	Valley Int'l	Harlingen, TX	461,619
121	Amarillo Int'l	Amarillo, TX	450,432
122	St. Petersburg/Clearwater Int'l	St. Petersburg/Clearwater, FL	444,604
123	Eastern Iowa	Cedar Rapids, IA	444,108
124	Burlington Int'l	Burlington, VT	424,266

Source: *FAA DOT/TSC CY1997 ACAIS Database*

The U.S. Department of Transportation (DOT) maintains a database of air passenger movements between all air carrier markets in the Unites States through the 10% Origin and Destination (O&D) sample. The data used in this database are from a collection of 10% of all tickets issued by airlines for all markets they serve. The raw data are entered by DOT into a database which tracks primary information, such as the airport of flight origination, flight destination, connection city, ticket cost, flight miles, and airline revenues.

In order to determine the precise nature of the Jackson traveling market, an analysis of the passengers traveling to and from Jackson was conducted. This analysis demonstrates how strong the individual markets are with Jackson, or whether any distinct trends can be discerned.

Using the O&D database, the most similar airports by enplanements were analyzed to determine their total passengers, the average fare collected at that market, the yield based in Cents per Mile (CPM), and the percentage of zero fared passengers (frequent flyers, children under 2, etc.). See **Table 2-11** below for this analysis.

Table 2-11: Similar Airport Airline Performances (1996)

Airport Code	Airport Name		Total Pass. 10% Samp.	Average Fare	Yield CPM	Fared Avg. Fare	Fared Yield/CPM	% $0 Pass
ICT	Mid-Continent	KS	127,174	$169.17	17	176	18	3.7%
SAV	Savannah Intl	GA	117,301	$148.71	17	155	18	3.9%
PWM	Portland	ME	116,602	$173.40	15	185	16	6.2%
LBB	Lubbock Intl	TX	115,546	$93.53	15	95	15	1.6%
MSN	Madison	WI	111,202	$170.87	16	182	17	6.2%
PSP	Palm Springs	CA	108,091	$160.25	13	172	14	7.0%
CAE	Columbia Metro	SC	107,928	$182.31	21	190	22	4.1%
PNS	Pensacola Reg	FL	106,591	$153.00	16	159	16	3.8%
MHT	Manchester	NH	105,835	$174.04	17	183	17	4.8%
HPN	Westchester County	NY	103,859	$212.06	24	227	26	6.6%
MAF	Midland Intl	TX	102,946	$95.88	15	97	15	1.3%
JAN	Jackson	MS	102,766	$177.54	18	164	18	3.3%
ISP	Islip (MacArthur)	NY	101,062	$134.17	14	138	14	3.1%
LEX	Lexington	KY	100,934	$148.68	17	158	18	5.6%
FAT	Fresno Air Term	CA	98,070	$149.57	14	155	14	3.6%
SBN	South Bend	IN	97,755	$151.69	15	159	16	4.4%
HSV	Madison County	AL	91,853	$198.44	20	206	21	3.6%
MYR	Myrtle Beach Intl	SC	81,452	$129.11	17	135	17	4.2%

Source: *Origin and Destination Database*, U.S Department of Transportation.

Airlines

Another indicator of airport health is the number and strength of airlines operating at the airport. **Table 2-12** illustrates the domestic airlines operating at the Airport in 1997, as well as their financial position in this market, based on the 10% O&D passenger sample database.

Table 2-12: Jackson Airline Performance (1997)

Carrier	$ Revenues	Average Fare	Yield CPM	Fared Avg. Fare	Fared Yield/CPM	%$0 Pass
YV	97,754	$166.82	57.20	$169.12	58.00	1.4%
EV	63,125	$203.63	47.71	$206.29	48.33	1.3%
Am Eagle	301,596	$130.22	33.64	$134.10	34.64	2.9%
United	35,780	$384.73	23.06	$388.91	23.31	1.1%
ASA	441,523	$119.56	22.17	$119.56	22.17	0.0%
Northwest	1,161,911	$168.27	19.87	$172.93	20.42	2.7%
US Airways	90,146	$212.61	19.31	$235.37	21.38	9.7%
Delta	10,058,651	$172.84	19.16	$179.51	19.90	3.7%
TWA	1,123,127	$174.48	18.29	$178.76	18.74	2.4%
American	1,471,629	$153.39	13.77	$163.51	14.68	6.2%
Southwest	886,005	$83.78	11.72	$83.81	11.73	0.0%
Continental	551,047	$160.19	11.67	$166.28	12.11	3.7%
Totals	16,342,978	$ 177.54	24.80	183.18	25.45	3.3%
National Average		$147.57	14.16	$158.15	15.17	6.7%

Source: *Origin and Destination Database*, U.S Department of Transportation.

As illustrated, the Jackson International Airport is served by most of the major U.S. airlines, with the exception of America West. Airlines operating at Jackson International charge an average of $177.54 per passenger, with an average yield of 24.80 cents per passenger mile. As shown in **Table 2-12**, this financial situation appears disproportionate compared to the national average of $147.57 per fare and 14.16 cents yield per revenue passenger mile. This may be due to a lack of competition to hub cities of the major airlines and the demand to those cities is fairly high.

Market-Pairs

The top 20 airport-pairs with Jackson, in terms of total passengers (inbound and outbound), are illustrated in **Table 2-13** below.

Table 2-13: Jackson Top 20 Airport Market Pairs (1997)

	City Name	Market Pair Rank	Airport Code	State	95 Sample	96 Sample	97 Sample	% Market Share for 97	% Change from 97' to 96'
1	Wm B Hartsfield GA	1,046	ATL	GA	109,950	108,520	83,870	8.16%	-3.86%
2	Dallas/Ft Wor Int TX	1,104	DFW	TX	44,870	53,050	68,930	6.71%	0.83%
3	Baltimore/Wash Intl MD	1,188	BWI	MD	8,500	10,680	32,670	3.18%	2.00%
4	O'Hare Intl IL	951	ORD	IL	25,800	32,770	32,570	3.17%	-0.46%
5	Orlando Intl FL	1,534	MCO	FL	21,820	26,450	30,570	2.97%	0.04%
6	Hobby Airport TX	800	HOU	TX	3,630	2,160	29,940	2.91%	2.67%

Contd.' Table 2-13: Jackson Top 20 Airport Market Pairs (1997)

7	Ronald Regan Natl DC	2,043	DCA	DC	30,020	32,940	28,380	2.76%	-0.89%
8	La Guardia NY	1,684	LGA	NY	17,980	22,780	25,470	2.48%	-0.05%
9	George Bush Intc TX	800	IAH	TX	16,580	19,230	25,440	2.48%	0.35%
10	Los Angeles Intl CA	1,884	LAX	CA	20,430	23,300	23,240	2.26%	-0.32%
11	Chicago Midway IL	951	MDW	IL	4,540	4,250	22,320	2.17%	1.70%
12	McCarran Intl NV	2,611	LAS	NV	10,070	13,730	20,670	2.01%	0.49%
13	Nashville TN	2,385	BNA	TN	17,370	17,860	19,440	1.89%	-0.09%
14	Wayne County MI	2,172	DTW	MI	13,350	16,930	17,680	1.72%	-0.16%
15	San Francisco In CA	2,750	SFO	CA	11,430	12,480	16,210	1.58%	0.19%
16	Denver Intl CO	2,975	DEN	CO	17,160	14,700	15,590	1.52%	-0.11%
17	Sky Harbor Intl AZ	2,678	PHX	AZ	7,070	9,830	15,090	1.47%	0.38%
18	Cincinnati/N Ktky OH	3,581	CVG	OH	13,430	25,430	14,720	1.43%	-1.38%
19	Logan Intl MA	3,837	BOS	MA	11,160	13,100	14,000	1.36%	-0.09%
20	Lambert-St Louis MO	4,179	STL	MO	10,380	14,570	13,820	1.34%	-0.27%
	Totals (Market Share Sample)				805,130	902,700	1,027,660		

Source: *Origin and Destination Database*, U.S Department of Transportation.

When the passenger movements from multiple airport city markets are combined, all markets with multiple air carrier airports become the top city-pair markets with Jackson. The top ten markets with Jackson, when adjusted for multiple airports are depicted in **Table 2-14**, below.

Table 2-14: JIA Top 10 City-Pairs (1997)

Rank	Market	Total Passengers	Airports Served
1	Atlanta, GA	83,870	Hartsfield Atlanta International
2	Dallas/Ft Worth, TX	68,930	DFW, Love Field
3	Washington, D.C.	61,050	Ronald Reagan, Baltimore
4	Houston, TX	55,380	Intercontinental, Hobby
5	Chicago, IL	54,890	Ohare, Midway
6	New York, NY	36,310	La Guardia, Newark
7	Orlando, FL	30,570	Orlando International
8	Los Angeles, CA	23,240	LAX
9	Las Vegas, NV	20,670	McCarran International
10	Nashville, TN	19,440	Nashville International

Source: *Origin and Destination Database*, U.S Department of Transportation.

As illustrated, the top two market-pairs with JIA in 1997 were Atlanta and Dallas/Ft. Worth. Delta Airlines has been a dominant airline at JIA, as evidenced in the **Table 2-12**. Atlanta is primarily served by Delta Airlines and Dallas/Fort Worth International airport is heavily served by Delta also.

When combining the passengers from Atlanta and in Dallas, the strength of the two markets

become evident, with 83,870 passengers traveling to and from Atlanta, and 68,930 passengers traveling to and from Dallas. The dominance of the Jackson market with Atlanta follows the close ties of similar sized communities in the southeast, which has been driven by Delta Airline's Atlanta hub operation.

Flights

While the level of passengers traveling through an airport is a broad indicator of the relative strength of a particular air service market, it does not indicate the level of air service provided at the facility. A relatively strong market, in terms of total passengers, could have weak air service provided if a majority of the air service is available through only hub airports.

A relatively weak market, in terms of total passengers, could have a relatively strong air service market if a higher portion of flights is provided directly to its top city-pair markets. In order to determine the relative strength of the air service market for Jackson, an analysis of the air service level at the top 20 city-pair markets with Jackson was conducted. The air service level of Jackson was then compared to five other markets: Columbia, SC; Lexington, KY; Pensacola, FL; Manchester, NH; and Des Moines, IA. All were chosen as comparable markets, in terms of population, economy, and the airports do not serve as a hub to any carriers.

The air service analysis was conducted through the use of the Official Airline Guide (OAG) Flight Disk. The OAG maintains flight information on all flights from all airlines. The Flight Disk is used to select and reserve flights on-line. For this analysis, the top 20 city-pair markets were selected for each of the five airports. While the top 20 city-pairs do not reflect all of the passenger movements through the selected airport, or all of the connecting air service for that particular market, it does represent a majority of the direct service provided through the particular market.

Under this analysis, direct daily and connecting daily flights have been tabulated for the top 20 city-pair markets for each of the five selected airports. The direct flights are those flights which fly either non-stop or single plane (i.e. one-stop with no connections) between the two markets. Daily connecting flights are those flights where passengers are required to transfer between aircraft at a hub airport. **Table 2-15**, on the next page, illustrates the top 20 city pair markets for Jackson.

Table 2-15 JIA Air Service at Top 20 Markets (1998)

Airport Name	Code	Daily Direct	Daily Connect	10% of Passenger
Wm B Hartsfield GA	ATL	7	0	8,387
Dallas/Ft Wor Int TX	DFW	9	0	6,893
Baltimore/Wash Intl MD	BWI	2	7	3,267
O'Hare Intl IL	ORD	1	5	3,257
Orlando Intl FL	MCO	1	5	3,057
Hobby Airport TX	HOU	4	0	2,994
Ronald Regan Natl DC	DCA	2	5	2,838
La Guardia NY	LGA	3	5	2,547
George Bush Intc TX	IAH	4	4	2,544
Los Angeles Intl CA	LAX	2	11	2,324
Chicago Midway IL	MDW	2	0	2,232
McCarran Intl NV	LAS	0	8	2,067
Nashville TN	BNA	0	3	1,944
Wayne County MI	DTW	0	8	1,768
San Francisco In CA	SFO	1	6	1,621
Denver Intl CO	DEN	0	11	1,559
Sky Harbor Intl AZ	PHX	2	9	1,509
Cincinnati/N Ktky OH	CVG	3	2	1,472
Logan Intl MA	BOS	1	5	1,400
Lambert-St Louis MO	STL	1	10	1,382
Totals		45	104	55,062

Source: *Flight Disk*, Official Airline Guide.

As illustrated, the Jackson International Airport serves 45 direct and 104 connecting flights (for a total of 149 flights) to its top 20 markets. A total of 550,620 passengers were traveling between these markets (this total is slightly different than other references due to alternate database).

Table 2-16 illustrates the similar market-pair analysis for Columbia SC International Airport.

Table 2-16: Columbia SC International Airport Air Service at Top 20 Markets (1998)

Airport Name	Code	Daily Direct	Daily Connect	10% of Passengers
Wm B Hartsfield	ATL	9	0	6921
La Guardia	LGA	2	12	5102
Newark Intl	EWR	2	3	4833
O'Hare Intl	ORD	1	16	4205
John F Kennedy In	JFK	5	1	3839
Ronald Regan Natl	DCA	0	7	3263
Orlando Intl	MCO	2	4	3242
Dallas/Ft Wor Int	DFW	0	9	3030
Philadelphia Intl	PHL	0	14	2986
Miami Intl	MIA	0	8	2455
Logan Intl	BOS	0	12	2269
Baltimore/Wash In	BWI	0	10	1938
Pittsburgh Intl	PIT	4	4	1789
McCarran Intl	LAS	0	9	1767
Tampa Intl	TPA	0	11	1748
Los Angeles Intl	LAX	0	10	1731
Nashville	BNA	0	9	1694
Cincinnati/N Ktky	CVG	5	8	1531
San Francisco In	SFO	0	10	1499
Fort Laud Intl	FLL	0	5	1385
Totals		30	162	57,227

Source: *Flight Disk*, Official Airline Guide.

As illustrated, the Columbia International Airport serves 30 direct and 162 connecting flights (for a total of 192 flights) to its top 20 markets. A total of 572,270 passengers were traveling between these markets.

Table 2-17 illustrates the similar market-pair analysis for Lexington/Blue Grass KY Airport.

Table 2-17 Lexington/Blue Grass KY Airport Air Service at Top 20 Markets (1998)

Airport Name	Code	Daily Direct	Daily Connect	10% of Passengers
Wm B Hartsfield	ATL	8	0	6031
O'Hare Intl	ORD	3	8	5911
Orlando Intl	MCO	0	3	3454
Charlotte	CLT	5	0	2960
La Guardia	LGA	0	12	2708
Dallas/Ft Wor Int	DFW	0	7	2633
Los Angeles Intl	LAX	0	13	2529
Wayne County	DTW	5	3	2421
Tampa Intl	TPA	0	9	2384
Ronald Regan Natl	DCA	0	13	2138
San Francisco In	SFO	0	9	1888
Denver Intl	DEN	0	7	1875
Logan Intl	BOS	0	7	1867
Cincinnati/N Ktky	CVG	10	0	1765
Miami Intl	MIA	0	4	1694
Fort Laud Intl	FLL	0	5	1685
McCarran Intl	LAS	0	7	1532
Philadelphia Intl	PHL	0	10	1521
Sky Harbor Intl	PHX	0	7	1503
Pittsburgh Intl	PIT	5	3	1469
Totals		36	127	49,968

Source: *Flight Disk*, Official Airline Guide.

As illustrated, the Lexington/Blue Grass Airport serves 36 direct and 127 connecting flights (for a total of 163 flights) to its top 20 markets. A total of 499,680 passengers were traveling between these markets.

Table 2-18 illustrates the similar market-pair analysis for Manchester NH Airport.

Table 2-18 Manchester NH Airport Air Service at Top 20 Markets (1998)

Airport Name	Code	Daily Direct	Daily Connect	10% of Passengers
Orlando Intl	MCO	3	5	7975
O'Hare Intl	ORD	4	14	5785
Ronald Regan Natl	DCA	2	5	5601
La Guardia	LGA	17	17	5503
Philadelphia Intl	PHL	5	2	5080
Newark Intl	EWR	5	0	4741
Tampa Intl	TPA	0	4	4098
Wm B Hartsfield	ATL	1	11	3331
Cincinnati/N Ktky	CVG	4	1	3147
Pittsburgh Intl	PIT	3	5	2926
San Francisco In	SFO	0	21	2058
Fort Laud Intl	FLL	3	6	2015
SW Florida Reg	RSW	0	3	1808
West Palm Beach	PBI	0	4	1757
Denver Intl	DEN	0	14	1688
Sky Harbor Intl	PHX	0	10	1624
Wayne County	DTW	4	5	1490
Los Angeles Intl	LAX	0	20	1434
Raleigh/Durham	RDU	0	5	1407
Dallas/Ft Wor Int	DFW	1	9	1324
Totals		52	161	64,792

Source: *Flight Disk*, Official Airline Guide.

As illustrated, the Manchester NH Airport serves 52 direct and 161 connecting flights (for a total of 186 flights) to its top 20 markets. A total of 647,920 passengers were traveling between these markets.

Table 2-19 illustrates the similar market-pair analysis for Pensacola FL Airport.

Table 2-19 Pensacola FL Airport Air Service at Top 20 Markets (1998)

Airport Name	Code	Daily Direct	Daily Connect	10% of Passengers
Tampa Intl	TPA	4	1	5002
O'Hare Intl	ORD	0	8	4841
Wm B Hartsfield	ATL	7	7	4825
Orlando Intl	MCO	5	7	4071
Ronald Regan Natl	DCA	0	1	3506
La Guardia	LGA	1	6	2949
Philadelphia Intl	PHL	0	6	2905
George Bush Intc	IAH	4	3	2498
Logan Intl	BOS	0	6	2219
Charlotte	CLT	3	1	2060
Norfolk Intl	ORF	0	4	2050
Wayne County	DTW	0	5	2004
Dulles Intl	IAD	0	3	1986
Los Angeles Intl	LAX	0	10	1906
Dallas/Ft Wor Int	DFW	2	4	1846
Denver Intl	DEN	0	8	1799
Baltimore/Wash In	BWI	0	4	1776
Lindberg Field	SAN	1	5	1749
Newark Intl	EWR	1	3	1604
Lambert-St Louis	STL	0	7	1557
Totals		28	99	53,153

Source: *Flight Disk*, Official Airline Guide.

As illustrated, the Pensacola FL Airport serves 28 direct and 99 connecting flights (for a total of 127 flights) to its top 20 markets. A total of 531,530 passengers were traveling between these markets. Although Atlanta Hartsfield International Airport isn't first in ranking, it retains the highest number of direct and total flights.

Table 2-20 illustrates the similar market-pair analysis for Des Moines IA Airport.

Table 2-20 Des Moines IA Airport Air Service at Top 20 Markets (1998)

Airport Name	Code	Daily Direct	Daily Connect	10% of Passengers
Sky Harbor Intl	AZ	5	8	9793
O'Hare Intl	IL	9	0	9331
Dallas/Ft Wor Int	TX	3	14	6902
Orlando Intl	FL	0	14	6743
McCarran Intl	NV	0	6	6412
Denver Intl	CO	4	7	5698
St Paul Intl	MN	9	0	4606
Ronald Regan Natl	DC	1	14	4307
Kansas City Intl	MO	7	0	3785
Lambert-St Louis	MO	7	0	3757
Wm B Hartsfield	GA	1	15	3553
La Guardia	NY	1	16	3377
Los Angeles Intl	CA	0	14	3271
San Francisco In	CA	0	11	2868
Logan Intl	MA	0	16	2528
Philadelphia Intl	PA	0	16	2501
Cincinnati/N Ktky	OH	8	2	2221
Seattle/Tacoma In	WA	0	10	2165
Lindberg Field	CA	1	11	2133
Chicago Midway	IL	4	0	2107
Totals		60	174	88,058

Source: *Flight Disk*, Official Airline Guide.

As illustrated, the Des Moines IA Airport serves 60 direct and 174 connecting flights (for a total of 234 flights) to its top 20 markets. A total of 880,580 passengers were traveling between these markets.

In order to understand the relative strength of the individual five markets, a weighting scale was developed. This scale divides the number of direct daily flights to the top 20 city-pairs for each market by the total enplanements of the top 20 city-pair markets. This illustrates the number of direct flights per enplanement, which normalizes the comparison. As shown in **Table 2-21**, each of the five markets has a "ratio" of between 0.019% and 0.028%, with the Jackson market having the lowest ratio, at 0.019% (the same as Pensacola).

Table 2-21: Market Comparison (1998)

Market	Direct Flights	Flights	Enplanements at Top 20 Markets	Direct Flight/Enplan. Ratio	Total Flight/Enplan. Ratio
Jackson, MS	45	104	541,830	0.008	0.019
Manchester, NH	52	161	647,920	0.008	0.025
Lexington, KY	36	127	499,680	0.007	0.025
Des Moines, IA	60	174	880,580	0.007	0.020
Pensacola, FL	28	99	531,530	0.005	0.019
Columbia, SC	30	162	572,270	0.005	0.028
Averages	42	138	612,302	0.007	0.023

Source: Data from *Flight Disk*, Official Airline Guide.

Based on this analysis, it appears there is a high ratio of direct flights per enplanement for Jackson International Airport and Pensacola primarily due to their proximity to Atlanta. However, the level of connecting flights Jackson International Airport is not consistent with the nature of the Jackson market, as evidenced by the comparison with the other five markets.

Aviation Demand Forecasts

In 1998, there were approximately 635,256 passengers enplaned at Jackson International Airport. By the year 2006, this number is expected to grow to 769,695. This rate of growth is consistent given the Airport's experience in the past few years and the trends in the commercial air carrier industry. Accordingly, annual operations are projected to grow from 95,876 in 1997 to 126,222 by the year 2005 and 147,752 by 2015. Modest increases in the air cargo tonnage handled at Jackson International Airport is projected due to the interest and commitment made by the Jackson Municipal Airport Authority to improve facilities and services.

Airline Traffic Analysis

Primary Service Area

Jackson International Airport primarily serves passengers beginning or ending their trips also known as, Origin and Destination traffic (O&D). As of January 1999, passenger airlines serving Jackson offered an average of 45 daily scheduled nonstop departures to 16 cities.

The region served by Jackson International Airport consists of (1) a primary area of three counties in central Mississippi: Hinds, Rankin, and Madison; and (2) a large secondary area surrounding those counties. The limits of the Airport service region are defined by airline service at surrounding air carrier airports, including Gulfport-Biloxi Regional Airport and New Orleans International Airport to the south,

Memphis-Shelby County International Airport to the north, Baton Rouge Metropolitan Airport and Little Rock Airport to the southwest and west, and Birmingham Airport to the east. Although residents in parts of the secondary area may be closer to other airports, they generally use Jackson International Airport because of the level and type of airline service provided.

Secondary Service Area

The population and employment data presented in this section are for the twenty counties comprising the primary and secondary Airport service region. This twenty-county area generates the majority of passenger traffic at the Airport, and is referred to throughout this airline traffic analysis as the Jackson Area. The population of the Jackson Area was estimated to be 755,917 in 1997.

The economy of the Jackson Area is diverse. Passengers originating their journey at the Airport are primarily traveling for pleasure, although there is significant travel for business activity due to MCI/WorldComm World Headquarters and Tyson Foods.

The following sections present a review of historical airline traffic, a discussion of the principal determinants of passenger demand, a summary of the key factors affecting future airline traffic, and airline traffic forecasts at the Airport.

Historical Airline Traffic

As of June 1997, 10 passenger airlines and 4 all-cargo airlines provided scheduled service at the Airport, as shown in **Table 2-22**. Other airlines, not shown in Table 2-22, provided charter and nonscheduled service at the Airport.

Table 2-22: Scheduled Airlines Serving the Airport (As of January 1999)

Major Passenger Airlines (*a*)	Cargo Airlines
Delta Airlines	United Parcel Service
Northwest Airlines	Airborne Express
Southwest Airlines	Burlington Air Express
Continental Airlines	Emery Worldwide
United Airlines	

Commuter Passenger Airlines	On-Site Freight Forwarders
ASA (Delta Express - Atlanta)	M.G. Maher Company
Comm-Air (Delta Connection)	Page & Jones, Inc.
American Eagle	
Continental Express	
US Airways Express	

Note: *(a)* Defined for this analysis as scheduled airlines operating aircraft with more than 60 seats.
Source: *Official Airline Guides, Inc.* (online database), June 1997, and the JMAA.

Enplaned Passengers

Table 2-23 presents historical data on enplaned/deplaned passengers at the Airport since FY 1980. The number of enplaned passengers at the Airport increased from 397,620 in FY 1980 to 635,256 in FY 1998, an average rate of 2.3% per year although some years appear as negatives.

During the most recent 5-year period from FY 1993 to FY 1998, the number of enplaned passengers at the Airport increased an average of 7.4% per year, compared to the national average of 4.7% per year. In the fall of 1997, Southwest Airlines introduced its low-fare service to Jackson, which included service to Houston and Nashville. This, in combination with certain expansion of low-fare service by other airlines, produced a 13% increase in the number of enplaned passengers at the Airport in FY 1997 then grew to 17% in 1998.

Table 2-23: Historical Enplaned Passengers at JIA (FY 1980 to FY 1998)

Year	Enplaned	Deplaned	Total	% Diff prev. year
1980	397,620	396,209	793,829	-10%
1981	340,724	339,863	680,587	-14%
1982	302,626	300,321	602,947	-11%
1983	337,067	334,049	671,116	11%
1984	356,489	354,482	710,971	6%
1985	385,168	379,691	764,859	8%
1986	413,409	408,565	821,974	7%
1987	460,675	456,535	917,210	12%
1988	428,445	424,648	853,093	-7%
1989	405,875	399,640	805,515	-6%
1990	406,408	398,256	804,664	0%
1991	395,437	388,511	783,948	-3%
1992	420,805	414,697	835,502	7%
1993	415,802	415,161	830,963	-1%
1994	408,368	404,731	813,099	-2%
1995	432,960	427,533	860,493	6%
1996	481,304	476,020	957,324	11%
1997	541,794	538,977	1,080,771	13%
1998	635,256	631,158	1,266,414	17%

Source: Data provided by the FAA – Terminal Area Forecasts and JMAA.
Analysis by g.c.r. & associates, inc.

Note: For Fiscal Years ended December 31.

Airline Market Shares

Table 2-24 shows the airline market shares of enplaned passengers at the Airport for FY 1991, FY 1996, and FY 1998. One or two major carriers have historically dominated the large origin-destination passenger base in Jackson; particularly Delta Airlines with 47% of enplaned passengers in FY 1998. Southwest, a close second, with 22% in FY 1998 is quickly rising in its first two years of service. The combined market share of these two carrier's account for two thirds of the passengers enplaned at JIA.

The share of passengers enplaned by commuter airlines at the Airport represents a relatively small percentage of around 14%. However three commuter airlines, the Delta Connection, American Eagle, and United Express, have introduced regional jet service to Atlanta, Dallas/Ft. Worth, and Denver. The increased capacity of these 60 seat aircraft is expected to boost the three-commuter airline's market share.

Table 2-24: Airline Market Shares of Enplaned Passengers at JIA (FY 1991, FY 1996, and FY 1998)

	FY Year 1991		FY Year 1996		FY Year 1998	
	% of Total	Rank	% of Total	Rank	% of Total	Rank
Major and Other Airlines						
Delta Airlines	66%	1	58%	1	47.1%	1
Southwest Airlines	--	-	--	-	22.7%	2
Northwest Airlines	1%	4	7%	3	9.9%	3
Simmons	--	--	9%	2	8.2%	4
Continental Airlines	5%	-	5%	6	5.0%	5
ComAir	--	--	5%	5	4.4%	6
US Airways	--	--	--	--	1.2%	7
ASA	--	--	1%	10	1.2%	8
OTHER						
Northwest Airlink	7%	3	7%	4	0.3%	9
American Airlines	21%	2	--	--	--	
Flagship	--	--	1%	9	--	
ValueJet	--	7	4%	7	--	
US Air Express	--	--	2%	8	--	
	100%		100%		100.0%	

Note: For Fiscal Years ended December 31.

Source: Data provided by the JMAA 1998.
Analysis by g.c.r. & associates, inc.

Origin-Destination Markets and Airline Service

Table 2-25 shows the 23 origin-destination cities accounting for 1% or more of the total scheduled domestic airline passengers (excluding commuter airline passengers) at the Airport for Fiscal Year 1996. These cities represented over 70% of the total scheduled origin-destination airline passengers at the Airport. Two of the 20 cities listed are long-haul markets (more than 1,500 miles from Jackson), twelve cities are medium-haul markets (500 to 1,500 miles), and the remaining six cities are short-haul markets (1ess than 500 miles).

Table 2-25 also presents the daily scheduled nonstop departures of the airlines serving the Airport to the origin-destination cities listed as of December 31, 1998. Of the 62 daily nonstop departures, 35 were to the top 20 origin-destination markets shown in **Table 2-25**. As of December 1998, nonstop service was provided to 10 of the top 20 origin-destination markets.

Table 2-25: Domestic Passenger Origin-Destination Patterns at JIA (12 Months Ended December 31, 1998)

City of Origin or Destination *(a)*	Air Miles from Jackson	% Total Origin and Destination	Daily Direct Nonstop Departures *(b)*
Wm B Hartsfield GA	341	7.7%	6
Dallas/Ft Worth Int TX	408	6.4%	8
Baltimore/Wash Intl MD	888	3.0%	2
O'Hare Intl IL	677	3.0%	0
Orlando Intl FL	587	2.8%	1
Hobby Airport TX	359	2.8%	4
Ronald Reagan Natl DC	860	2.6%	2
La Guardia NY	1071	2.4%	3
George Bush Intc TX	351	2.3%	4
Los Angeles Intl CA	1640	2.1%	0
Chicago Midway IL	666	2.1%	2
McCarran Intl NV	1456	1.9%	0
Nashville TN	327	1.8%	0
Wayne County MI	777	1.6%	0
San Francisco In CA	1859	1.5%	0
Denver Intl CO	966	1.4%	0
Sky Harbor Intl AZ	1275	1.4%	0
Cincinnati/N Ktky OH	555	1.4%	3
Logan Intl MA	1254	1.3%	0
Lambert-St Louis MO	444	1.3%	0
Cities Listed		50.8%	35
All Others		49.2%	27
Total		100%	62

Note*:* (*a*) Cities with 1% or more of total inbound and outbound passengers (on scheduled airlines) at Jackson International Airport on the basis of a 10% sample for the 12 months ended December 31, 1998.
(*b*) Official Airline Guides, Inc. (online database), December 1998

Source: *Origin-Destination Survey of Airline Passenger Traffic, Domestic* (CD-ROM database), fourth quarter 1998, except as noted, U.S. Department of Transportation/Air Transport Association of America.

Landed Weight

Table 2-26 present's aircraft landed weight at the Airport for FY 1980 through FY 1998. Total aircraft landed weight decreased from about 1.4 million 1,000-pound units in FY 1983 to about 1.65 million 1,000-pound units in FY 1998. Year-to-year changes in landed weight reflect changes in the number of airline aircraft operations and the mix of aircraft types. The overall increase in aircraft landed weight since FY 1983 reflects the increase in all cargo aircraft operations at the Airport and generally increased air carrier operations.

Table 2-26: Historical Aircraft Landed Weight at JIA FY 1983 to FY 1998 (In 1,000-Pound Units)

Fiscal Year	Major and Other Airlines	All-Cargo Airlines	Total	Percent Increase (Decrease)
1983	1,316,077	79,957	1,396,034	
1984	1,270,113	96,043	1,366,156	-2%
1985	1,403,077	129,407	1,532,484	12%
1986	1,457,631	118,464	1,576,095	3%
1987	1,399,476	137,211	1,536,687	-3%
1988	1,356,327	154,156	1,510,483	-2%
1989	1,313,417	204,299	1,517,716	0%
1990	1,337,767	229,635	1,567,402	3%
1991	1,306,067	211,792	1,517,859	-3%
1992	1,335,824	206,258	1,542,082	2%
1993	1,375,767	218,533	1,594,300	3%
1994	1,069,215	220,998	1,290,213	-19%
1995	1,076,971	190,631	1,267,602	-2%
1996	1,118,339	295,936	1,414,275	12%
1997	1,211,343	381,233	1,592,576	13%
1998	1,349,591	306,439	1,656,030	4%

Note: For Fiscal Years ending December 31.

Source: Data provided by the JMAA, 1998.
Analysis by g.c.r. & associates, inc.

During the years of 1996 and 1997 saw a dramatic 12% and 13% increase in landed weights due to increased commuter service with ASA and American Eagle in 1996 and the introduction of low fare carrier Southwest Airlines in 1997.

As presented in **Table 2-27**, in FY 1997, 76% of total aircraft landed weight at the Airport was accounted for by the major and commuter passenger airlines and 24% by the all-cargo airlines. In 1998, the share of passenger airline aircraft landed weight increased to 81.5% while all-cargo airline aircraft landed weight decreased to 18.5%. The decrease in all-cargo airline aircraft landed weight can be attributable to Emery AirFreight and BAX Global discontinuing air cargo service to the Airport.

Table 2-27: Airline Market Shares of Aircraft Landed Weight at JIA (FY 1993, FY 1997, and FY 1998)

	Percentages of Total Landed Weights		
	CY 1992	CY 1997	CY 1998
DELTA	52.99%	47.2%	45.3%
SOUTHWEST	--	8.2%	20.3%
N'WEST AIRLINES	--	3.9%	5.7%
SIMMONS	--	4.7%	3.6%
CONTINENTAL	2.48%	2.7%	2.1%
COMAIR	--	2.1%	2.0%
USAIRWAYS	--	1.9%	1.8%
ASA	--	0.5%	0.5%
N'WEST AIRLINK	5.61%	--	0.1%
TWA	--	4.8%	--
American	23.45%	--	--
Flagship	0.03%	--	--
All Cargo	15.44%	23.9%	18.5%
	100%	100%	100%

Note: For Calendar Years ending December 31.

Source: Data provided by the JMAA, 1998.
Analysis by g.c.r. & associates, inc.

Principal Determinants of Passenger Demand

The principal determinants of passenger demand are (1) the population and general economy of the Jackson Area, (2) strength of the specific high technology sector, and (3) airline fares.

Population and Economy of the Jackson Area

The development and diversity of the economic base of an airport service region is important to airline traffic growth at the airport serving the region. **Table 2-28** presents comparative trends in population and employment in the Jackson Area, the State of Mississippi, and the United States.

Table 2-28: Comparative Trends in Population and Employment Growth for the Jackson Area, State of Mississippi and United States (1970 to 2005)

	POPULATION Average Annual Percent Increase (Decrease)		
	Jackson Area	State of Mississippi	United States
Historical			
1970 to 1980	1.3% *(a)*	1.2% *(a)*	1.1% *(a)*
1980 to 1990	-3.1% *(a)*	0.2 *(a)*	0.9 *(a)*
1990 to 1996	-0.5% *(a)*	0.5 *(a)*	1.4 *(a)*
Projected *(e)*			
1996 to 2000	0.6%	0.3%	0.7%
2000 to 2005	0.4	0.5%	0.6%

	NONAGRICULTURAL EMPLOYMENT Average Annual Percent Increase		
	Jackson Area	State of Mississippi	United States
Historical			
1970 to 1980	2.1% *(b)*	2.1% *(b)*	2.5% *(c)*
1980 to 1990	1.1% *(b)*	1.1% *(b)*	1.9% *(c)*
1990 to 1998	1.7% *(b)*	1.4% *(b)*	1.5% *(c)*
Projected *(d)*			
1998 to 2005	1.08% *(d)*	0.9%	1.6%
2000 to 2005	1.08% *(d)*	0.8%	1.4%

Note: The Jackson Area consists of the counties of Hinds, Rankin, and Madison.

Source: *(a)* *1990 Census Statistics*, U.S. Census Bureau, U.S. Department of Commerce.
(b) U.S. Bureau of Economic Analysis, U.S. Department of Commerce.
(c) *Employment and Earnings*, May editions for years noted Bureau of Labor Statistics, U.S. Department of Labor.
(d) *Center for Policy Research and Planning, Mississippi Institution of Higher Learning. September 1998.*

Population

From 1970 to 1980, population growth in the Jackson Area stayed within the national population growth trends. From 1980 to 1990, however, the population in the Jackson Area decreased an average of 3% per year, and the population of the State of Mississippi remained relatively flat, while the population of the nation as a whole increased an average of 0.9% per year. The decrease experienced in the Jackson Area is partially the result of outmigration related to industry moving operations into more rural areas.

From 1990 to 1996, both the Jackson Area and the State of Mississippi experienced flat to negative population increases due to a slowing of the rate of outmigration and industry downsizing. In 1997, the population of the Jackson Area was estimated to be 755,917.

The population of the Jackson Area and the State of Mississippi are forecast to increase moderately from 1996 to 2005, the net result of natural increases (births over deaths) and continued slowing of the rate of outmigration.

Nonagricultural Employment

From 1970 to 1980, nonagricultural employment in the Jackson Area and the State of Mississippi increased at about the same rates as those for the nation as a whole, as shown in **Table 2-28**.

From 1980 to 1990, nonagricultural employment in the Jackson Area had a negative growth factor due to a downturn in local industry and the outmigration factor of the population trend. The State of Mississippi increased more slowly than in the nation, as a result of the national economic recession in the early 1980's, followed by a decline in the early 1990's in agricultural production and manufacturing jobs being relocated to Mexico and Taiwan.

On average, from 1990 to 1996, growth in nonagricultural employment in the Jackson Area and the State of Mississippi was similar to the rate for the nation. As shown in **Table 2-29** below, the rate of growth in employment in the Jackson Area and the State of Mississippi has increased in recent years because of a strong growth in services sector employment.

Table 2-29: Recent Trends in Employment Growth

	Annual Percent Increase		
	Jackson Area	State of Mississippi	United States
1993	1.5%	1.9%	2.0%
1994	2.7	3.8	3.1
1995	2.4	2.9	2.7
1996	0.8	2.2	2.0

Source: *Bureau of Labor Statistics*, U.S. Department of Labor.

Employment by Industry Sector

A comparison of nonagricultural employment by industry sector for the Jackson Area in 1986 and 1996 and for the State of Mississippi and the United States in 1996 showed the services sector represented the largest share of nonagricultural employment in the Jackson Area. The major service industries in the Jackson Area include health services, hotel services, tourism, and other amusements. In 1996, the services sector accounted for (29.2%) of the total, higher than in the State (26.8%) and the nation as a whole (28.7%). Consistent with nationwide trends, the services sector was the fastest growing employment sector in the Jackson Area. Its growth exceeded the rate of job growth of the overall economy. Nearly one out of three jobs in the state is in agriculture or forestry products. And, since agriculture usually is one of the lowest-paying sectors of the economy, the state cannot help but rank low in per capita income, about $19,575, compared to $22,016 in the rest of the Southeast and $24,426 in the United States as a whole.

As the largest metropolitan area in the State of Mississippi, Jackson serves as a regional trade center for much of the State and surrounding areas. Accordingly, wholesale and retail trade employment represents a larger share of the total in the Jackson Area than the State of Mississippi (24.4%) and the nation as a whole (23.6%).

The share of employment in the government sector in the Jackson Area increased slightly between 1986 and 1996, but remained relatively steady at about 19%--higher than in the State and higher than in the nation as a whole. State and local government accounts for about 85% of the employment in this sector in the Jackson Area with federal government accounting for the remaining 15%.

Manufacturing sector employment represents a smaller share in the Jackson Area and the State of Mississippi than in the nation as a whole. In 1996, manufacturing sector employment in the Jackson Area accounted for 9.1% of total nonagricultural employment.

Conventions and Tourism

Conventions and tourism have long been important to the Jackson economy. Attractions to the Jackson Area include the largest planetarium in the southeast, city zoo, historic sites and museums. With its central location between Dallas and Atlanta it makes an ideal location for regional conventions.

Growth in the tourism industry is expected to continue due to promotional efforts at the state and local levels to attract visitors and conventions to the area and special events such as the 1998 Dixie National Western Rodeo held recently at the coliseum, annual Jubilee Jam, and SkyParade at the airport.

Airline Fares

Airline fares charged for travel to and from Jackson have also been an important determinant of airline passenger traffic at the Airport. For the seven years FY 1990 through FY 1997, average airline fares for travel originating at the Airport have decreased 0.3% per year.

As an origin-destination market, Jackson has recently attracted low-fare airline service; for example, Southwest began service at the Airport in the second half of 1997. Also, as discussed earlier, in 1996, ValueJet Airlines introduced its low fares. The competitive response by other passenger airlines serving the Airport resulted in a 7.5% decline in average airfares from FY 1996 to FY 1997, and a 10% decrease from FY 1997 to FY 1998. However the first two quarters of FY 1998 have produced a 3.5% increase as the market stabilizes from Southwest Airlines arrival.

Outlook for Passenger Demand

From FY 1993 to FY 1997, passenger traffic at the Airport increased an average of 5.5% per year compared with 3% for the nation as a whole. From FY 1997 to FY 2005, the outlook is for continued, moderate growth. The following factors suggest that this growth is likely:

- Continued economic growth in the Jackson Area is expected to contribute to passenger traffic growth at the Airport.
- Tourism in the Jackson Area is expected to continue to grow because of the area's attractions and activities, and the ongoing state and local promotional efforts to draw visitors and conventions to the area.

- Southwest Airline's continued growth of its low-fare service in Jackson and introduction of regional Jet service from American Eagle and United Express will increase the number of seats into the market. Expansion of low-fare service has historically generated growth in passenger demand at the Airport.

Key Factors Affecting Future Airline Traffic

Key factors that will affect future airline traffic at the Airport are:

- Growth of the population and economy of the Jackson Area, as discussed earlier;
- Airline service and route networks;
- National economic and political conditions;
- Availability and price of aviation fuel;
- Airline economics, competition, and airfares;
- Capacity of the national air traffic control system; and
- Airport capacity provided at Jackson.

Airline Service and Route Networks

While the most important determinant of passenger airline traffic demand at an airport is the population and economy of the region served by the airport, the overall level of airline service and the number of passengers using an airport depend to some extent on the route networks of the airlines serving the airport. Since passage of the Airline Deregulation Act of 1978, airlines have been free to enter or leave individual air traffic markets at will. Consequently, it is uncertain which airlines, if any, will serve particular origin-destination markets. Particularly since deregulation, most major airlines have emphasized the development of "hub-and-spoke" route networks as a means of increasing their service frequencies, passenger volumes, and profitability, although much of the recent growth in passenger traffic has been generated by low-fare airlines concentrating on point-to-point service.

National and International Economic and Political Conditions

Historically, airline passenger traffic nationwide has correlated closely with the state of the U.S. economy and levels of real disposable income. Sustained future growth in domestic airline passenger traffic will depend largely on the ability of the nation to sustain economic growth. Over the past several years, international airline travel has increased more rapidly than domestic travel, and international economics, currency exchange rates, trade balances, political relationships, and conflicts within and between foreign countries are increasingly important influences on passenger traffic at major U.S. airports. International economic and political conditions will continue to affect the number of passengers using the Airport as part of international journeys.

Availability and Price of Aviation Fuel

There has been no shortage of aviation fuel since the "fuel crisis" of 1974. However, the price of aviation fuel continues to be an important and uncertain factor affecting airline operating economics. Fluctuating fuel prices have caused corresponding fluctuations in airfares and airline operating results. Since 1992, the average price of aviation fuel has been fairly stable at between $0.55 and $0.60 per gallon (except for a brief period in early 1996 when the average price rose to about $0.65). In the long term, fuel prices are likely to increase as worldwide oil reserves are gradually depleted, but industry analysts do not expect such reserve depletion during the forecast period.

Airline Economics, Competition, and Airfares

Airfares have an important effect on passenger airline traffic demand, particularly for price-sensitive, "discretionary" travel, such as vacation travel. Airline operating costs such as fuel and labor; debt burden; passenger demand capacity and yield management; market presence; and competition influence airfares.

As airline traffic growth slowed during the late 1980s and early 1990s, the major airlines experienced increasing competition from low-cost, low-fare airlines, including established airlines such as Southwest and America West, new entrant airlines operating jet aircraft such as Vanguard and ValuJet, now known as "Air Tran", and regional airlines operating smaller turboprop and jet aircraft. In an increasing number of markets, the expansion of service by lower-cost airlines has resulted in fare competition, lower fares, and increased traffic. The response by the established major airlines to increased competition from low-fare airlines has varied. In some markets, the major airlines have reduced service; in other markets, they have reduced fares and increased service. Some major airlines have established their own low-fare operations to compete in selected markets. In 1994, United introduced its low-fare operation, Shuttle by United, which competes in short-haul markets, primarily on the West Coast. In 1995, Delta introduced its low-fare operation, Delta Express, which competes in several of Delta's established East Coast markets, particularly in Florida. Most large origin-destination passenger markets have attracted low-fare competition in one form or another, and passenger traffic has increased accordingly.

Capacity of the Air Traffic Control System

Increased demands on the national air traffic control system continue to cause aircraft delays and restrictions--both on the number of aircraft movements in certain air traffic routes and on the number of landings and takeoffs at certain airports. These restrictions affect airline schedules and passenger traffic throughout the national airport system. While increasing demands on the national air traffic control and airport systems could cause delays and restrictions in the future, the FAA is implementing a complex and far-reaching plan to automate and enhance the computer, radar and communications equipment of the air traffic control system and

to provide needed additional capacity. The FAA is also giving priority to the development of additional airfield capacity at critical airports through the construction of new runways and the more effective use of existing runways.

Airport Capacity Provided at Jackson

The current airfield and Terminal Building facilities at the Airport do not offer any capacity constraints that would limit airline traffic at the Airport during the forecast period.

Airline Passenger and Traffic Forecasts

Table 2-30 presents historical and forecast enplaned passengers at the Airport for FY 1993 through FY 2016 and aircraft landed weight for FY 1993 through FY 2005.

The forecasts are based on the assumption that future growth in airline traffic at the Airport will occur largely as a function of growth in the population and economy of the Jackson Area, notwithstanding temporary fluctuations that occur because of airline industry developments such as changes in airfares and the level of airline service. Accordingly, the forecasts are based on the analysis of historical and projected population and economic indicators for the Jackson Area and recent trends in passenger traffic and airline service at the Airport. Also considered were (1) recent and potential developments in the national economy and the air transportation industry as they affected or may affect airline traffic at the Airport, and (2) recent airline traffic forecasts for the nation as a whole produced by the FAA. The FAA forecasts that the number of domestic air carrier enplaned passengers in the United States will increase an average of 3.9% per year between Federal Fiscal Year (FFY) 1995 and FFY 2005.

In preparing the forecasts, it was assumed that future growth in airline traffic at the Airport through the forecast period will not be constrained by the availability of aviation fuel, limitations in airline service at the Airport, limitations in the capacity of the national air transportation system or the capacity of the Airport, or government policies or actions that restrict growth. In particular, it was assumed that, over the forecast period:

- The national economy will experience moderate and sustained growth at an average rate between 2.0% and 2.5% per year.
- The economy of the Jackson Area and the State of Mississippi will grow at rates somewhat slower than the nation as a whole, as presented earlier.
- The air traffic market will continue to attract a diversified mix of residents and nonresidents traveling for business, conventions, and pleasure.
- There will continue to be fare competition at the Airport, although the low-fare service provided by individual airlines may change.

- Notwithstanding such fare competition, average airfares for flights to and from Jackson will change from current levels to rates generally consistent with the prices of other goods and services.

Table 2-30: Airline Traffic Forecasts at JMAA (FY 1994 to FY 2020)

	Historical				Forecast	Forecast	Forecast
	FY 1995	FY 1996	FY 1997	FY 1998	FY 2000	FY 2010	FY 2020
Enplaned Passengers							
All Airlines	432,960	481,304	541,794	635,256	668,865	836,915	1,009,773
Average Annual % Increase	--	11.2%	12.6%	17.3%	2.58%	2.05%	1.86%
Air Cargo (tonnage)							
All Airlines	6,711	6,778	6,389	6,190			
All Cargo Airlines	10,240	22,463	22,875	16,741			
Total	16,951	29,241	29,264	22,931	0	0	0
Average Annual % Increase		73%	0%	-22%			
Aircraft Operations							
Air Carrier	12,393	16,093	18,594	21,364	21,864	24,241	26,211
Air Taxi & Commuter	27,059	26,098	24,100	19,657	22,784	31,315	38,564
General Aviation	24,617	25,231	26,742	29,430	32,834	40,025	48,790
Military	23,611	16,229	26,666	38,597	37,391	41,303	45,625
Total	87,680	83,651	96,102	109,048	114,874	136,885	159,189
Average Annual Increase (by period)		-5%	15%	13%	5%	19%	16%

Note: These forecasts have been prepared on the basis of the information and assumptions given in the text. The achievement of any forecast is dependent upon the occurrence of future events, which cannot be assured. Therefore, the actual results may vary from the forecasts, and the variations could be material.

Sources: Historical data provided by the Jackson Municipal Airport Authority.

Enplaned Passengers

As shown in **Table 2-30**, the total number of enplaned passengers at the Airport is forecast to increase from 432,960 in FY 1995 to 1,009,773 in FY 2020.

Air Cargo Tonnage

Total Air Cargo tonnage at the Airport is forecast to increase from about 16,951 tons in FY 1995 to 20,663 tons in FY 2005, an average increase of 2% per year. The forecast of aircraft landed weight is derived primarily from the forecast of enplaned passenger demand, considering trends in average aircraft weight as well as assumed growth in all-cargo aircraft operations.

Section Three

LANDSIDE FACILITIES INVENTORY AND RECOMMENDATIONS

Introduction

A key component of the Airport Master Planning process is the assessment of demand and capacities available for various landside facilities. Landside facilities serve vital airport functions related to processing and handling of passengers using the airport and other aircraft and airlines support activities.

As part of the analysis of landside facilities requirements for Jackson International Airport, the following functional areas were studied and needs were projected over the 20-year study period:

- Passenger Terminal Complex
- Terminal Frontage - Curbside & Roadway
- On-Airport Parking
- Car Rental Facilities
- Cargo Facilities
- Terminal and Airfield Maintenance Facilities
- Military Facilities

The methodologies employed in establishing the existing and future facility requirements were based in part on FAA Airport Planning Criteria, specifically, *Planning and Design Guidelines for Airport Terminal Facilities Advisory Circular 150/5360-13, Airport Master Plans Advisory Circular 150/5070-6A.* Aviation forecasts in the previous section were used as the basis to project facility demands for the years 1999 - 2015. The specific forecast activities include:

- Enplaned passengers
- Total cargo
- Number of aircraft operations - air carrier, commuter, and general aviation.

Summarized below is an outline of the methodologies used in analyzing existing facilities for each of the functional areas listed above.

Passenger Terminal Complex

The Jackson International Airport completed a major terminal expansion and East Concourse development program in the early 1990's. The new facilities included ticket counters, holding gates, and airline ticket offices on the second level, and baggage claim, make-up and airline operations areas on the ground level.

Presently, the terminal complex is based on a three-story concept whereby central ticketing is located on the second floor and baggage claim/car rental on the first floor. The airport administrative offices are located on the third floor (see **Exhibit 3-1 and 3-2**). To the west of the main lobby is the main concession/gift shop area consisting of a full service restaurant, bar, snack bar and gift shop. The recently completed expansion of the East concourse created additional gates and snack bar facilities.

East Concourse

The East Concourse includes four gates, which are all occupied by airlines. Southwest Airlines occupying one gate on the east side, Northwest and Northwest Airlink occupy one gate on the east side, American Eagle has a gate on the west side, and United Express has a gate on the east side. Host International uses the southwest corner of the concourse for a snack bar.

Currently, the West Concourse serves Delta Airlines, which uses four of the five available gates. Continental Express and US Airways Express occupy the fifth gate. Delta's commuter airline partners ASA and ComAir share a gate on the south side of the West Concourse.

West Concourse

The baggage claim areas are operated under a common use agreement with all airlines. This provides unrestricted use of any baggage claim belt by any airline. There are four claim belts operational, two of which were added during the recent terminal renovation.

Baggage Claim

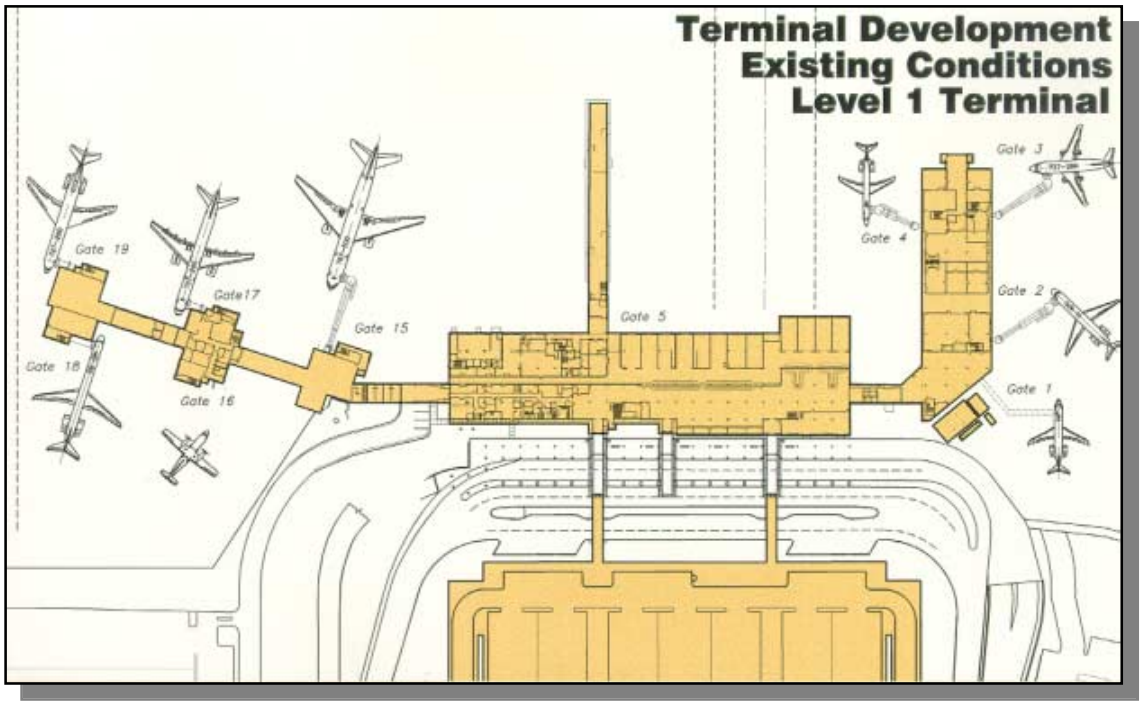


Exhibit 3-1 Terminal First Floor – Baggage Claim/Car Rental

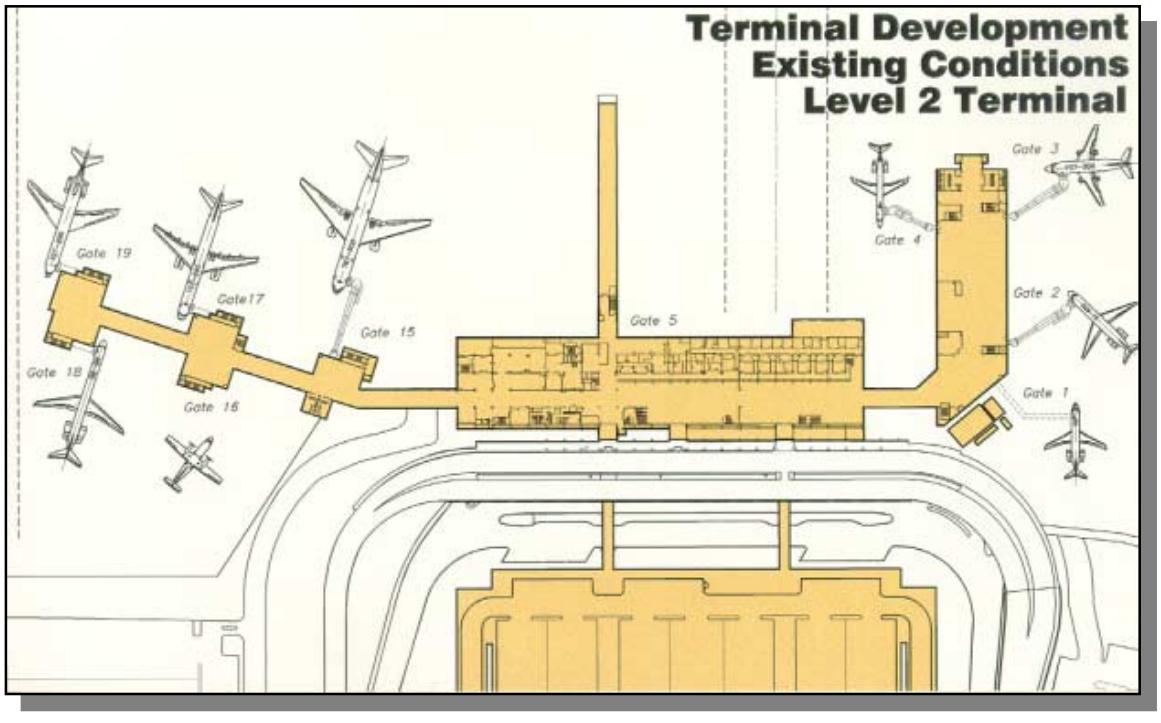


Exhibit 3-2 Terminal Second Floor – Ticketing/Gate Areas/Concessions

Car Rental

Within the baggage claim lobby are five rental car positions to assist travelers in obtaining a rental car. All five: Hertz, Avis, Enterprise, Budget, and Thrifty operate adjoining counters with vehicle pick-up in a consolidated parking facility adjacent to the terminal.

The food service concession area consists of a full service restaurant, bar, and snack bar operated by a single operator. There is also a limited snack bar located in the southwest corner of the East Concourse.

A non-profit concessionaire providing news and gifts to the traveling public operates the retail concession, located just east of the food service. The airport recently completed a Concession Plan in February of 1999 outlining a long-term plan for concession in the terminal. A detailed development plan is discussed in a later section of this chapter.

Concessions

Terminal Requirements

Terminal facility requirements are based in part on the methodologies presented in FAA Advisory Circulars, available inventory, and aviation forecasts. These requirements at Jackson International Airport are established by incorporating projected enplanement and operations forecasts into a design day model of peak-month weekday travel. The terminal facility requirements were derived to satisfy facility demand at peak weekday travel levels. The methodology simulates a design day operation schedule reflecting the typical values for aircraft fleet mix, hourly distributions and travel patterns characteristic of peak-month weekday travel.

For the purposes of this study, the passenger terminal requirements are examined using the methodology provided by FAA Advisory Circular 150/5630-13, *Planning and Design Guidelines for Airport Terminal Facilities,* based upon the airport operational forecasts presented in Chapter 2. This Advisory Circular establishes analytical relationships between passengers demand and the capacities of major terminal components.

Using the criteria in the Advisory Circular, several key components of the terminal facility have been defined and analyzed. Each terminal component was assessed based on current passenger demand, as well as forecast future demand. The guidelines used by FAA are based around the premise that the nature of the airport's existing terminal operations will serve as the basis, with adjustments, for the future operations. The first step is to determine the existing nature of the airport, whether low gate utilization or high gate utilization. Low

utilization airports are defined as airports which process six or fewer aircraft flights per gate per day. Conversely, high utilization airports are those airports where a high demand exists, and where seven or more aircraft are processed per gate per day. The Jackson International Airport is classified as a low demand airport.

The second step is to determine the current number of enplanements per gate using the existing airport terminal facilities. After determining the existing gate utilization (annual enplanements divided by existing utilized gates), an analysis of intermediate (10 year) and long-term (20 year) planning periods is conducted. For purposes of this analysis, an intermediate demand level of 836,915 annual enplanements (Planning Year 2010) and 1,009,773 annual enplanements (Planning Year 2020) was used. These forecast levels were selected to determine if the existing airport has the ability to serve the demands of a significantly higher level of passenger demand.

The existing enplanement level is then divided into the future enplanement levels to determine the ratio of growth. This ratio of growth is then related to the forecast period and a comparison is made to the design year gate capacity.

This analysis assumes that existing terminal facilities will be able to accommodate greater passenger demands in future years, particularly under a high growth mode. This is because the airport facilities will become more efficient, the aircraft fleet size and load factors will increase (thus serving more passengers per aircraft gate operation), and airline ground servicing operations will improve (thus reducing aircraft turn-around time, allowing more flights to be serviced at each gate).

Based on the analysis conducted for Jackson International Airport, gross terminal area requirements were calculated for a ten-year and a twenty-year forecast period. Typical terminal facilities at other airports with comparable demand to JIA's range from 21,000 to 23,000 square feet of total terminal space per air carrier gate for the 10 - year range, and 17,000 to 19,000 square feet per gate for the 20 year period. The reduction in facility square footage indicates efficiencies in processing passengers and the change in aircraft type from the traditional 100-140 seat jets to the 50 seat regional jets now entering the market.

Based on the forecast contained in Section 2, it is anticipated that air carrier operations at JIA will increase 24% by the year 2005, 35% by 2010, and 47% by 2015. This increase in operations, considering potential load factors and larger aircraft, will require approximately 13 gates by the year 2015. Applying FAA planning standards, the passenger terminal requirements will be 221,026 square feet by the year 2015. This represents a 3.4% increase over existing terminal space. Additional Planning Activity Levels (PALS II & III) are included to represent activity levels over and above the standard forecasted levels.

Existing facilities, required facilities, and projected facility demand through the year 2020 are provided in **Table 3-1**. Applying FAA planning criteria, the gross terminal area of the terminal exceeds existing facility requirements. However, the configuration of many of the existing terminal components are configured inefficiently and will pose problems in accommodating modern aircraft and travel patterns. Each of the major terminal components are described in detail in the following sections.

Table 3-1: JIA Terminal Facility/Gate Requirements (1998 to 2020)

		Needed						
	Existing	1999	2005	2010	2015	2020	PAL II	PAL III
Enplanements	635,256	652,061	752,891	836,915	920,940	1,009,773	1,500,000	2,000,000
Air Carrier Operations	41,027	42,368	50,671	55,556	60,151	64,774	96,221	128,295
Total Gate Requirements	9	9	11	12	13	14	20	27
Gross Terminal Area (sqft)	213,659	156,495	180,694	200,860	221,026	242,345	360,000	480,000
Gross Terminal Area/Gate (sqft)	2,100	1,175	1,200	1,300	1,400	1,500	2,100	2,100
Ticket Lobby Area (sqft)	7,911	6,000	6,500	6,500	7,000	7,000	10,000	15,000
Waiting Lobby (sqft)	7,800	2,500	2,500	3,000	3,000	3,500	5,000	6,000
Baggage Claim Area (sqft)	11,155	4,500	5,000	6,200	7,800	8,000	10,000	12,000
Baggage Belt Requirements	4	4	4	4	5	5	6	6
Terminal Counter Frontage (linear ft)	260	105	120	130	150	160	225	275
Airline Ticket Office/Support (sqft)	9,300	3,000	3,500	3,500	4,000	4,000	5,000	6,500

JIA presently has 9 gates in operation.

Source: JMAA 1999

The total square footage of the Terminal Building is over 213,650 square feet. The main ticket lobby, with ticket counters on the north side (see **Exhibit 3-3**), serves all air carriers. The rectangular shaped area provides over 20,000 thousand square feet for passenger services, airline operations, support and utility facilities, and office space. Presently there are twenty-six (26) ticket counters in this area. The average size per position of a ticket counter is 105 square feet. According to FAA planning scenarios, the ticket counter area is sufficient for future expansion. A total of four ticket counter positions are vacant and ready for existing airline expansion or a new entrant to the Jackson market.

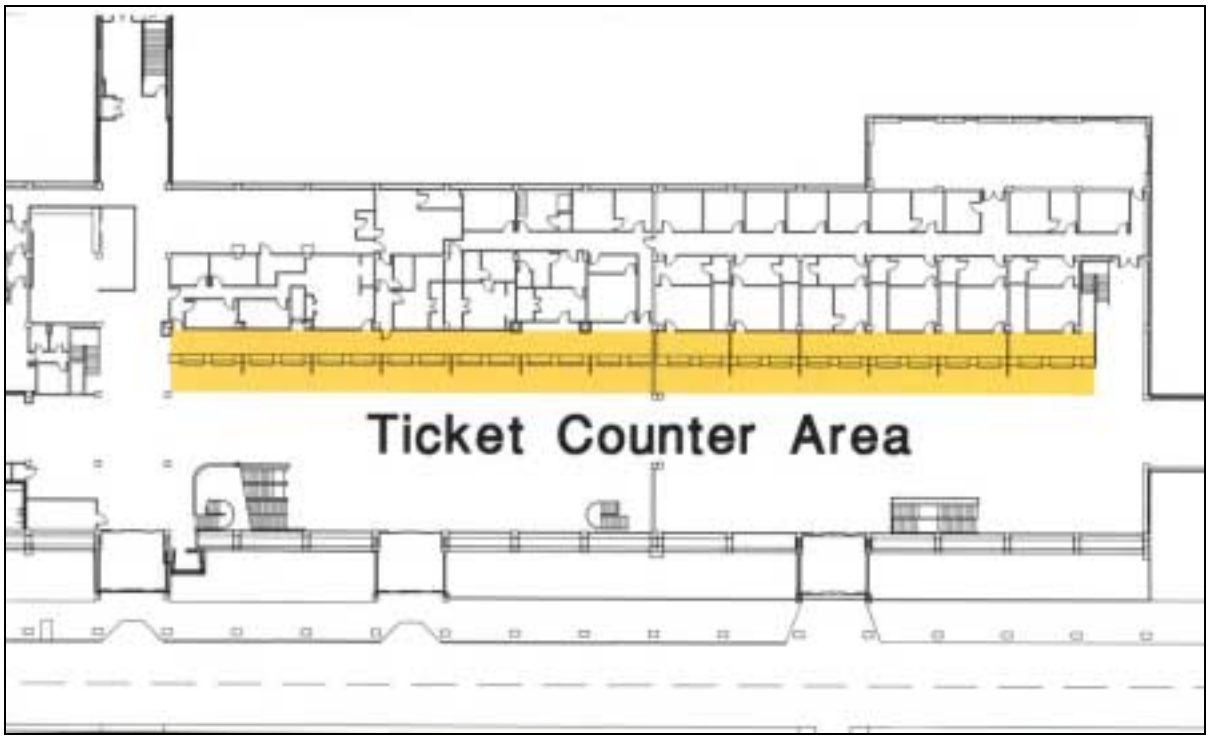


Exhibit 3-3 Terminal Second Floor Layout

Concourse and Gates

Gate facilities were analyzed to determine their ability to satisfy existing and future demands (operations). Air carrier operations for 1998 and future planning years are used to measure the operational capacity of the existing gates. Operational capacity is measured through annual and daily utilization rates. The daily utilization methods provide "average day peak month" (ADPM) departures as they relate to existing and projected gate utilization factors. The annual utilization method employs FAA nomographs, which establish the relationship of current annual enplanements per gate and forecasted growth rates to determine an estimate for future total gate requirements.

Jackson International Airport maintained an average daily use rate of 6 departures per gate in 1998. Scheduled air carrier service for the peak month was accommodated by 9 gates. For the purposes of the Master Plan, the existing 6 departures per gate is established as the minimum operation standard, 8 departures is considered the optimal operation standard and 10 departures per gate is the maximum operation standard. This methodology and the results are consistent with daily and annual utilization techniques. FAA planning techniques state that departures per gate typically increase by 1.5 to 3.0 departures per gate for the intermediate and long term planning levels, with 10 departures per gate deemed to be a ceiling for planning purposes.

With the Jackson market being primarily one of origin and destination flights, ground time

for some flights exceeds 75 minutes. As low-fare air carrier activity increases and the number of through flights with shorter ground times increase, more efficiencies will be realized in gate usage at the Airport. Demand for future gates is determined by future airline flight characteristics. Based on forecast future operations and current gate efficiencies, new gates will not be required until the year 2005. The need for new gates is based on a growth in origin and destination flights versus growth in through flights. **Table 3-1** provides gate requirements based on operation forecasts.

Recommendations

In order to accommodate the need for additional gates in the future, a significant terminal expansion or redevelopment is necessary. Because the configuration and orientation of aircraft gates generally drive the overall design of the terminal facility, it is being used as the critical design component for future facility recommendations. All other terminal facility recommendations will be made in the context of the building footprint dictated by the gate requirements.

As such, two principal terminal expansion alternatives are provided in this report. The first alternative design assumes that the existing facility will be redeveloped and expanded in place. The second alternative design assumes that the existing facility will be completely replaced by a new facility. Each of the two alternatives have been developed within an orderly phasing concept, which will allow development to be sequenced based on actual demand levels.

Alternative I Design

In Alternative I, it assumes the existing East Concourse and Terminal Expansion, which were completed in 1990, would essentially remain in place. Recognizing the East Concourse is under utilized because commuter operations are operating at full service gates, this concept serves to consolidate commuter operations into one new concourse designed specifically for that purpose.

Phase I – Commuter Concourse Buildout

This Commuter Concourse **(Exhibit 3-4)** is located in the center of the terminal and would include, in the first phase, four commuter gate positions sized to handle the regional jet category aircraft. The concourse will include one common multi-airline passenger holding area and processing area, and a common aircraft service corridor. This model is common for consolidated commuter facilities at other modern airports, and could efficiently serve the commuter operations at JIA.

As indicated earlier, the existing 9 gates could handle peak activity within normal standards of gate usage until the year 2005. Additional gates to handle expected traffic beyond the 2005 planning activity level year can be accomplished by adding the Commuter Concourse.

Currently commuter aircraft, including the new regional jets, use existing gates and

commingle with larger aircraft, which create inefficiencies in space utilization. An additional 18,000 sq. ft. Two-Level Commuter Terminal will be built providing four gates for ground or jetway loading of Commuter aircraft. All commuter operations can then be relocated, freeing additional capacity for the larger air carrier aircraft in the East and West concourses.

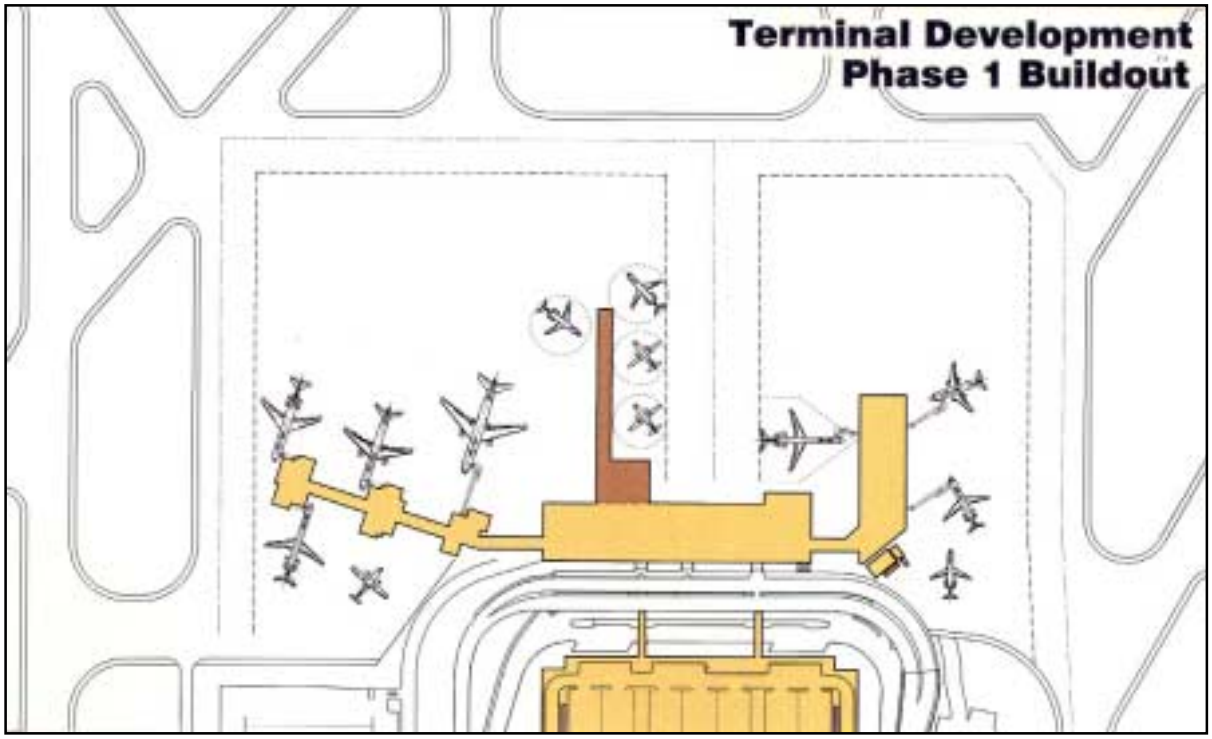


Exhibit 3-4 Alternative I - Phase I Commuter Buildout

Phase II – West Concourse Buildout

By the year 2010 through 2020, an additional three gates are required to meet the forecasted demand levels. Reconstruction of the west concourse was chosen as the best option for achieving this capacity increase. The West Concourse physical infrastructure is outdated and needs significant modernization. Because of that, it is believed that redevelopment of the West Concourse should occur before expansion of the East Concourse. The general reconstruction and expansion plan for the West Concourse is outlined in **Exhibit 3-5**.

This phase includes demolition and reconstruction of a 59,000-sq. ft. West Concourse to accommodate the additional gates necessary for the planning period. The new concourse will replace the current 5 gates with four gates capable of parking widebody aircraft. Two new gates will be added to the Commuter Concourse providing a buildout capacity of six gates. This will give the necessary capacity of 14 gates.

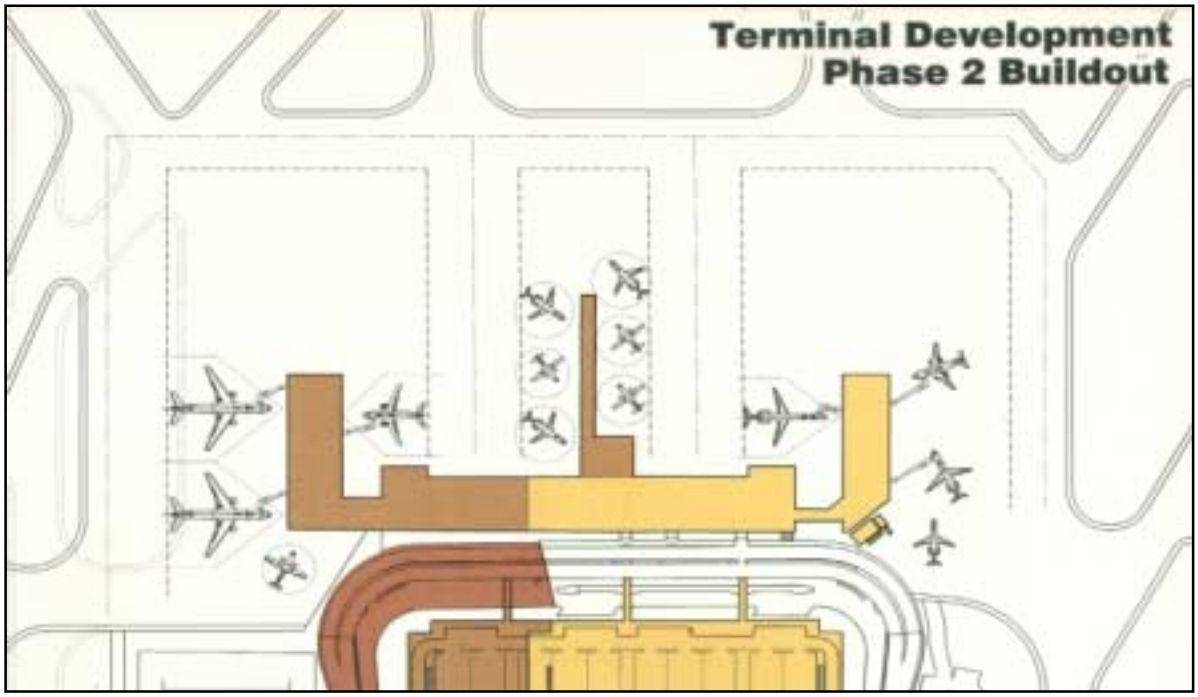


Exhibit 3-5 Phase II West Concourse Buildout

Support facilities related to Phase II, such as increased curbside frontage, additional aircraft ramp, and larger parking facilities, are discussed later in this chapter.

Phase III – Long Term Terminal Development Buildout

Based on the forecasts contained in Chapter 2, three additional gates will be required to meet the expected demand levels in the year 2020. In addition to the specific forecasts requirements, the terminal development program is designed to meet the ultimate demand requirements for the Planning Activity Levels of approximately 2,000,000 enplanements. This phase of the plan is outlined in **Exhibit 3-6**.

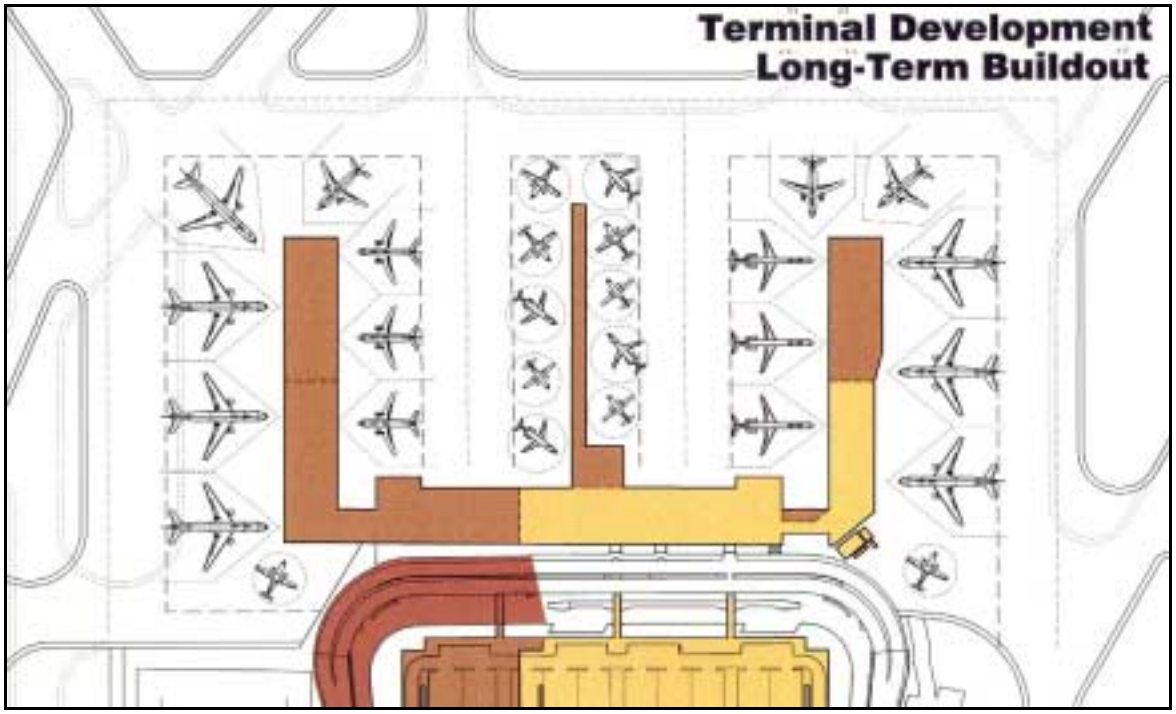


Exhibit 3-6 Phase III Long Term Buildout

Recommendations – Alternative II Design

Under the second terminal development strategy, a new terminal is constructed in place of the existing facility. **Exhibit 3-7** illustrates an approach, which is recommended for the Jackson International Airport. The conceptual layout of the facility is based around modern airport design principals of small to medium sized airports. This facility is based on a two level passenger service concept, with departures, flight service, and retail on the second level; and arrivals, baggage claim, and ground transportation provided on the first level.

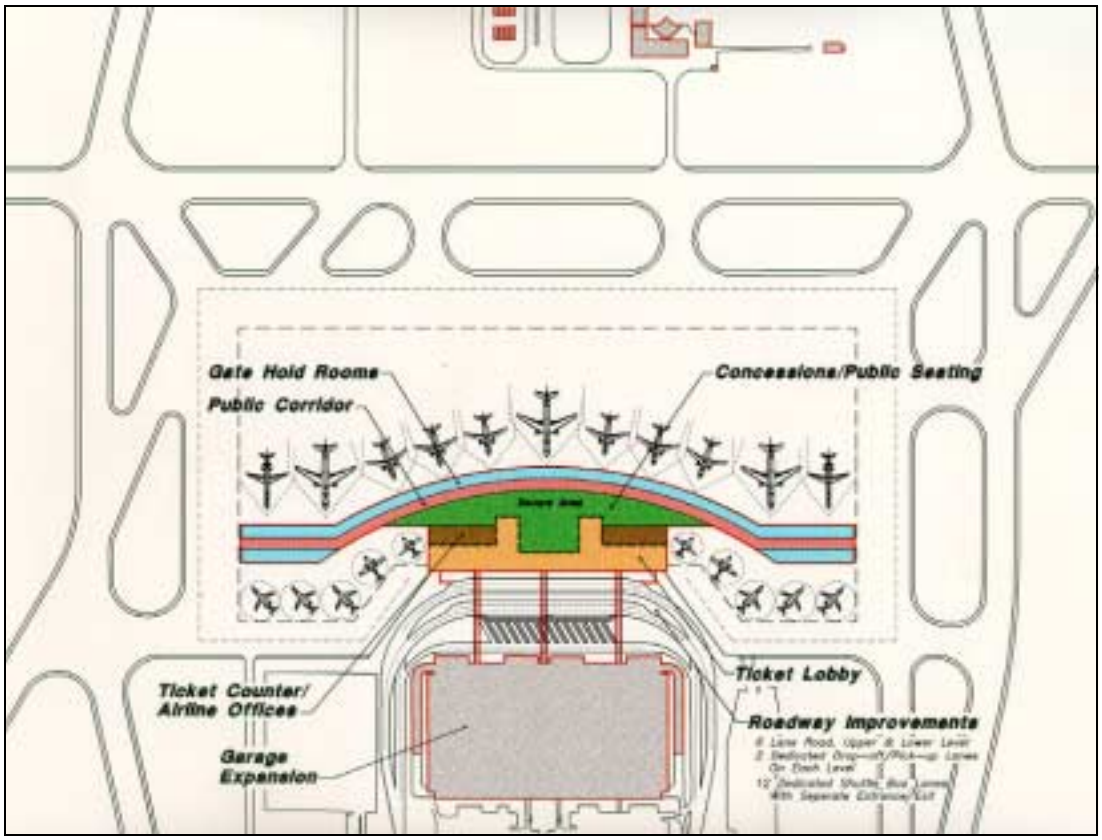


Exhibit 3-7 Alternative II Phase 1 - Design

On the flight service level (second level), a central retail area, both news/gifts and food/beverage, is provided. A contiguous holdroom is provided for all departures. This allows for the even distribution of waiting passengers between holdroom of differing gates. This also provides airline-ticketing operations on the public side of the facility.

As shown in **Exhibit 3-8**, the number of gates can be expanded by developing an additional concourse on the northside of the terminal. This expanded concourse can be accessed by either a ground level or subsurface corridor.

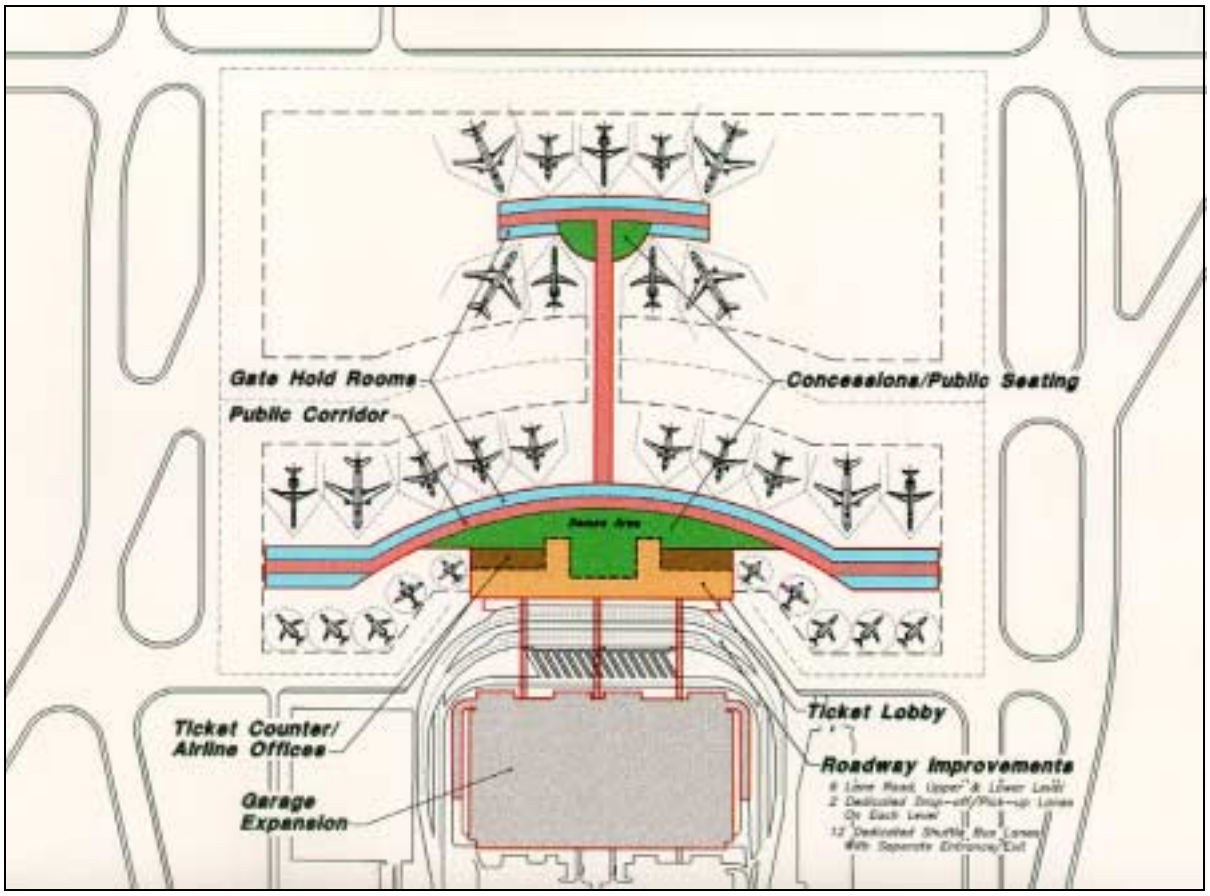


Exhibit 3-8 Alternative II Phase 2 - Design

Departure Lounges/Hold Rooms

The departure lounge or hold room provides a waiting area for passengers prior to boarding an aircraft, as well as space for greeting visitors. The size of the hold room is a function of the number of passengers anticipated to be in the lounge 15 minutes before boarding. For example, a departure lounge for an aircraft that seats between 111 and 160 passengers (such as a B-727 using a load factor of 75-85%) should have a minimum of 1,500 square feet.

Departure lounges at JIA range from 581 to 1900 square feet and are considered adequate given the seating capacity and fleet mix used by the airlines at JIA. However, the configuration of departure lounges must also be considered. As such, an analysis was conducted to determine departure lounge and hold room requirements, based on the agent station/queuing areas, seating requirements, queuing for passenger boarding, and aisle/corridor space for deplaning passengers.

Recommendations

Existing departure lounges are adequate given the level of passenger activity and the current mix of aircraft serving JIA. Aircraft that seat 110 – 148 passengers (such as MD80 or 727) are primarily used by Delta Airlines, with an occasional 200 seat Boeing 757 on the West Concourse. The average lounge size in the West Concourse is 1,200 square feet. In order to accommodate 85% of the aircraft capacity before boarding, the departure lounge space should be 2,000 square feet. While this indicates a deficit of 800 square feet per lounge in the West Concourse, the low to moderate level of activity allows for overflow into adjacent hold rooms with minimal disruption. However, further expansions in these areas are necessary to accommodate future traffic.

The East Concourse departure lounges, on the other hand, are able to accommodate all current traffic. The average departure lounge size varies from 2000 to 2200 square feet. However, further expansions in these areas are necessary to accommodate future traffic.

In addition, gate agent stations in the West Concourse are currently restricting the flow of traffic in the public corridors during check-in procedures. The placement of agent stations can have an adverse effect on the public corridors. Future stations should be recessed no less than 20 feet from the edge of the public corridor to minimize passenger queuing in the corridor.

Concessions Area

In February of 1999, JMAA completed work on a comprehensive Concession Program Plan. This plan analyzed the existing and future requirements for concession activity at JIA, and provided a series of options for improving all retail concessions at the airport. Each option was compared relative to customer convenience, revenue generation, and facility configuration. Based on the findings in the report, current traffic flow in the terminal does not warrant the development of multiple retail spaces. It was also determined, however, that the configuration, location, and size of the existing facilities were inconvenient to some travelers.

Food and Beverage – 9,026 sqft.

News and Gifts – 736 sqft. need 1,550 sqft. (Concession Plan recommendation)

Recommendations

A number of recommendations were made in the Concession Program Plan to improve the existing concession facilities and services. They are as follows:

- *Retail space should be located in areas of the terminal building which provide optimum exposure–visibility and accessibility to all passengers, well-wishers, and meeters/greeters;*
- *Retail space would be clustered together and double-loaded in specific areas of the terminal which are accessible and visible by the majority of passengers, well-wishers, and meeters/greeters in the terminal;*
- *The total size, location and variety of retail categories (i.e. News, Gifts and Specialty, and Food and Beverage) should form a critical mass which attracts passengers to the area; and*
- *The location of retail areas (including remote storage) should allow the tenants to operate efficiently, and easily access delivery and storage areas.*

Security Station

West Concourse Security Station

Air carriers are required to provide security screening services prior to boarding any passengers on scheduled or public charter aircraft of 30 passengers or higher. This activity is normally handled inside the terminal building at a security screening station. JIA currently has two stations, one at each concourse throat, operated under contract to the airlines operating at the airport. Both security stations are minimally sized with one x-ray and one weapons detector per station. This configuration appears adequate under most operating conditions, but poses a constraint to high demand periods.

Recommendations

Because of facility constraints, expansion of the security stations will be difficult. The throats to both concourses are narrow and will require either widening or relocation of the station. If the stations are expanded in place, the throat of either concourse would need to be expanded by approximately 10 feet, **Exhibit 3-9** shows this alternative. If the Commuter Concourse development scenario is implemented, it is recommended that the East Concourse throat be expanded when the commuters are relocated to the new concourse and East Concourse demand is based on all-jet activity (approximately year 2005).

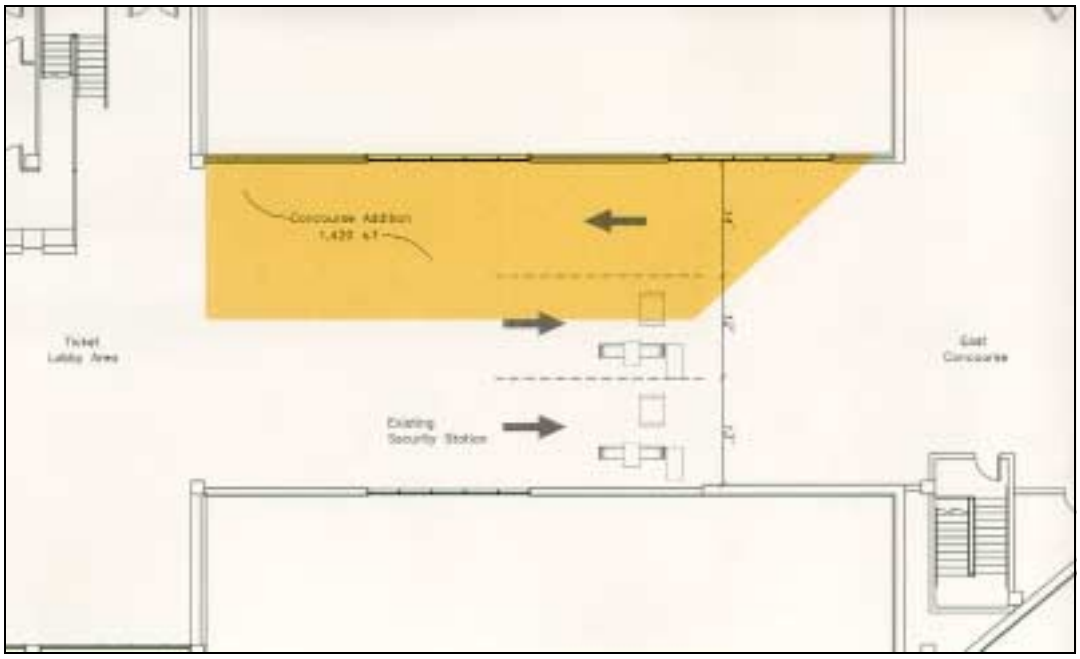


Exhibit 3-9 East Concourse Security Station Redevelopment

If the West Concourse redevelopment is implemented in the near term (before 2005), it is recommended that the expansion of the security station on this concourse be deferred until redevelopment occurs. If redevelopment of the West Concourse is deferred until the long-term period (after year 2010), expansion of the existing security station may be warranted.

As an option to facility expansion, reconfiguration and alternative queuing of passengers may be available. This alternative is presented in **Exhibit 3-10**. Again, this option is only considered viable as a short-term improvement pending the redevelopment and expansion of the facilities.

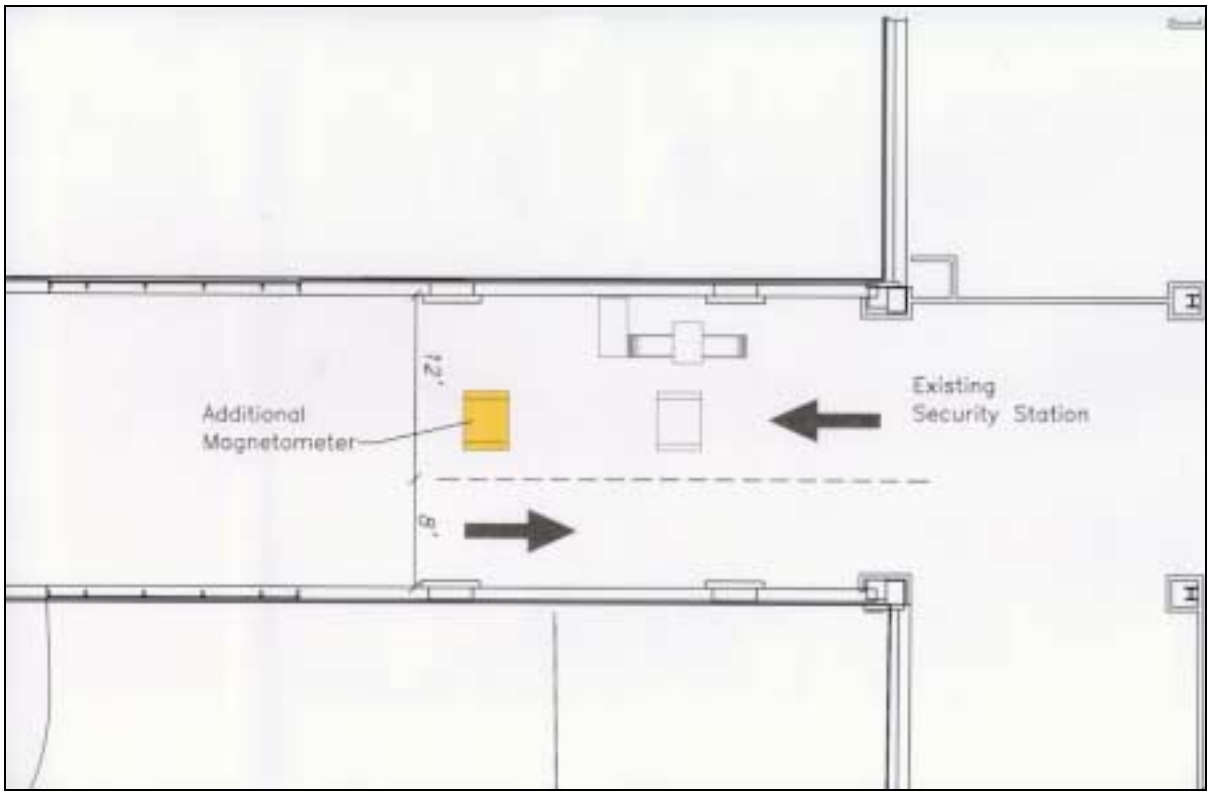


Exhibit 3-10 West Concourse Security Screening Alternative

Circulation

Public circulation corridors and passageways in the terminal facility are considered “non-rentable” spaces, but are included in the gross terminal area requirements. Historically, these types of spaces were sized according to specific passenger circulation requirements, which would, in turn, maximize rentable space and terminal revenue. Recent trends in airport planning, however, indicate a high level of customer demand for larger public spaces, including areas for entertainment and education. These design components are designated as “design-induced revenue” features, and often lead to opportunities for increased consumer spending.

Design-induced revenue is defined as consumer spending resulting from architectural design elements or environmental features intended to control public behavior. For example, "pedestrianization" of the concession areas with plazas, food courts and art displays attempt to divert the traveler or encourage a stroll and browse traffic. Ultimately, the enhancement of public non-rentable areas and the availability of bars, restaurants, shops, and kiosks can define the nature of consumer activity.

For planning purposes, the Advisory Circular 150/5360-13 estimates non-rentable space requirements at 45% of the total gross terminal area. This estimate allocates 30% to public spaces such as circulation, waiting areas, restroom, and exits, and 15% to mechanical rooms, shafts, tunnels, stairs, shops and electrical communication rooms.

The main corridor and access to and use of vertical corridors such as stairwells, elevators and escalators primarily define public circulation in a terminal environment. Public circulation totals 70,314 square feet, or 33% of the total gross terminal. Sizing the main corridor includes calculating the "effective corridor design width", less existing and planned obstructions, and dividing the peak hour corridor population per minute by the corridor width capacity factor expressed in people per unit width per minute.

Recommendations

While the airport has enough aggregate public space available for passengers, public space in the western half of the terminal is undersized and antiquated. It is necessary to expand the West Concourse corridor to provide more passenger space during peak times for seating and greeting. The third floor, which offers approximately 9,000 square feet, is occupied primarily by Aviation offices, and is essentially unavailable for public use.

Ticket Counters and Ticket Offices

The design of ticket lobbies should include the required linear footage of ticket counters, and the square footage of support/office area. FAA design standards are based on the percentage of origin/destination passengers, and the number of aircraft arrivals in the peak hour.

The Airport currently has 260 linear feet of ticket counters. There are 9,300 square feet of support/office space. By 2020, the requirements will be for 160 linear feet of ticket counters or 60% over its current capacity; 4,000 square feet of support/office space, or 40% of its current capacity. Based upon current FAA design standards, there is sufficient capacity to support these services within the planning period.

Baggage Handling Areas

The design characteristics of the baggage handling areas dictates the linear foot requirements for claim frontage (baggage carousels), as well as the square footage required for passenger queuing (baggage claim) and personnel areas (baggage make-up). The standards are based on the percentage of origin/destination (O/D) passengers and the number of aircraft arriving in the peak 20-minute period. JIA does not operate as a hub, and the O/D percentage, at 95%, is considered high by FAA standards.

The current baggage area has four carousels totaling approximately 256 linear feet of claim frontage. It is estimated that in 2020, the requirements will be for 316-324 linear feet, which is an increase of 20% over current capacity. The current passenger queuing area (baggage claim) has approximately 10,155 square feet of space. By 2020, it is estimated the passenger area will require approximately 10,000 square feet. Although the queuing area size is sufficient to meet the capacity, the configuration of existing baggage belts restricts passenger flow during peak times. **Exhibits 3-11**, **3-12**, and **3-13** illustrate the existing configuration of all apron level terminals.

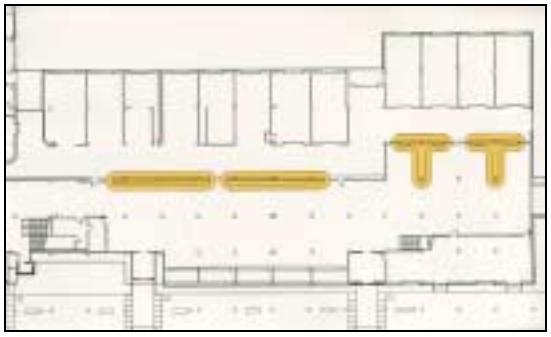


Exhibit 3-11 Baggage Carousels

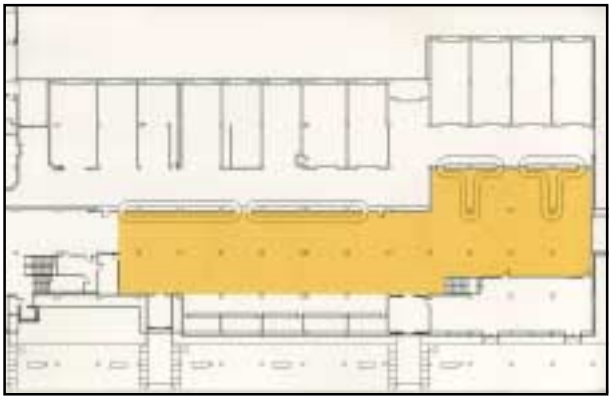


Exhibit 3-12 Baggage Claim Area

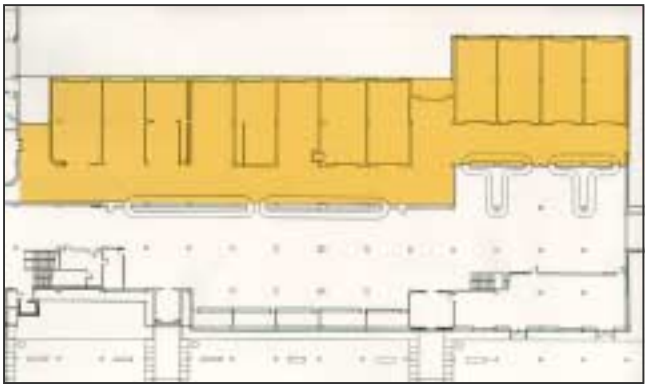


Exhibit 3-13 Baggage Make-Up Area

The current personnel area (baggage make-up) has approximately 16,600 square feet. By 2020, it is estimated the personnel area will require approximately 12,000 square feet. The current capacity in square feet is sufficient to meet the demand during this planning period.

Recommendations

Reconfiguration of the baggage claim area will be vital to the circulation of passengers within the future. As shown in **Exhibit 3-14,** the expanded baggage claim increases the number of baggage belts from the current four to six, providing a total of 400 linear feet of baggage belt and approximately 14,500 square feet of baggage claim area.

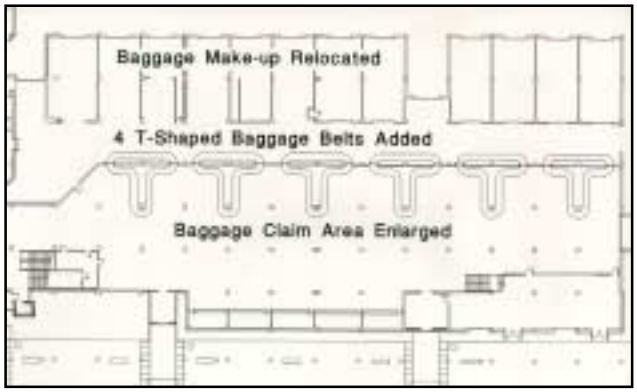


Exhibit 3-14 Baggage Claim Expansion

The new configuration allows for sufficient queuing for Car Rental counters and increased capacity for passenger growth.

Terminal Curbside Frontage

Terminal curbside frontage provides the area for interface between ground transportation modes and the passenger terminal. Automobiles, taxis, limousines, shuttle vehicles, and buses all use the terminal curb area. A two-level roadway that separates departure and arrival passenger activities provides curb frontage at the Main Terminal. The upper level roadway is a four-lane roadway with a pedestrian island separating the two inside and two outside lanes. The upper level roadway serves departing passengers.

Passenger vehicles and taxi drop-off are accommodated by the inner and outer lanes, with the innermost lane providing limited curbside standing. The second lane allows passenger drop-off. The inner lanes also provide curbside space for service vehicles. The outer lanes provide curb frontage for buses, Airport shuttles, ground transportation services, and other passenger vehicles. The innermost lane provides approximately 493 linear feet of curbside frontage, while the pedestrian island provides 550 linear feet of curbside frontage for enplaning passengers.

A four-lane lower level roadway is comparable to the upper level roadway and serves arriving passengers. The lower level roadway provides two two-lane sections separated by a pedestrian island. The two-lane section nearest the terminal building is assigned to Airport-authorized ground transportation services and taxis, and the outer most lanes are assigned to passenger car vehicles for general passenger pickup. The inner and outer sections provide approximately 430 and 520 linear feet of curbside frontage, respectively, for arrival passenger pickup.

Through the Master Plan analysis, it was determined that the existing terminal roadway will be adequate to maintain acceptable levels of stable flows and vehicular maneuverability through projected activity of the year 2020. It was further determined that the existing lower level roadway configuration is inadequate to serve the existing levels of vehicular demand.

It is also estimated that the total linear length of curb frontage, on both the inner and outer

roadways, will be adequate until the 2020 activity level. As the Airport approaches the 2020 activity level, congestion is anticipated to increase on the inner segment of the upper-level/departure roadway, and the outer segment of the lower-level/arrival roadway during peak enplanement periods.

Recommendations

Immediate Recommendations

Because of the narrow column width and spacing of the ramp, however, the lower level capacity levels are already constrained and will continue to become more constrained in the short-term. The driver's ability to maneuver will be more noticeably limited, approaching stop-and-go conditions. Due to physical constraints in the ramp infrastructure, expansion of the existing facilities is not feasible. In the immediate-term, therefore, the Airport must maximize utilization of the existing facilities. Strict enforcement of pick-up and drop-off procedures, including enforcement of no-stopping requirements, is required to maintain traffic flow at all activity levels.

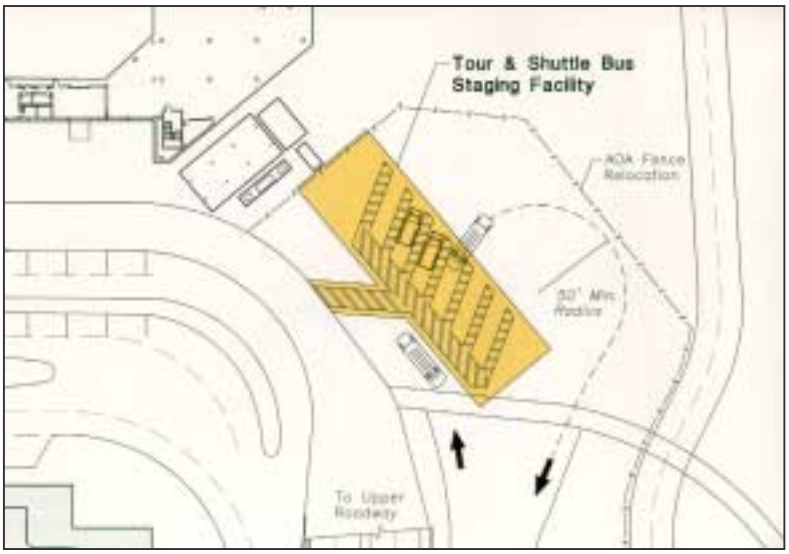


Exhibit 3-15 Shuttle Bus Staging Area

Future congestion on the lower level/arrival roadway may require the restructuring of roadway usage. Presently, the outer lanes serve as queuing area for taxicab and ground transportation vehicle pickup, while the inner lanes serve general passenger pick-up. As a short-term option for improving lower-level congestion, utilization of the outer roadway should be improved. Improved signage and pavement markings could be used to restrict the inner lanes to commercial vehicles only (i.e.-taxicabs, shuttles, etc.) and force public vehicles to the outer lanes. The outer lanes could then be widened to accommodate additional lanes for public access. This option is presented in **Exhibit 3-15**. As an adjunct to this option, a remote bus staging area could be developed at the southeast corner of the terminal (see **Exhibit 3-15**). This bus staging area has good walking access to the terminal, and is in a secured and dedicated location. The disadvantage of this option is that it eliminates the aircraft parking position at that location.

Short-Term Recommendation

Additional efficient passenger loading and unloading lanes will be required in the short term, as indicated by existing land constrains and delays. Many options were explored to develop an efficient expansion of the curbside area, while still maintaining the existing structure. Because of the extremely narrow column separations, both laterally and longitudinally, efficient expansion and redevelopment of the existing ramp is impractical.

It is recommended, therefore, that the existing ramp structure be completely reconstructed into a modern structure with widely spaced columns and adequate lane configurations. A general concept for this new structure and lane configurations is provided in **Exhibit 3-16**.

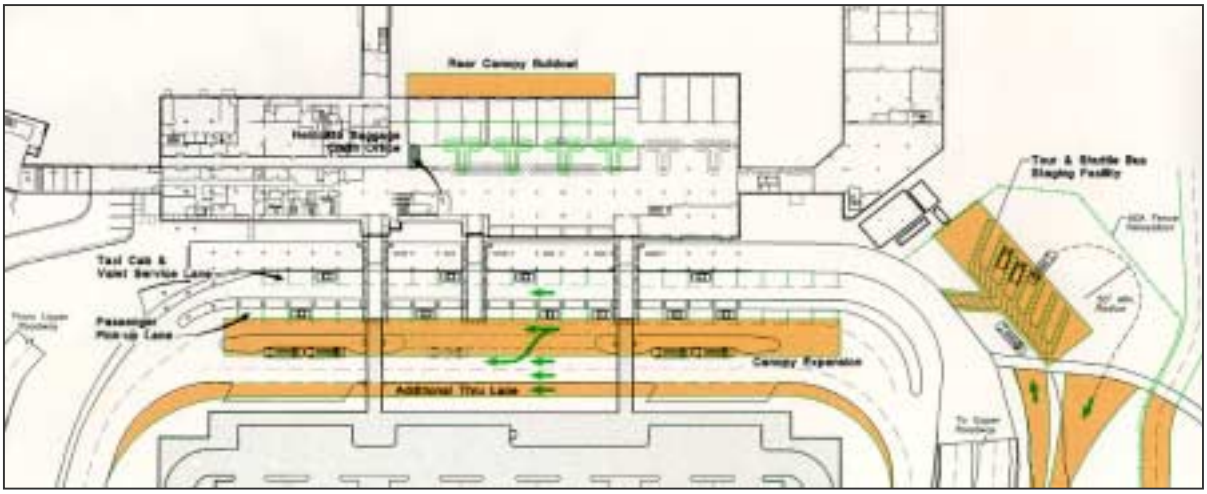


Exhibit 3-16 Terminal Roadway Improvements

Public Parking

Short-term public parking generally refers to hourly parking, usually up to three hours in duration. Long-term public parking generally refers to more than three hours in duration and overnight parking. Both short-term and long-term parking are provided in the Terminal Parking Garage.

In the Master Plan process, a number of factors were analyzed to determine present and future on-airport public parking demands:

- Peak-hour occupancy levels for each lot.
- Parking facility requirements for both current and projected levels of activity, presented as the total number of spaces which would be required so that peak demand would require no more than 90% of the available spaces. Demand above this level would increase the difficulty for passengers to locate the few remaining spaces.
- Future public parking demand is projected to increase as a linear function of originating and terminating passengers.
- Future employee parking demand is projected to increase related to aircraft operations.

These assumptions were the basis for projecting future on-airport parking demands for three future planning years at the airport: 2005, 2010, and 2020.

The main terminal parking garage and adjacent surface lot provide all public parking at JIA. The main terminal parking garage is a two-level facility with 1,012 total parking spaces, which accommodates both short-term and long-term parking. The Long Term Lot is a surface lot that provides 678 parking spaces and primarily serves as an overflow lot when the parking garage is full. Additionally, an overflow lot located adjacent to the general aviation facilities is used during high demand peak periods, particularly holidays and special events. This lot accommodates approximately 300 vehicles.

Based on analysis in the Master Plan, existing peak-parking capacity is established at 1,990 spaces, with 1690 available during normal operations. It is estimated that the current patron parking facilities operate at 80% of available capacity, during normal operations, and that during routine peak periods the demand reaches as high as 1,990 spaces, which is 95% of available capacity, including the overflow lot. This calculation is based on the capacity of the multi-level garage and long-term lot, peak occupancy levels attained during the course of the year, and percentage increases to accommodate vehicle circulation allowances.

Based on the relationship of current demand to current operating capacities, an estimate was prepared for future capacities to meet anticipated demand. **Table 3-2** shows the anticipated capacity levels for each of the forecast years, including the two Planning Activity Levels. This analysis assumes that the correlation between enplanement level and parking demand will continue, with slight modifications, through each planning period. It is anticipated that as enplanement levels increase at the airport the proportion of passengers needing parking spaces will reduce. This reduction will occur because more passenger will be using other modes of transportation, such as hotel shuttles, rental cars, rapid transit, etc., which will not create a resultant parking requirement. These alternative modes of transportation will become more cost effective with higher demand levels, and will, therefore, become more widely available.

Table 3-2 Public Parking Demand 1999-2020

	Enplanements		Normal Ratio	Resulting Demand	Peak Ratio	Resulting Demand
1998	635,256		0.00213	1,352	0.00313	1,990
1999	652,061	2.65%	0.00213	1,388	0.00313	2,043
2000	668,865	2.58%	0.00213	1,424	0.00313	2,095
2001	685,671	2.51%	0.00213	1,459	0.00313	2,148
2002	702,476	2.45%	0.00213	1,495	0.00313	2,201
2003	719,280	2.39%	0.00213	1,531	0.00313	2,253
2004	736,085	2.34%	0.00213	1,567	0.00313	2,306
2005	752,891	2.28%	0.00213	1,602	0.00313	2,359
2006	769,695	2.23%	0.00213	1,638	0.00313	2,411
2007	786,500	2.18%	0.00213	1,674	0.00313	2,464
2008	803,306	2.14%	0.00213	1,710	0.00313	2,516
2009	820,110	2.09%	0.00213	1,745	0.00313	2,569
2010	836,915	2.05%	0.00213	1,781	0.00313	2,622
2011	853,719	2.01%	0.00213	1,817	0.00313	2,674
2012	870,525	1.97%	0.00213	1,853	0.00313	2,727
2013	887,330	1.93%	0.00213	1,888	0.00313	2,780
2014	904,134	1.89%	0.00213	1,924	0.00313	2,832
2015	920,940	1.86%	0.00213	1,960	0.00313	2,885
2016	938,058	1.86%	0.00213	1,996	0.00313	2,939
2017	955,495	1.86%	0.00213	2,034	0.00313	2,993
2018	973,255	1.86%	0.00213	2,071	0.00313	3,049
2019	991,346	1.86%	0.00213	2,110	0.00313	3,105
2020	1,009,773	1.86%	0.00213	2,149	0.00313	3,163
PAL I	1,500,000		0.00213	3,192	0.00313	4,699
PAL II	2,000,000		0.00213	4,257	0.00313	6,265

Employee Parking

Employee parking (**Exhibit 3-17**) is provided in a surface lot west of the parking garage. The Employee Parking lot provides 320 parking spaces for airport employees. Because of the nature of daily shift changes, normal peak activity typically occurs near shift change, when the new shift arrives prior to the departure of employees from the prior shift.

Exhibit 3-17 - Existing Employee Parking Lot

Demand for employee parking is estimated to be near the capacity of the existing facility. Future employee parking demand is projected to increase in relation to commercial aircraft operations.

Recommendations

Because of these factors above, it is anticipated that within the short term, a new and alternative approach is needed to accommodate the patron and employee demand on vehicle parking facilities at the airport.

Regional Transportation Center

As part of the major expansion of the airport facilities and the services provided, a new Regional Transportation Center (**Exhibit 3-18**) is proposed on the southeast corner of the airport.

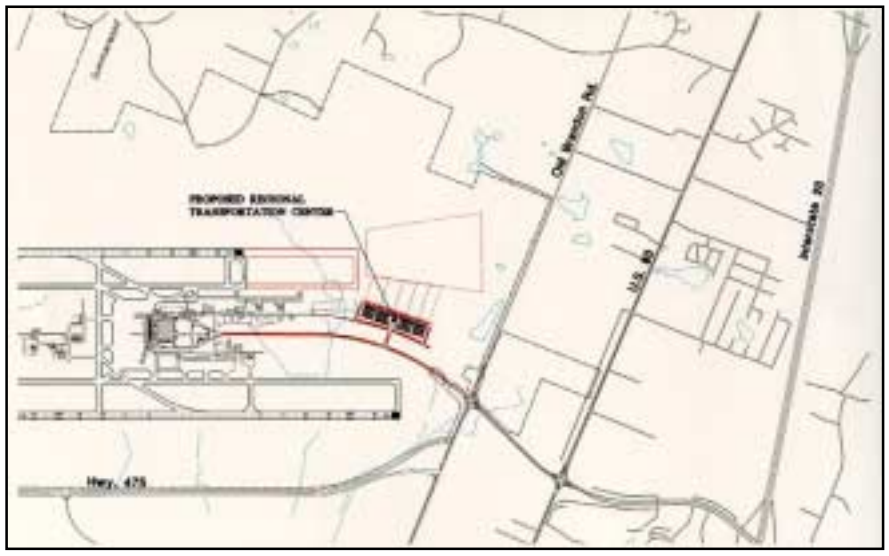


Exhibit 3-18 Regional Transportation Location

This facility will serve as the central point for all transit based and commuting activities in the region. This facility will be multi-faceted and multi-purposed. It will serve as the terminating node of the Jackson Intermodal Corridor Project, and will be ideally suited to serve as a common distribution and consolidation point for both inbound and outbound transit based trips.

In its first phase, the Regional Transportation Center will serve two principal functions: First, it will provide a commuter parking facility for riders who take transit services into downtown Jackson. Secondly, it would serve as a facility to transfer airport-based employees who desire the use of public transit services.

Because of the unique geographical location of the airport, it is believed that this project would be one of few projects of its type that would serve transit passengers on both inbound and outbound trip legs simultaneously. The nature of the two major trip generators (the airport and downtown Jackson) provides a unique opportunity to share and distribute the demand for transit services. Trip generators during morning peaks would include inbound commuters parking and consolidating for a transit trip downtown. Simultaneously, employees working at facilities on or near the airport would consolidate along the transit route for the ultimate destination to the airport's Regional Transportation Center. The airport would then provide shuttle buses from the Regional Transportation Center to the airport terminal or other airport employment centers or trip generators.

The planned facility would include, in the initial phase, a ten (10) acre surface parking facility and related passenger transfer facility. This site would accommodate approximately 500 vehicle parking spaces for commuter/transit related parking. The facility would be fed from a dedicated access roadway connected to the airport entrance roadway. This roadway will serve as the access point for both terminal bound traffic and public traffic.

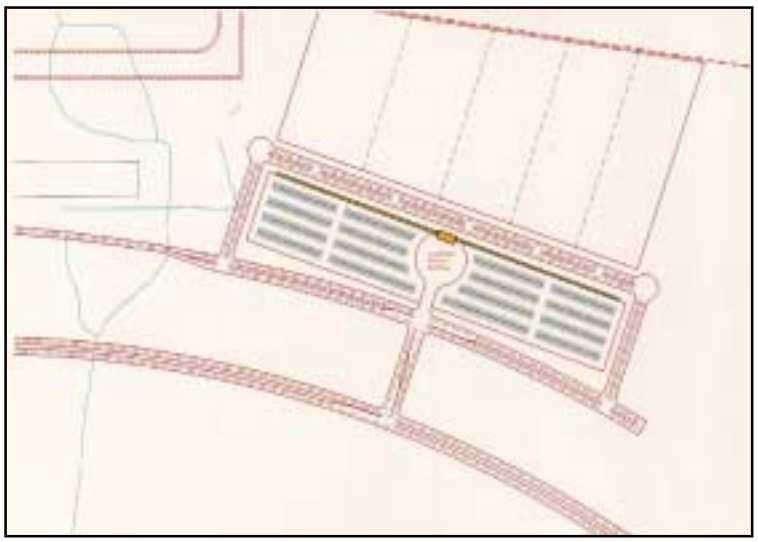


Exhibit 3-19 Employee Lot

This facility will be centrally located on one of the most visible areas of the airport. Over time, the first phase transportation center will expand to serve as the central focus of all surface transportation activities of the airport.

In addition to the public transit characteristics, the facility would also serve as a remote overflow lot and an employee parking lot. As shown in **Exhibit 3-19**, the existing employee parking would be relocated to the new lot, which would allow the current employee lot to be converted to overflow patron parking. This conversion will be critical to the expansion and improvement of rental car facilities, as well as providing a relatively low cost option for increasing patron parking.

Airport Entrance Road

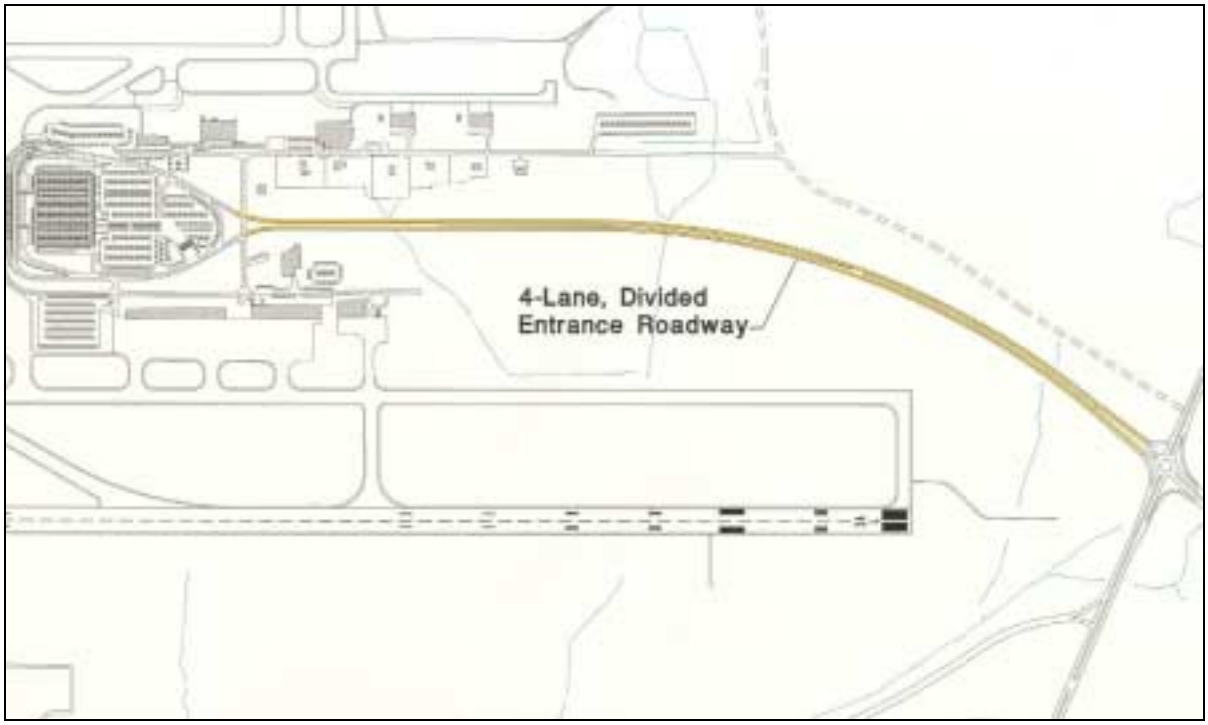


Exhibit 3-20 Airport Entrance – Four Lane Expansion

As passenger traffic increases at the airport, vehicular traffic congestion on the airport entrance road is inevitable. A recommendation to increase the number of traffic lanes from two to four is essential. As shown in **Exhibit 3-20,** the proposed Regional Transportation Facility near the airport entrance necessitates a planned expansion capable of accommodating the traffic created at the airport's entrance.

Rental Cars

Currently, the rental car operations at JIA consist of one common ready-return lot southeast of the terminal facility and individual storage and maintenance facilities south of the ready return lot. The ready-return lot consists of five rental car operators with 50 parking spaces each (for a total of 200 spaces). The facility is relatively new, but is already constrained, and cannot be enlarged because of physical site constraints.

Exhibit 3-21 Existing Car Rental Properties

The maintenance and storage facilities consist of individual leaseholds for each tenant, ranging in size from .78 acres to 1.29 acres. These facilities are also becoming constrained, and requests have been made by several of the tenants to expand their facilities. **Exhibit 3-21** graphically illustrates the location of all existing rental car facilities.

Recommendations

Exhibit 3-22 Conceptual Consolidated Rental Car Facility

Since the ready-return lot and the maintenance/storage facilities are currently constrained, several options were examined for their redevelopment. **Exhibit 3-22** illustrates a consolidated rental car concept, which would bring all rental car operations together onto one facility. This concept would require patrons to pick-up and return vehicles at this facility, which would necessitate shuttle bus operations to and from the terminal.

Ultimately, it was determined that the best alternative for JIA would be to relocate both the ready-return facility and the maintenance/storage facilities, but leaving them as separate operations. Because of the nature and size of JIA, customer convenience requirements will dictate that a ready-return facility be located in close proximity (easy walking distance) to the terminal. As such, it is recommended that the ready-return facility be relocated to the top floor of the parking garage. It is estimated that approximately half of the upper level would be required for this operation.

With this relocation, additional patron parking will be required to replace those displaced by the rental cars. Conversion of the employee lot into a patron lot is essential, so that additional capacity can be constructed without impacting more patron spaces.

Because the maintenance and storage facilities are not strategically located for significant expansion, it is also recommended that these facilities be relocated to the new regional transportation center. The new facilities are sized at approximately 4.6 acres, which is based on modern car rental facility standards. This facility is also sized to allow incremental development and expansion of the facilities.

Exhibit 3-23 illustrates the proposed location and configuration of the recommended new ready return facility, as well as the new maintenance/storage facilities.

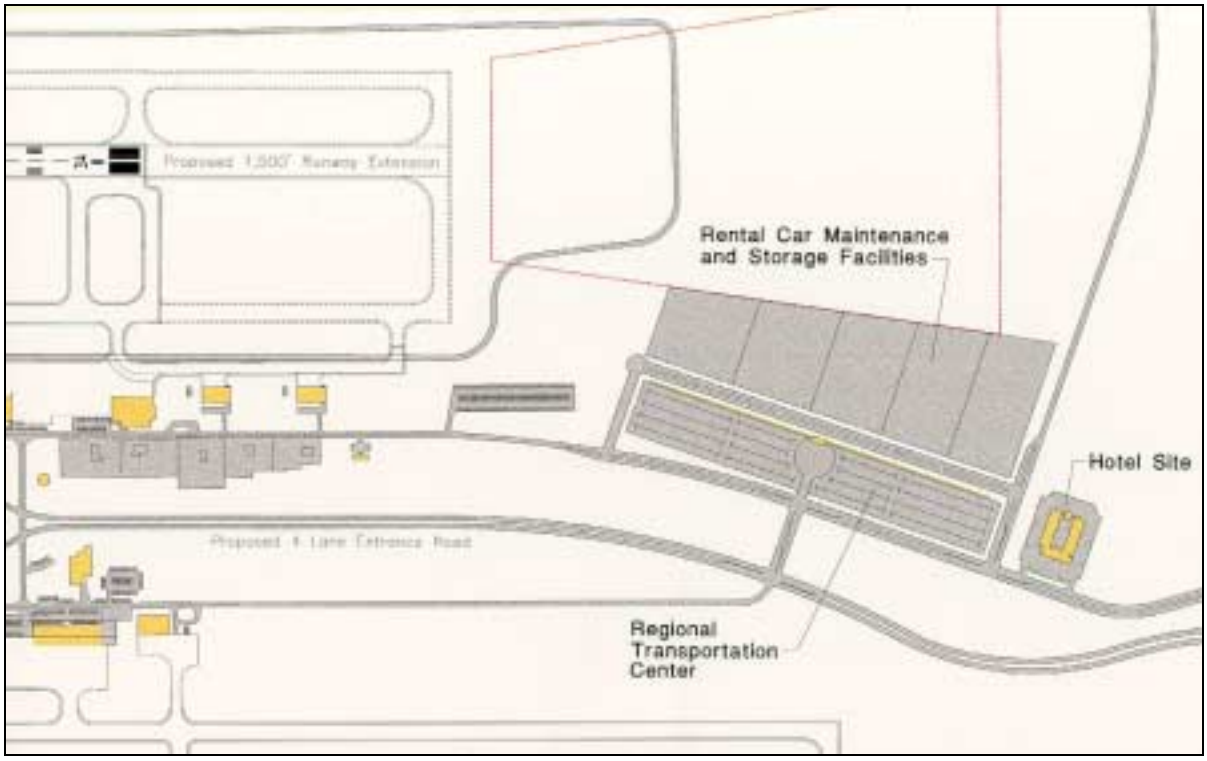


Exhibit 3-23 New Rental Car Maintenance/Storage Facilities

East Side Business Park Development

This is a planned 400-acre office/industrial development site for Jackson International Airport. Designed to take advantage of the exceptional growth opportunities planned for the east side of the Jackson Metropolitan area, the East Side Business Park will be located off the proposed Eastern Metropolitan Center Access Road now being designed. The area is parceled out in a typical business park development style.

Part of the development area is adjacent to a planned parallel taxiway adjacent to Runway 16L/34R. With access to the runway, the airport can market aviation related businesses to locate facilities and take advantage of runway access.

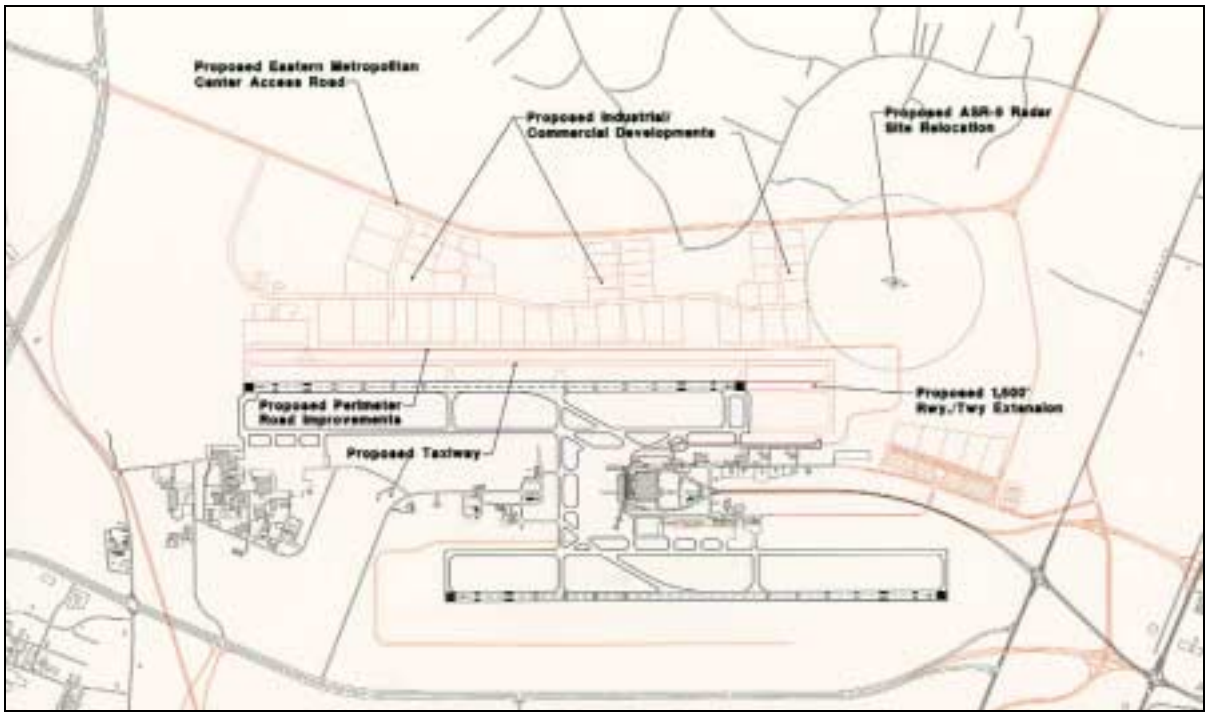


Exhibit 3-24 Business Park Plan

Terminal and Airfield Maintenance

In addition to the primary landside passenger service components discussed above, various support components were also analyzed in this master plan.

The FAA's Advisory Circular on terminal design, AC 150/5360-13, does not specifically address maintenance facilities, other than to state, "requirements will vary." In the absence of design standards, it is safe to assume that the current level of service must at least be maintained by providing additional maintenance space as facilities and facility demands increase.

The current Airfield Maintenance facilities are located north of the Main Terminal Ramp. They consist of two facilities, with a total of 20,450 square feet. Because these facilities are strategically located in a good area and are relatively unconstrained, it is recommended that any expansion that is required be accomplished on the site of the existing facilities. Because sizing of maintenance facilities is somewhat independent of passenger demand, no empirical analysis of specific facility sizing per forecast year was conducted.

Military Facilities

The Mississippi Air National Guard (MANG) brings together a large presence at Jackson International Airport. Employing approximately 1,000 support and non-civilian personnel, MANG's mission is to provide airlift support for the United States Air Force. A compliment of 12 C-141 Starlifter Aircraft provides immediate relief to crisis and conflicts throughout the world.

The Mississippi ANG base occupies 96.8 acres and is leased by the U.S. Government on behalf of the Mississippi ANG from the City of Jackson, Mississippi (**Exhibit 3-25**). The 33 installation buildings consist of a variety of support buildings and Aircraft Hangars enclosing approximately 341,400 square feet. Nearly half of all floor space has a dominant aircraft maintenance use, with an estimated two thirds of all the installation go to support the flying mission.

Exhibit 3-25 Mississippi ANG Current Layout

Exhibit 3-26 MANG Long Term Development Plan

The land use plan as shown in **Exhibit 3-26** depicts the Mississippi ANG after future expansion needed to implement short term and long range mission objectives. In the short term MANG is slated for delivery of the new C-17 Globemaster to replace the existing C-141 Starlifter in service at the base.

Land requited for the expansion of the apron and associated safety zones, maintenance and operations facilities and the small arms range will require an additional 55 acres of land on airport property. This acquisition is proposed to occur in two stages, one during a short term and the other during long term.

Short Term – 5 to 10 Years

1. Construct Fire Station
2. Add Alter Bldg 103/Compositeb/Life Support/Physical Fitness
3. Alter O&T Building 116
4. Construct New Installation Entry, Fencing, Secondary Gate
5. Construct Small Arms Range
6. Construct Truck Loading Ramp
7. Construct Hazardous Storage Facility
8. Apron Expansion, Phase I/Wash Rack

The Long Range Plan provides for future accommodation of 16 C-17 aircraft. The projects included in the long-range plan are:

Long Term – 10 +

1. Construct Aircraft Generation Unit/Extend Starlifter Road
2. Construct Flight Simulator
3. Construct Squadron Operations
4. Alter Building 129 for Aeromed Evacuation
5. Apron Expansion, Phase II
6. Expand Hangar 102
7. Construct Maintenance Hangar/AGE Shop
8. Construct Fuel Cell Dock
9. Addition to Supply
10. Extend Globemaster Road
11. Construct Fire Training Area
12. Construct Mobility Complex/Truck Scale

Section Four

AIRSIDE FACILITIES INVENTORY AND RECOMMENDATIONS

Introduction

This section provides an overview of the inventory and recommendations of Airside facilities, including the airfield (i.e. runways, taxiways, aprons, and navigational aids) and buildings and roads that are inside the Airport security fence. These facilities are within the Airport's Aircraft Operational Area (AOA), and are considered the restricted area of the Airport.

This chapter provides an overview of all airside facilities, as well as summarize the analysis that were conducted to determine the minimum requirements necessary to meet existing and future airfield requirements. A comparison of existing airfield facilities to the minimum requirements will serve as the basis for recommended airside improvements and/or modifications.

Many of the recommendations in this report are based on empirical capacity analysis. Other recommendations, however, are based on tenant needs or operational necessity. The rationale for recommendations based on operational necessity will be thoroughly discussed in this chapter.

The following section delineates the primary airside facilities at Jackson International Airport.

Description of Existing Airfield Facilities

Runway and Taxiway Facilities

The Jackson International Airport consists of two runways, **Runway 16R/34L** and **Runway 16L/34R**. Runway Ends 16L and 34L have precision instrument approaches on each end, while Runway 16R and 34R are designated as a precision approach. The specific runway characteristics are listed in Table 4-1. **Exhibit 4-1** illustrates the configurations and locations of all runways and taxiways at Jackson International Airport.

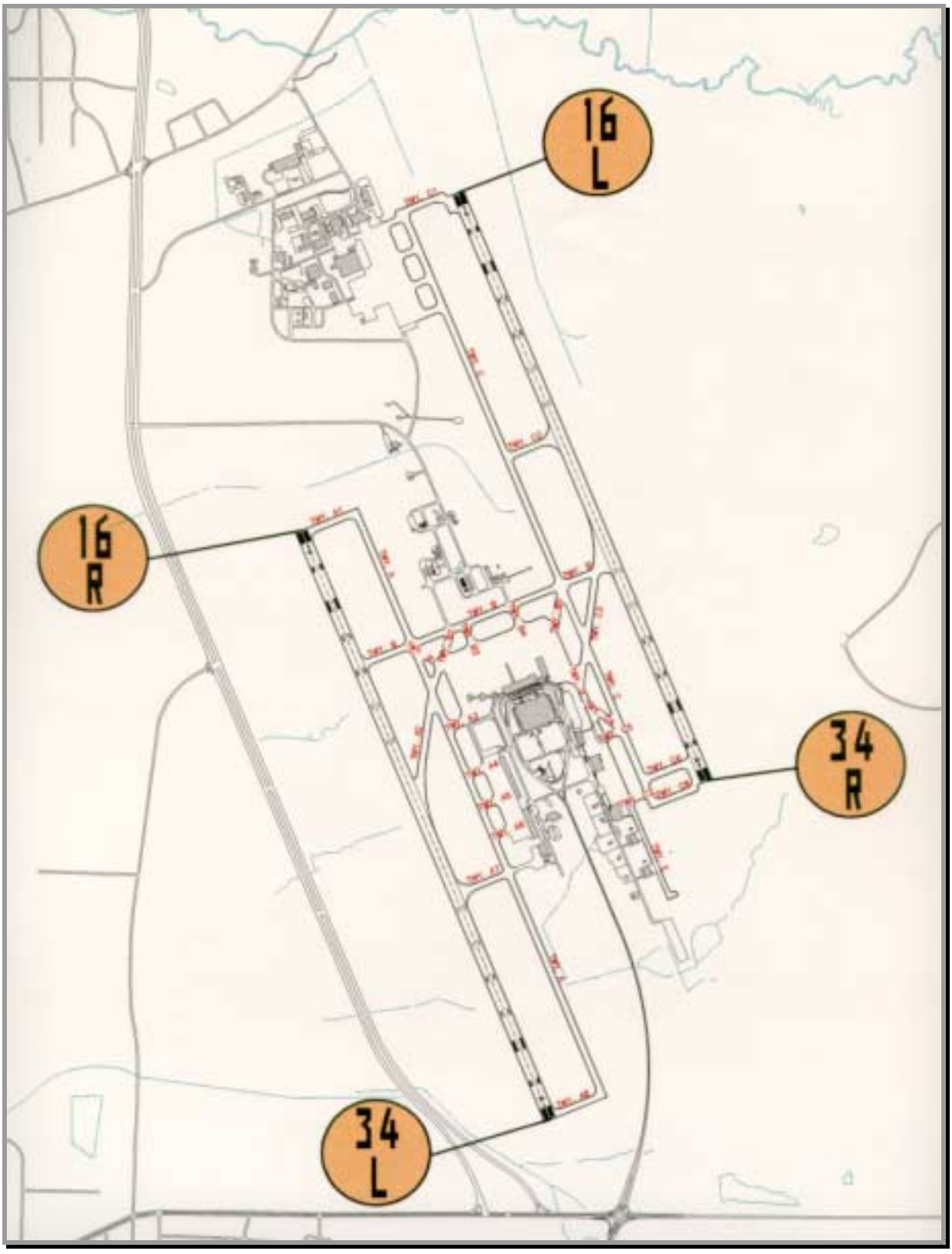


Exhibit 4-1 Runway Configurations

Table 4-1: Jackson International Airport Runway Characteristics

	Runway End			
	16L	**34R**	**16R**	**34L**
Length	8,500'		8,501'	
Width	150'		150'	
Surface Material	Asphalt		Asphalt-Concrete	
Load Bearing Capacity by Gear Type (pounds)				
Single-Wheel	75,000		130,000	
Dual-Wheel	200,000		165,000	
Dual-Tandem Wheel	358,000		300,000	
Designated Approach Slope	50:1	40:1	35:1	50:1

Source: *FAA 5010 Information, 1999*

Parallel Taxiway A runs the entire length of Runway 16R/34L and parallel Taxiway C runs the entire length of 16L/34R. In addition Taxiway B connects the parallel runways at the mid-point of both runways and immediately north of the main terminal complex. All Taxiways and crossover taxiways are 75 feet wide.

Aprons and Aircraft Parking

The Airport maintains a total of approximately 2,671,714 square feet of apron area (61.33 acres). The aprons are divided into four main areas: 1) Terminal Apron; 2) General Aviation Apron; 3) Air Cargo Apron; and 4) Air National Guard Apron. **Table 4-2** lists the total area of each apron.

Exhibit 4-2 illustrates the configuration and location of each apron identified in **Table 4-2**.

Table 4-2: Jackson International Apron Characteristics

Apron	Square Footage	Acres
Terminal Apron	1,195,650 SF	27.45 Acres
General Aviation Apron	318,110 SF	7.30 Acres
Air Cargo Apron	300,607 SF	6.90 Acres
Air National Guard Apron	857,347 SF	19.68 Acres

Source: *Jackson International Airport, 1999.*

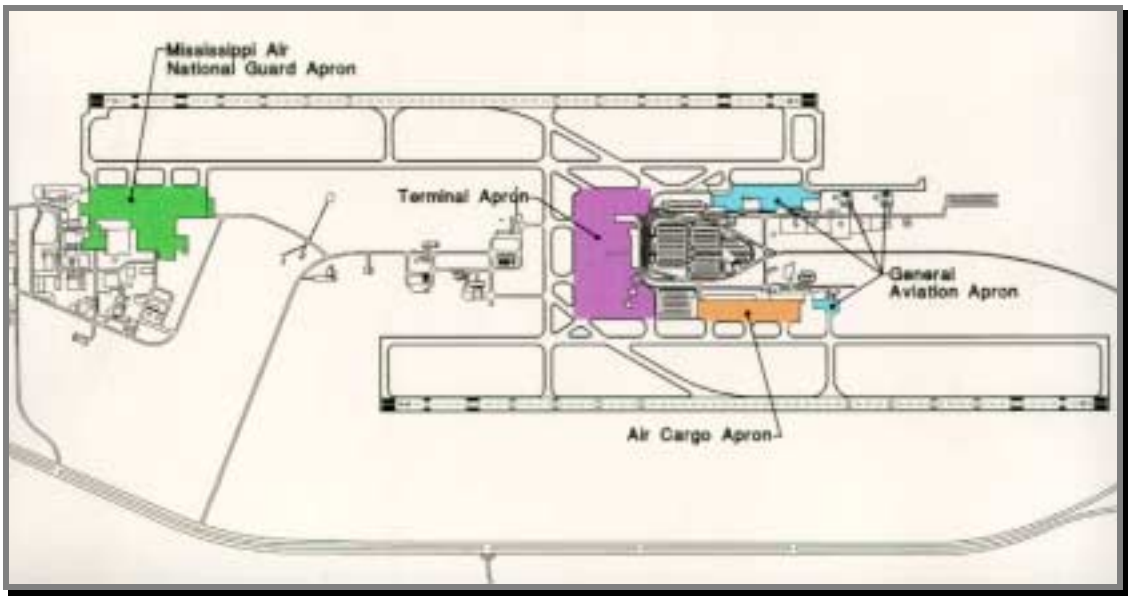


Exhibit 4-2 Apron Identifications

Air Cargo Facilities

The Jackson International Airport handled approximately 22,000 tons of total cargo in 1998, consisting of air cargo transported on scheduled airlines, on all cargo aircraft, small-package carriers and on general aviation aircraft. All air cargo activities at the Airport are conducted in one building totaling approximately 60,000 square feet.

Currently, four cargo companies and three airlines operate cargo facilities at the Jackson International Airport. Airlines handle Air Cargo on the Terminal Apron and transfer the cargo to the facility west of the Terminal, where the All-Cargo carriers also operate. All freight unloading, forwarding, consolidating, transferring and loading operations are conducted at these facilities for All-Cargo operations and Integrators.

A listing of Air Cargo companies and their operational square footage is found in the Table 4-3. The location of each facility is illustrated in **Exhibit 4-3**.

Table 4-3: Jackson International Airport Air Cargo Facilities

Tenant	Building Area (Approximate)
Consolidated Air Cargo Building	30,000 Square Feet
- UPS	
- BAX Global	
- United States Post Office	
- Emery Worldwide	
- LTS Express	
- Miscellaneous Freight Forwarders	
Airborne Express	30,000 Square Feet

Source: Jackson International Airport, 1999

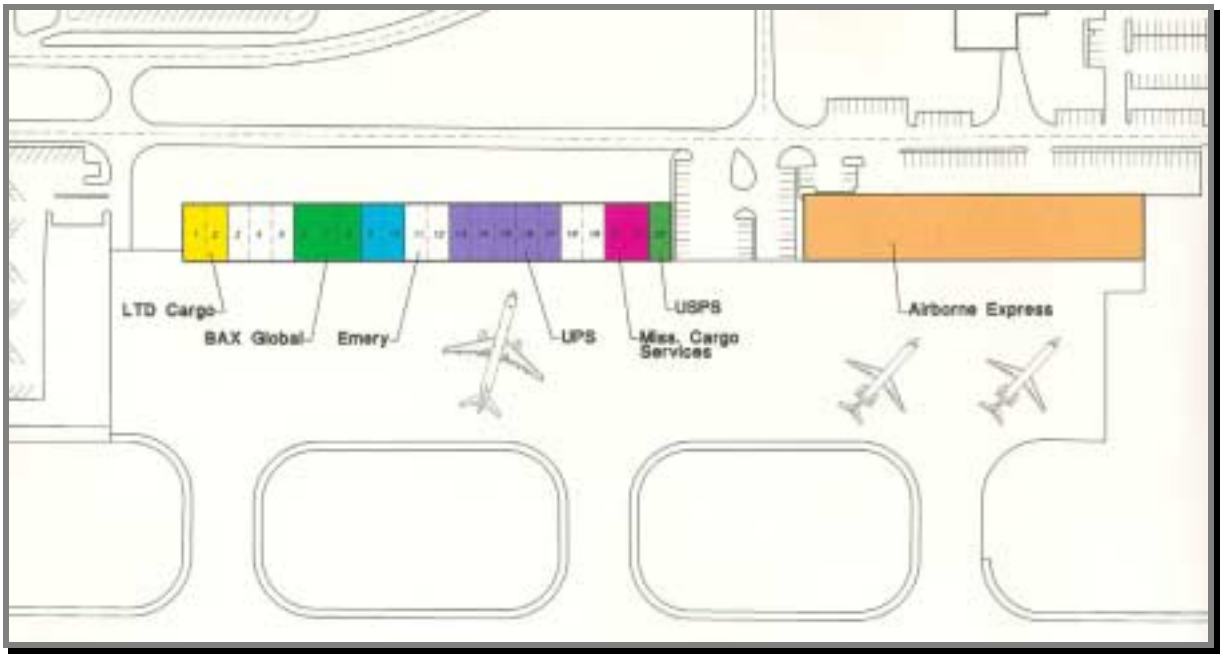


Exhibit 4-3 Existing Air Cargo Tenants

Navigational Aids and Airspace

Runway Navigational Aids

The Jackson International Airport has precision approaches to Runways 16L and 34L. The approaches to Runway 34R and 16R are non-precision. All runways are equipped with High Intensity Runway Lights (HIRL). These lights are used on runways having precision Instrument Flight Rule (IFR) approach procedures and for illumination at night and in inclement weather. Each runway end has specific navigational equipment and characteristics. **Table 4-4** lists all equipment associated with each runway end. **Exhibit 4-4** illustrates the locations for navigational aids at the Airport.

Table 4-4: Jackson International Airport Runway NAVAIDS

RUNWAY NAVIGATIONAL AIDS	
RUNWAY 16L/34R	**8,500 X 150'**
	High Intensity Runway Lighting (HIRL)
	Runway Center Lights
Runway End 16L	Instrument Landing System Localizer (ILS LOC)
	Glide Slope (GS) Indicator
	Runway Visual Range (RVR)
	High Intensity Approach Lighting System (ALSF2)
	Low Level Wind Alert System (LLWAS)
	Touch-Down Zone Lights
Runway End 34R	Runway Visual Range (RVR)

	Visual Approach Slope Indicator (VASI) Runway End Identification Lights (REILs)
RUNWAY 16R/34L	**8,501 X 150'** **High Intensity Runway Lighting (HIRL)** **Runway Center Lights**
Runway End 16R	Visual Approach Slope Indicator (VASI) Runway End Identification Lights (REILs) Low Level Wind Alert System (LLWAS)
Runway End 34L	Instrument Landing System Localizer (ILS LOC) Glide Slope Indicator Low Level Wind Alert System (LLWAS) Medium Intensity Approach Lighting System (MALSR) Touch-Down Zone Lights

Source: Jackson International Airport, 1999

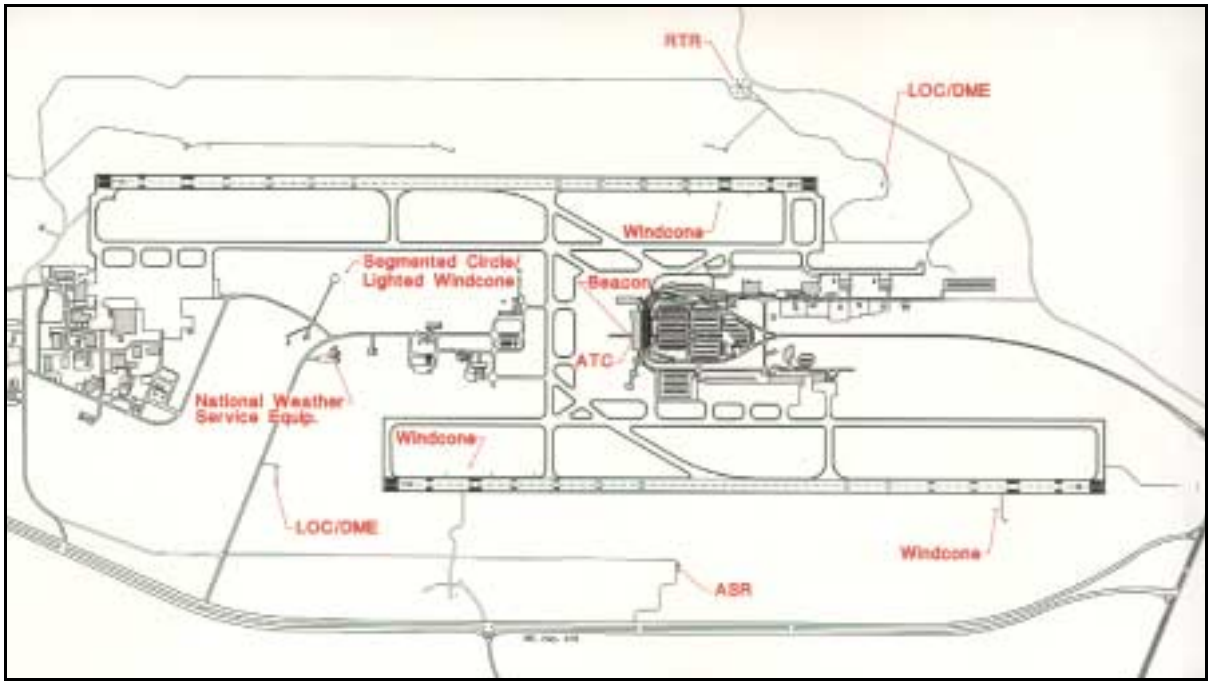


Exhibit 4-4 Navigational Aids

The approach minimums are the measure that indicates the poorest weather conditions (either lowest visibility or lowest cloud ceiling) that can exist with the runway operating. Generally, the approach minimums are a function of the runway instrumentation available, and can be affected by the presence of natural or man-made obstructions to the imaginary approach surfaces. **Table 4-5** provides a summary of the established approaches available for JIA, as well as their available approach minimums.

Table 4-5: Jackson International Airport Runway Approach Profile

Approach	Minimums
ILS Runway 16L	511' / 1,800
ILS Runway 34L	528' / 2,600'
ILS Runway 16L (CATII)	461' / 1,600'
ILS Runway 16L (CATIIIA)	0' / 700'
Localizer Back Course Runway 16R	700' / 5,280
NDB/GPS Runway 16L	800' / 4,000'

Source: *Jackson International Airport, 1999.*

As illustrated, the lowest minimums achievable at JIA are on the ILS to Runway 16L, under a Category IIIA ILS approach. Runway 16L NDB/GPS has the highest minimum approach, with a decision height of 800 feet.

Additionally, the Runway 16L approach, which is the busiest approach at the Airport, has a number of ILS category approaches depending on weather conditions, with an approach minimum of 0'/700'. This CAT III/A minimum is available only for a small minority of aircraft using the runway. The best achievable approach for a majority of aircraft on this runway is the ILS Category I, given the number of aircraft capable of using this approach. No significant delays due to insufficient approaches are predicted for Jackson International in the near future.

Airport Navigational Aids

In addition to those navigational aids for particular runways, Jackson International Airport has several facilities associated with navigation to and within the airfield. The location of the Airport's navigational aids are illustrated in **Exhibit 4-4**. These navigational facilities are outlined below:

- FAA Air Traffic Control Tower
- Rotating Beacon
- Airport Surveillance Radar (ASR)
- Ground Remote Transmitter/Receiver (RTR)
- Localizer/Distance Measuring Equipment (LOC/DME)
- National Weather Service Equipment
- Nondirectional Beacon (NDB)
- Very High Frequency Omnirange Terminal Access Control (VORTAC)
- Locator Outer Marker (LOM)
- Windcones
- Segmented Circle

The **Airport Reference Point** established by two runways is:

- Latitude: 32 degrees 18 minutes 40.254 seconds North
- Longitude: 90 degrees 04 minutes 33.218 seconds West

The Airport Elevation based on these two runways is 346 feet above mean sea level (AMSL).

Airspace and Part 77 Surfaces

Exhibits 4-5 and 4-6 illustrate the FAR (Federal Aviation Regulations) Part 77 surfaces around the Airport. These Part 77 drawings depict the three-dimensional navigable airspace around the Airport, based on the approach category of each runway. Under Part 77 regulations, any object, which penetrates the Part 77 surfaces, is considered an obstruction to navigable airspace. The FAA must then evaluate the obstruction to determine if it is a hazard or simply an obstruction, which must be lighted and/or marked.

Exhibit 4-5 Part 77 Close-up

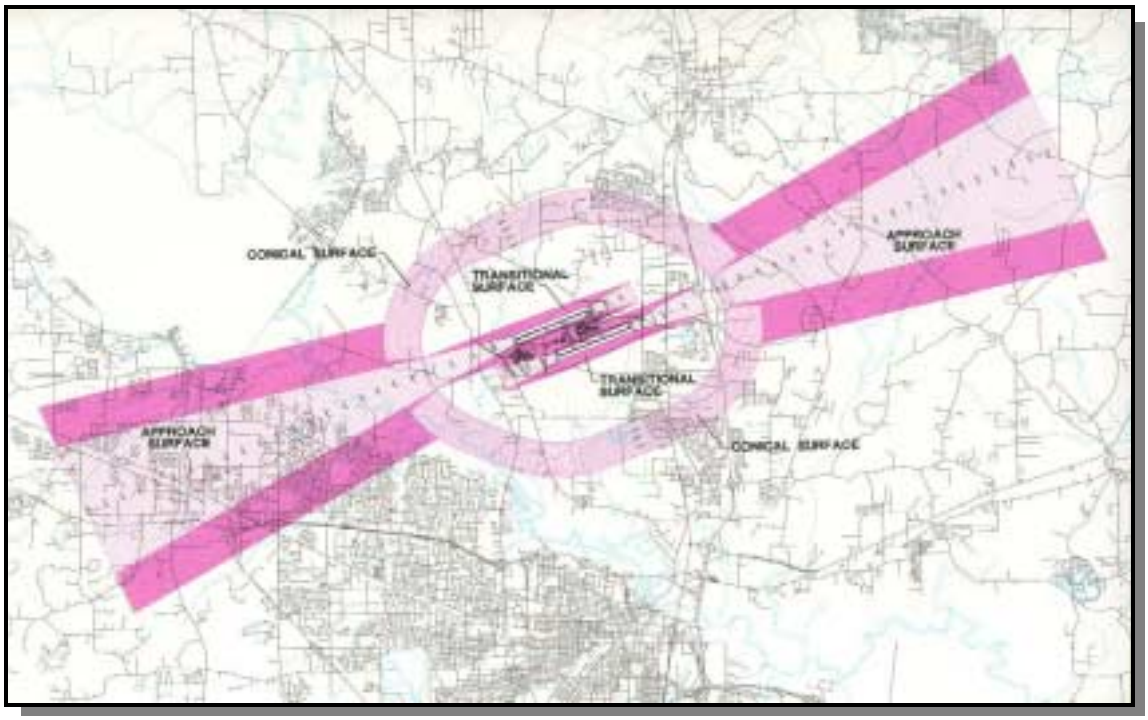


Exhibit 4-6 Part 77 Full View

All runway approach surfaces were documented as defined by Part 77 and FAA (Federal Aviation Administration) Advisory Circular 150/5300-13 using the PHOTSLOPE^{TM} process in 1992. The PHOTSLOPE^{TM} process combines geometric principles used in engineering and terrestrial photography. The result is a photographic documentation of the approach surface and the identification and location of obstructions to the approach surface.

The Runway Protection Zone (RPZ) is a trapezoidal area off the runway end used to enhance the protection of people and property on the ground. These areas extend beyond the runway centerline and are identified and illustrated in **Exhibit 4-5**. The Airport owns all land required for runway protection zones of Runways 16L and 16R. The Airport owns the majority of tracts in all other RPZs.

Airfield Facilities Analysis and Recommendations

Runway Capacity

Presently, Jackson International Airport has two primary runways parallel to each other. Since each runway has two possible directions in which to operate, there are a total of 2 flow patterns: north and south as shown in **Table 4-6**. The flow pattern is dictated by weather and prevailing winds. For this study, northward and southward flow was chosen for simulation, since this pattern was indicated by the Air Traffic Control Tower to be the most common. In this configuration, the following operating flows are observed:

Table 4-6: Most Common Flow Pattern

Type of Operation	Direction	Frequency
Arrival	from North	75%
Arrival	from South	25%
Departure	to North	25%
Departure	to South	75%

Source: Jackson International Airport – FAA Control Tower.

The component of the airfield which is most related to the available capacity of the airport is the runway system. The type and configuration of the runway system dictates the type and configuration of virtually all other components of the airport. The runway system is usually the greatest investment made for a single airfield component, and because of operational mandates, all other facilities, including terminals, ancillary facilities, and roadway systems are constructed around the basic scheme of the runways.

Because of this, the initial capacity analysis begins with assessing the number and configuration of the runways available for landings and departures. Jackson International Airport has two runways, Runway 16R/34L and Runway 16L/34R, which are used for all commercial air carrier, military, and general aviation aircraft.

The operational capacity for the airport also takes into consideration the aircraft mix, the general weather conditions, the total number of arrivals and departures, the delay times involved at the gates, the delay times in crossing active runways, and the taxi delays encountered between the gate areas and the runway ends. Each of these factors limits the maximum number of aircraft able to land and/or take off from the airport.

FAA Advisory Circular 150/5060-5 provides general guidelines for evaluating the operational capacity of an airport. In the Master Planning process, the runways at Jackson International Airport were analyzed to determine if they are sufficient to accommodate the demand of air traffic forecasted in the future, assuming that delays would be held to a minimum (between 4 and 5 minutes).

The following three sections provide a further description of the analysis, which was conducted to determine the available airfield capacity of the airport. The first section provides an overview of the Annual Service Volume analysis, which is the annual capacity of the airport. The second section is the VFR Peak-Hour Analysis, which is the peak hour capacity during good weather conditions. The third section describes the IFR Peak-Hour Analysis, which is the peak hour capacity during poor weather conditions.

Annual Service Volume

For long-range planning purposes, annual projected demand numbers were used to calculate the Annual Service Volumes of the existing runways. This analysis revealed that the current runway configuration has an annual service volume capacity of 275,000 operations, which will meet the projected demand levels through all planning periods.

While an annual service volume analysis provides a macro view of airport capacities for long-range planning purposes, the peak-hour capacity analysis provides more detailed and realistic view of the activities at an airport. As such, a demand/capacity comparison for peak-hour activities under both VFR and IFR conditions was conducted and is described below in **Exhibit 4-7**.

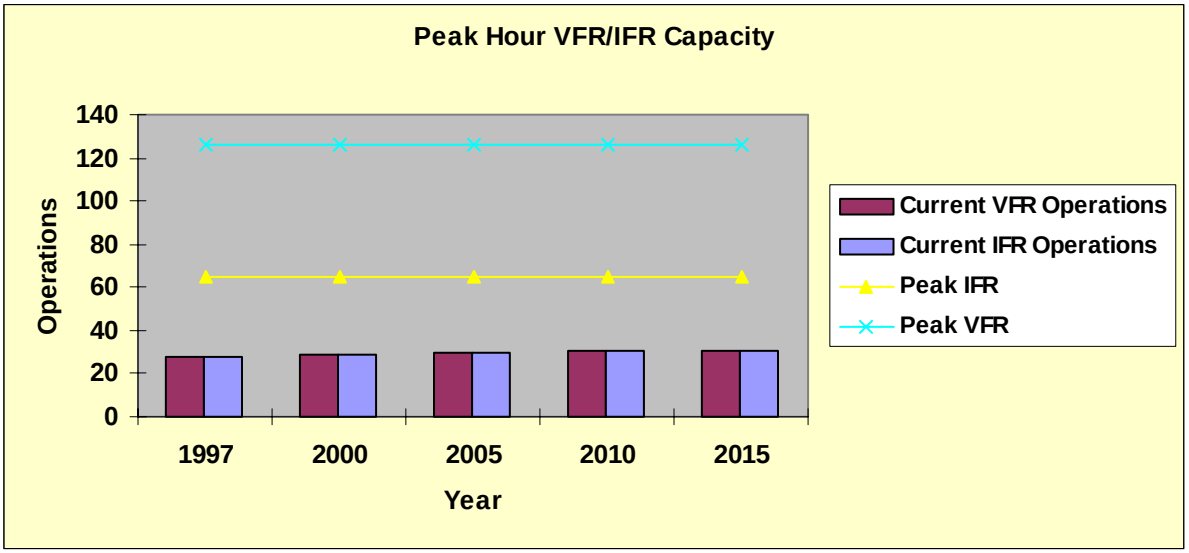


Exhibit 4-7 Peak Hour VFR/IFR Analysis

VFR Peak-Hour

The hourly capacity of the existing runway configuration under VFR conditions is 126 operations. In the year 2005, the projected hourly demand under VFR conditions is expected to be 34 operations, and in 2015, the projected hourly demand under VFR conditions is 47 operations. The existing airfield configuration provides sufficient capacity to accommodate peak hour demand under VFR conditions through all planning periods.

IFR Peak-Hour

The hourly capacity of the existing runway configuration under IFR conditions is 65 operations. In the year 2005, the demand under IFR conditions is projected to be 34 operations and in the year 2015, it is projected to be 47 operations. The existing airfield configuration provides sufficient capacity to accommodate peak hour demand under IFR conditions through all planning periods.

Exhibit 4-7 illustrates the relationship of the projected demand versus the available peak-hour capacities of the airfield. **Table 4-7** illustrates the percentage of capacity used under the various demand levels and operating scenarios described above.

Table 4-7
Airfield Capacity Levels

	Capacity Level	1997	2000	2005	2010	2015
ASV	275,000	35%	40%	42%	50%	58%
VFR Hour	126	22%	25%	27%	32%	37%
IFR Hour	65	43%	49%	52%	62%	72%

Runway Length Analysis

The runway length at an airport is critical, and dictates what aircraft and what market can be served by the airport. The length does not affect the capacity of the facility, but a short runway will limit the length of flight available for aircraft departing the facility. Aircraft flying longer distances will carry more fuel and often more passengers and baggage, and will, therefore, require longer runways.

Specific Aircraft Requirements

Table 4-8 contains data for existing runway lengths at Jackson International Airport. Runways 16R/34L and 16L/34R extend approximately 8,500 feet respectively, and are currently the longest runway available at the Airport.

Table 4-8 Existing Runway Data at JIA

Runway	Runway Data		Strength (000)			Approach
	Length	Width	Single Wheel	Dual Wheel	Dual Tandem	
16R/34L	8,501	150	130	165	300	Precision
16L/34R	8,500	150	75	200	358	Precision

Source: *Draft Airport Layout Plan*, JMAA, 1999.

The wide variety of available aircraft places varying demands on runway lengths, and the design length of the runway must take into consideration the design aircraft operating at an airport. Currently, the aircraft mix operating at JIA is predominantly narrow-body and commuter aircraft.

Because of the past and present fleet mix which has operated at the airport, and the anticipated future demand levels, it is assumed in this report that the B-757, B-767 and C-17 aircraft will be the critical aircraft for runway length at the airport. All of these aircraft are designed for medium to long haul, predominantly domestic flights. Although the C-17 is a military aircraft, its specific design is for rapid deployment for overseas operations.

Additionally, the design characteristics of the aircraft are suitable for operations out of airports with undersized runways.

Table 4-9 summarizes the required runway lengths for each these aircraft, based on the "Airplane Characteristics for Airport Planning" documents published by the Boeing Commercial Airplane Group. **Table 4-9** illustrates the length requirements under varying conditions for the most common critical aircraft. In order to ensure high runway demand levels for this analysis, the 757-300 was used as the base long-range aircraft for JIA. The 757-300 is the anticipated aircraft of choice for cargo carriers operating within this planning period.

Based on Boeing aircraft planning criteria for these aircraft, runway length requirements are provided for aircraft departing an airport during standard day conditions (for Jackson, a standard day is considered 59°F at Sea Level). The planning guidelines also provide length requirements for variations of the standard day, with higher ambient temperatures and wet runway conditions.

Table 4-9: Required Runway Lengths

Aircraft	Demand Conditions	Required Length
757-300		
	Standard Day (59°)	8,400'
	Standard Day (84°)	8,800'
	Standard (50°) + Wet Rwy.	8,750'
	Standard (84°) + Wet Rwy.	9,200'

Source: *Airplane Characteristics for Airport Planning*, Boeing Commercial Airplane Group.

As shown in **Table 4-9**, the existing runway length of 8,501 feet cannot support the variations of 757 aircraft settings used in this analysis. Because the summer temperatures in Jackson are often higher than the 84 degrees used by Boeing, the anticipated ultimate runway length required to support the anticipated demand would be approximately 10,000 feet.

Airfield Facilities Recommendations

The following recommendations are provided to address all of the airside facility requirements for the Jackson International Airport. The recommendations are based on the empirical analysis delineated previously and on operational necessity. The operational necessity recommendations include items recommended by airport operations staff, airport tenants and users, and which would streamline or improve the existing facility.

Runway 16L Extension and Extension of Associated Taxiway

An additional 1,500' extension on the southern end of the runway is needed to meet the critical aircraft takeoff requirements. This would allow anticipated aircraft to operate at Jackson International without restrictions on range and payload.

North/South Parallel Taxiway - 16L/34RL East Side and Ancillary Development

With the anticipated extension of roadways and future development of the east side of the airport, construction of a full-length parallel taxiway east of runway 16L/34R is anticipated to keep up with demand for airport runway access.

North/South Parallel Taxiway 16R/34L West Side and Ancillary Development

The proposed Air Cargo complex on the west side of Runway 16R/34L has been indicated and approved on the Airport Layout Plan (ALP) of 1992. Before complete buildout of this facility (discussed later in this chapter), a full length parallel taxiway to Runway 16R/34L is necessary for efficient and safe operations out of the new Air Cargo complex. The parallel taxiway will allow bi-directional, free flow of aircraft arriving and departing on the new runway.

West Air Cargo Ramp

In order to accommodate the new Air Cargo Complex, a 380,000 square foot cargo ramp capable of serving any type of aircraft, including the Boeing 747, is necessary. The cargo ramp will be connected to the new west parallel taxiway on the north end and have the capabilities for further expansion when necessary. This will be further discussed in the next section relating to Air Cargo growth scenarios.

Perimeter Road

As part of the north/south taxiway development, the existing Perimeter/ARFF Road must be expanded to provide for a complete alignment around the airport runways.

Safety Road

A safety road is needed for the west and east side of the Terminal Air Carrier Ramp, which will connect to the General Aviation and Air Cargo Areas. A suitable road for fuel trucks is not available forcing trucks to get clearance from the FAA Control Tower to access the taxiway in order to transition from the General Aviation area to the Air Carrier ramp. A critical step in alleviating this situation involves separating vehicle operations with aircraft operations.

Navigational Aids and Airspace Recommendations

Relocation of the ARTS-6 Radar Facility

In order to complete the buildout of the new cargo complex, the current ARTS Radar facility needs to be relocated. After a thorough evaluation of alternative sites, a final site has been selected on the southeast corner of the airport. This relocation will allow the facility also to be upgraded to the current technology, ASR-9.

Runway 16R CAT II/III ILS

An upgrade of the current CAT I ILS system to a CAT II/III ILS on Runway 16R would allow precision instrument approaches with the lowest minimums possible. As

air service increases and becomes more critical, particularly with the new cargo complex developed, a CAT II/III ILS system will allow aircraft to land in the very low visibility, which will reduce airport delays.

Runway 34R CAT I ILS

The development of a CAT I ILS approach to Runway 34R will allow parallel, dependent IFR approaches from the south, which could reduce delays for up to 40 percent of arriving aircraft to the airport. With only one southerly ILS approach currently available on Runway 34L, delays in air traffic to the airport will be expected in future years.

Air Cargo Facilities Analysis

According to World Air Cargo News, a leading industry news magazine, forecasts of air cargo growth between the United States and South and Central America show substantial increases, with estimates of up to 15% per year for the next 10 years. The Boeing Company additionally expects that world air cargo activity will triple between 1996 and 2015.

Estimating the demand and capacity of air cargo facilities involves a lengthy analysis of warehouse facility throughput capacity, cargo capacities of the aircraft fleet, and a determination of cargo volumes moved in the aircraft serving the Airport.

Cargo Payload

In order to develop an assessment of current and future air cargo demand on facilities, *g.c.r. & associates, inc.* analyzed the existing distribution of air cargo at Jackson International Airport. **Exhibit 4-8** illustrates that most air cargo (73%) is transported on all-cargo aircraft (includes domestic and international), while only (27%) is transported in the belly of passenger aircraft.

The annual cargo tonnage that an airport can transport is directly related to the fleet mix serving the airport and the average payload (weight) of cargo on aircraft. The fleet mix refers to the types of aircraft that serve a particular airport and will usually not fluctuate drastically from year to year. The historical average of air cargo tons per operation at Jackson International for domestic operations is provided in **Table 4-10** which is based on the existing fleet mix at the Airport. However, passenger flights transport less than 10 percent of the payload of a typical all-cargo flight. Passenger flights transport cargo in the belly of aircraft at the rate of 0.34 ton per domestic flight.

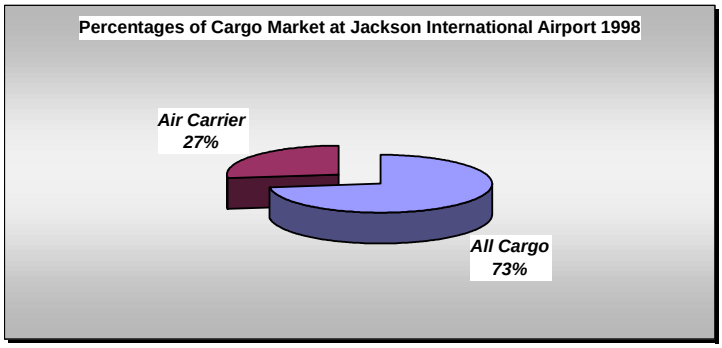


Exhibit 4-8
Air Cargo Share by Flight Type and Average Tons Per Operation
Source: Jackson Municipal Airport Authority

Table 4-10: Existing Cargo Statistics at JIA

Air Cargo Load Factors		
	Domestic	
	Percent of Total Domestic	Payload (Tons Per Operation)
All-Cargo	73%	7.8
Passenger	27%	.32
Total	100%	

Source: Jackson Municipal Airport Authority, 1998.

Although it is impossible to precisely predict the volume of cargo that will be transported by each flight type (i.e. all-cargo or passenger), it is logical to assume that a large portion of the air cargo growth will be transported on all-cargo flights. This assumption is made because increased cargo growth will not create an increase in passenger flights; therefore, the growth in cargo tonnage will exceed the ability for passenger flights to accommodate the air cargo tonnage.

In order to evaluate future air cargo demand, assumptions concerning the future aircraft fleet mixes were made. In terms of all-cargo flights, the existing payload of 7.8 tons or 15,600 pounds, which represent 75% of the maximum payload on a DC-9, was used for assessing demand from all-cargo carriers. Although the actual payload may be more or less than 7.8 tons, it is believed that a conservative, high assumption of demand provides the best planning tool for analysis of facility capacity.

Existing Facilities

There are four major cargo operators at Jackson International Airport. Two of them, United Parcel Service and Airborne Express continue to operate an air cargo operation out of their facilities. Emery and BAX Global operate a land operation without the use of aircraft. **Exhibit 4-9** shows the existing configuration of all cargo operations at Jackson International Airport.

A total of approximately 60,000 square feet of warehouses and 350,000 square feet of ramp, including the warehouse Airborne Express uses for it's own air cargo and ground distribution system, exists at Jackson International Airport. Various airlines and freight forwarding companies occupy offices in the consolidated cargo facility.

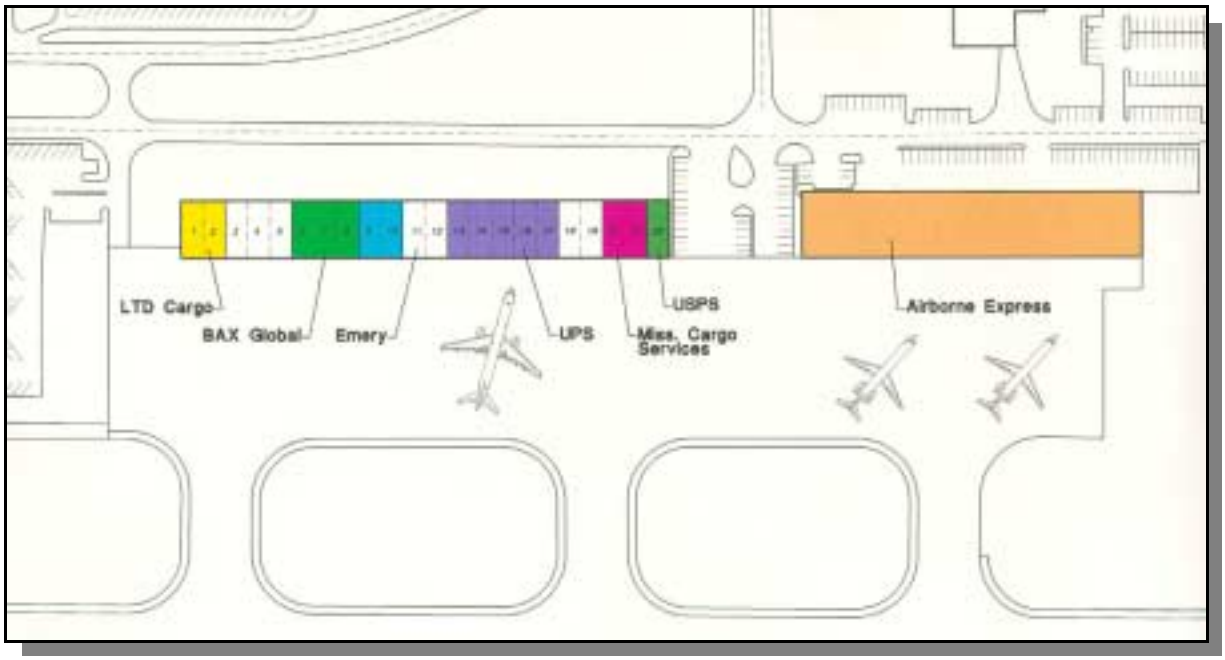


Exhibit 4-9 – Existing Cargo Facilities

Warehouse Area Requirements

Industry standards are used to estimate warehouse requirements for air cargo facilities for a wide range of facility utilization categories, or "warehouse productivity factors" (WPF) conducted by various air cargo operators. The WPF factor is a ratio that represents the tonnage of cargo that can be moved from an apron through a warehouse (throughput) on an annual basis. The WPF ranges from a low of 0.4 tons per square foot annually in older, non-automated facilities, to a high of 0.75 tons per square foot annually for modern, highly automated cargo-processing facilities. A WPF of 0.4 tons per square foot means that a 10,000 square foot warehouse can accommodate 4,000 tons of cargo annually.

Based on actual activity at JIA, the baseline productivity factor shown in **Table 4-11** was assumed to be 0.65 tons per square foot. This factor was chosen for two primary purposes: first, it provides a more realistic scenario for demand on facilities; and second, it more accurately reflects the smaller, non-hub nature of the JIA air cargo market. These smaller cargo facilities have a tendency to be less efficient than larger cargo facilities, which results in a lower “warehouse productivity factor”.

Based on the established WPF of 0.65 and the recommended baseline activity level of cargo volume, it appears that the existing cargo building area is adequate for the volume of cargo currently moved through the Airport, although additional warehouse space will be needed to

accommodate significantly increased demand levels. **Table 4-11** provides further detail on the building requirements for each planning period.

For purpose of the cargo analysis, Planning Activity Levels (PAL) are used as a basis for facility planning. Each PAL represents a different level of facility demand, without assigning a particular year to that demand level. This rationale assumes that when actual demand reaches a certain PAL demand level, regardless of the time period, facility capacities will be required to meet the demand. This analysis will outline what facilities will be required to meet each PAL. Each PAL level is discussed in further detail in the recommendation section of the analysis.

Table 4-11: JIA Cargo Growth Planning Activity Levels (PAL)

	Baseline			
	1997	PAL II	PAL III	PAL IV
All Cargo (tons)	22,875	_	_	_
Air Carrier (tons)	6,389	_	_	_
TOTAL AIR CARGO	29,264	50,000	170,000	370,000
TOTAL LANDSIDE CARGO	9,000	37,500	125,000	277,500
Industry Standard WPF	0.65	0.65	0.65	0.65
Jackson Airside Cargo WPF	0.64	0.7	0.75	0.85
Jackson Landside Cargo WPF	0.58	0.64	0.7	0.9
Airside Warehouse	45,000	71,429	226,667	435,294
Landside Warehouse	15,000	58,594	178,571	308,333
TOTAL WARHOUSE	60,000	130,022	405,238	743,627
Additional Capacity Needed	-	(70,022)	(345,238)	(638,627)

Source: *Jackson Municipal Airport Authority. Analysis done by g.c.r. & associates, 1999.*

As illustrated in the table above, the WPF will steadily increase in future years due to automation and increased efficiencies in throughput capacity.

Apron Area Requirements

Aircraft parking area (apron) requirements for each planning period are a function of: (1) the critical aircraft dimensions, specific physical constraints, and required operating clearances, and (2) the projected number and mix of annual aircraft operations required to accommodate the projected enplaned cargo.

Based on industry standards, calculating the amount of apron area required is based on a function of the warehouse facility requirements. For purposes of this analysis, it has been determined that approximately 1.1 square yards of apron area is required to support each square foot of warehouse facility. This apron area includes space for aircraft gate parking and for all support activities, including the following elements:

- **Aircraft gate position** - area for parked aircraft, ground service equipment, and boarding/cargo loading and unloading devices.
- **Aircraft service area** - area for ground service equipment around the aircraft.
- **Apron baggage and freight service** - area for staging and loading/unloading aircraft baggage, freight, and mail.
- **Taxilanes** - joint use areas of apron that provide aircraft access to terminal gate positions.
- **Service roads** - rights-of-way designated for vehicular traffic, including fire lanes within the apron area, identified by stripes painted on the apron surfaces.

The estimated additional aircraft apron requirements for each planning period are as shown in **Table 4-12**:

Table 4-12: Aircraft Parking Apron and Warehouse Requirements

Component	1997	PAL II	PAL III	PAL IV
Warehouse Area (SF)	60,000	130,000	405,000	740,000
Aircraft Apron (SY) Needed	66,000	143,000	445,000	814,000
Aircraft Apron (SY) Current	35,389	-	-	-

Source: g.c.r. & associates, inc. analysis.,1999.

Additional Requirements

In addition to warehouse area, ancillary facilities are required to facilitate the handling and storage of air cargo. Industry standards have been applied to each development alternative to quantify such requirements. In summary, the primary ancillary components included are administrative/office space, vehicular parking, and truck docks. **Table 4-13** summarizes the additional capacity required for each facility type during the future planning periods.

Table 4-13: Additional Air Cargo Ancillary Facility Requirements

Component	1997	PAL II	PAL III	PAL IV
Administrative Office Space (SF)	0	13,000	40,500	745,000
Vehicular Parking (Spaces)	0	130	405	745
Truck Docks (Spaces)	0	22	68	125

Source: g.c.r. & associates, inc. analysis, 1999.

As a percentage of warehouse space, administrative office space was allocated at 10% for each planning period. Vehicular parking was allocated at one space (equivalent to 400 square feet of parking and maneuvering area) per 1,000 square feet of warehouse floor area.

Truck loading/unloading docks are integral components of the warehousing design area. To compute the truck dock requirements for the four planning periods, every 6,000 square feet of warehouse was allocated one truck dock. A minimum of two truck docks is recognized.

Air Cargo Requirements Summary

The results of the facility area requirement analysis for each planning period are summarized in **Table 4-14**. The table presents the space allocations based on the anticipated tonnage to be handled in a given year. The space is expressed in square feet, tonnage, and count. These facility area requirements are viewed as baseline development scenarios with an acknowledgment that each has the potential of additional development and growth.

Table 4-14 Facility Area Requirements Summary (Planning Periods I-IV)

Facility Area	1997	PAL II	PAL III	PAL IV
Annual Cargo (Tons)	38,264	87,500	295,000	645,000
Warehouse Area (SF)	0	130,000	405,000	745,000
Admin. Area (SF)	0	13,000	40,500	74,500
Truck Docks (spaces)	0	22	68	125
Parking (SF)	0	52,000	162,000	298,000
Parking (Spaces)	0	130	405	745
Aircraft Apron (SY)	0	143,000	445,000	814,000

Source: g.c.r. & associates, inc. analysis, 1999.

Cargo Facilities Recommendations

Based on the continued growth of air cargo activity and in keeping with the Airport's investment in building and marketing air cargo activities, it is obvious that the current configuration of facilities is inadequate. All cargo operations are scheduled to be relocated to the West Side of the airport adjacent to the northwest side of Runway 16R/34L. **Exhibit 4-10** illustrates the locations and configurations of the proposed developments.

The analysis presents two alternatives for consideration. Alternative I assumes that air cargo growth will greatly exceed the land based cargo operations and therefore requires more facilities. Alternative II assumes that land based cargo will increase at a more rapid pace and requires more facilities to operate.

Alternative I - Air Cargo Facilities Recommendations

The following sections outline ***Alternative I*** recommendations based upon four phases, as demand warrants:

West Air Cargo Complex Phase I - Baseline

The Phase I development plan will include the relocation of all cargo operations in the consolidated cargo facility as shown in **Exhibit 4-10**. This new facility allows a total of 60,000 square feet of warehouse operational space and 380,000 square feet of apron space for air cargo operations. Although the space is larger than the 30,000 square foot facility currently available in the consolidated facility, it is anticipated that Airborne Express will relocate from their 30,000 square foot facility to the new complex before Phase II is needed.

The new facilities are designed to allow for joint air cargo and land based operations out of one facility. The number of truck docks and truck parking spaces has been increased to allow for various land-based alternatives.

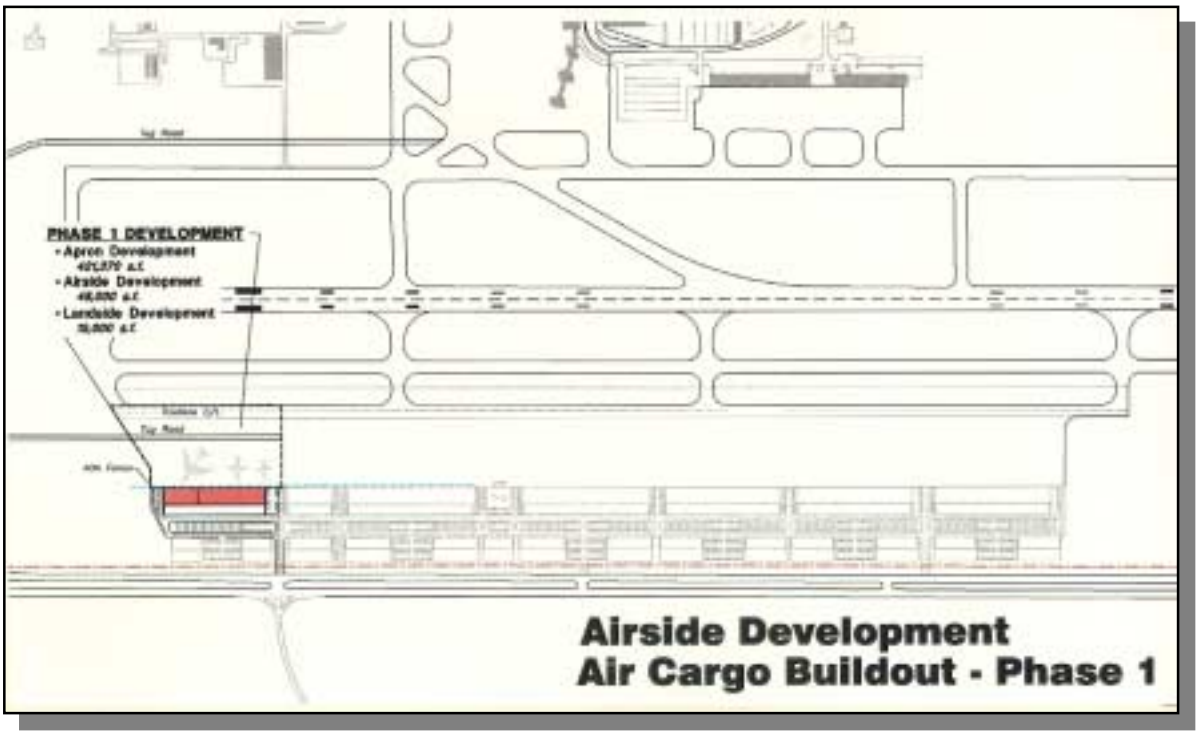


Exhibit 4-10 Proposed Phase I – Air Cargo Complex

West Parallel Taxiway – Runway 16R/34L - Planning Period II

Before expansion of Phase II can begin, the need for a new full-length parallel taxiway is required for safe continuous air operations. A proposed full length taxiway (approximately 8,300') parallel to the west side of 16R/34L is needed.

West Air Cargo Complex Phase II - Planning Period II

In an effort to build and market air cargo support facilities at the Airport, the Airport Authority is currently conducting a comprehensive Cargo Marketing Plan. The plan's intention is to develop a regional air and land cargo distribution center at Jackson International Airport.

The first part of Phase II development, shown in **Exhibit 4-11**, consists of constructing one new 26,400 square foot warehouse building and 275,000 square feet of apron adjacent to the new taxiway. This development will accommodate truck and automobile parking areas and will also accommodate future expansion as the demand grows.

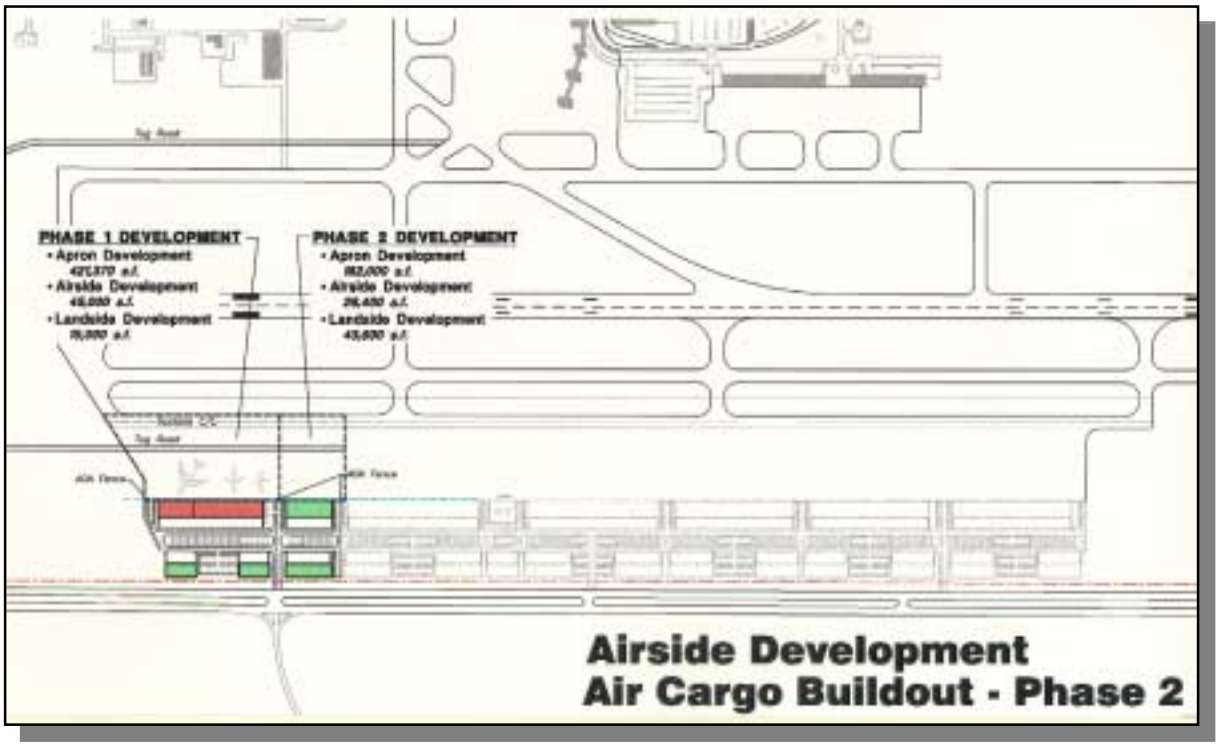


Exhibit 4-11 Proposed Phase II – Air Cargo Complex

In addition, three new land based warehouse facilities are constructed to accommodate cargo distribution operations for land based cargo operators and freight forwarders. These facilities consist of two 13,000 square foot and one 17,600 square foot warehouse and office space with the capabilities to add an additional 50 or more truck docking spaces. There will be no apron access to these buildings because it is intended to primarily handle and transfer freight carried in the belly of passenger air carrier aircraft or strictly for ground cargo carriers. It will provide cargo support services and accommodate ample truck and automobile parking areas.

Highways' 475 & 80 - Interchange Improvements - Planning Period III

With the increased traffic on Highway 475, improvements to access of the cargo facility are essential. A new interchange is proposed at the intersections of Highways' 475 and 80. Without this improvement, traffic flow to the airport will be congested. Participation from state and federal highway departments is anticipated.

With this new interchange, a vital link between US 25 and Interstate 20 is established. The new interchange provides easy access to I-20 from one of the fastest growing business communities in the Jackson Metropolitan area.

West Air Cargo Complex Phase III – Planning Period III

As demand warrants, the development of Phase III should be undertaken as shown in **Exhibit 4-12**. This phase is the most critical phase in terms of size will accommodate a tremendous amount of growth. It's size, with two 75,000 square foot air cargo warehouses and associated aprons, will accommodate a rapid growth of air cargo at the airport in future years.

At this point a centralized fueling facility for ground equipment is necessary to support operations. The facility can be accessed from airside and landside, and will consist of two 30,000 gallon fuel tanks operated by either the Airport Authority or private enterprise.

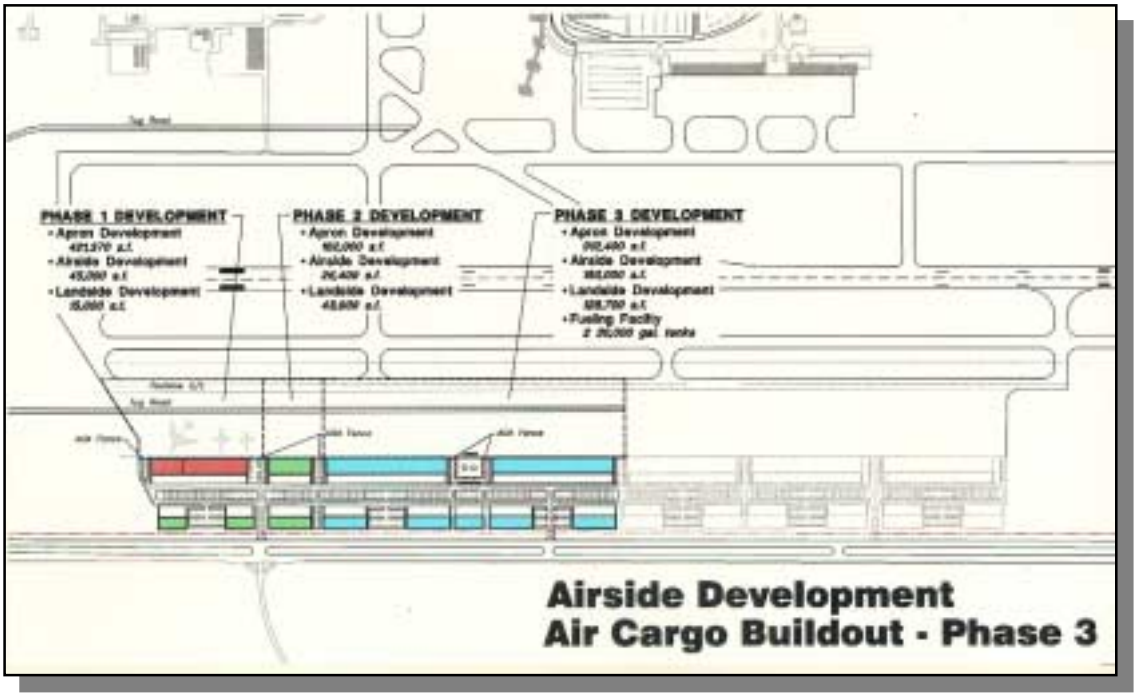


Exhibit 4-12 Proposed Phase III - Air Cargo Complex

In addition, three new land based warehouse facilities are constructed to accommodate cargo distribution operations for land based cargo operators and freight forwarders. These facilities consist of two 13,000 square foot warehouse and one 17,600 square foot warehouse, office space, and the capability to add an additional 50 or more truck docking spaces.

West Air Cargo Complex Phase IV Year – Planning Period IV

The final Phase IV, the most complex of all phases, consists of a buildout of the West Side cargo complex, as shown in **Exhibit 4-13**. An additional 240,000 square feet of warehouse and 130,000 square feet of land based office would be required to meet demand by the fourth planning period. The remaining ramp area of 990,000 square feet would be built to accommodate the expected increased air cargo aircraft and staging areas.

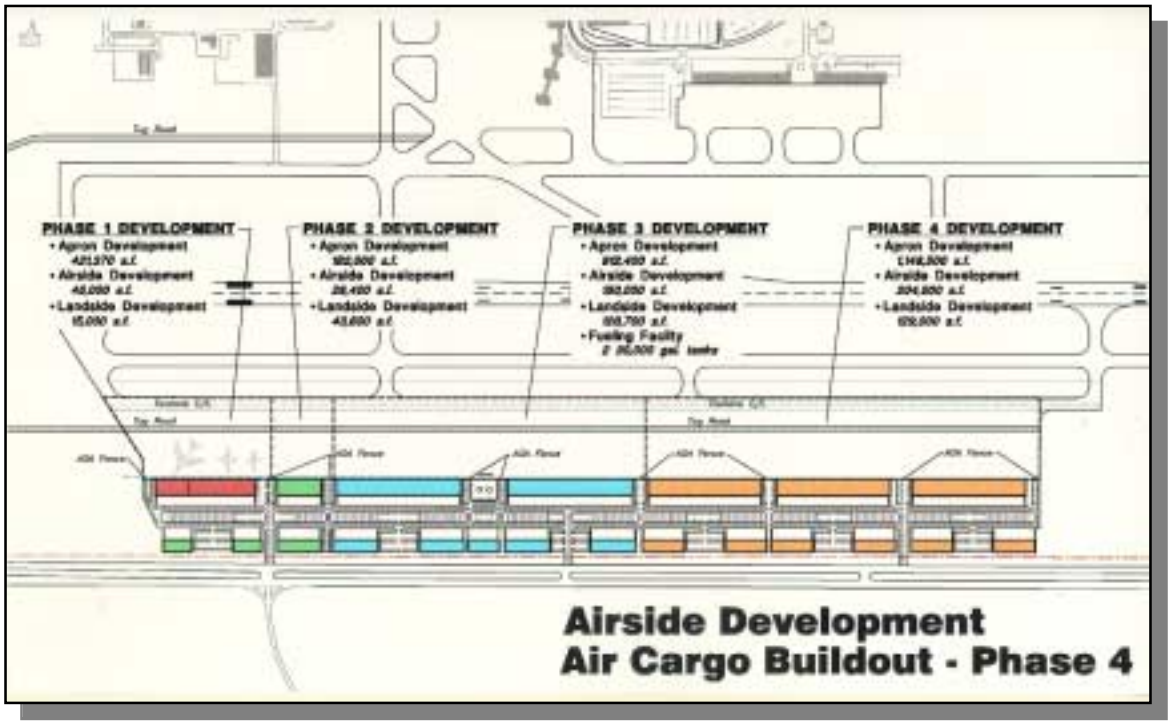


Exhibit 4-13 Proposed Phase IV - Air Cargo Complex

Alternative II -Air Cargo Facilities Recommendations

As an option to the first cargo development scenario, an alternative scenario has been developed which evaluates facility requirements for a land based cargo consolidation and distribution facility. This facility will be heavily dependent on trucked cargo, and less reliant on cargo moved on aircraft. The facility requirements necessary to accommodate this type of demand is different from pure air cargo demand.

The Alternative II Plan is also split into four phases, which are similar in layout as the first alternative for a dominant air cargo complex. **Table 4-15** was developed to show a predominately land based operation with supplementary air cargo operations support.

The following sections outline ***Alternative II*** recommendations based upon four phases, as demand warrants:

Table 4-15 – Alternative II – JIA Cargo Growth Planning Activity Levels (PAL)

	1997	PAL II	PAL III	PAL IV
TOTAL AIR CARGO	-	40000	75000	100000
TOTAL LANDSIDE CARGO	-	50000	250000	500000
Industry Standard WPF	0.65	0.65	0.65	0.65
Jackson Airside Cargo WPF	0.65	0.7	0.75	0.85
Jackson Landside Cargo WPF	0.55	0.6	0.7	0.9
Airside Warehouse	30,500	57,143	100,000	117,647
Landside Warehouse	29,500	83,333	357,143	555,556
TOTAL WARHOUSE	60,000	140,476	457,143	673,203
Additional Capacity Needed		(80,476)	(397,143)	(613,203)

West Cargo Complex Phase I – PAL I

The Phase I development plan will include the relocation of all cargo operations in the consolidated cargo facility similar to the air cargo complex plan in Alternative 1. This new facility provides a total of 60,000 square feet of warehouse operational space and 380,000 square feet of apron space for land and air cargo operations, as shown in **Exhibit 4-14**. The primary focus is to replace the existing facilities in use by all cargo carriers.

The new facilities are designed to allow for joint air cargo and land based operations out of one facility. The number of truck docks and truck parking spaces has been increased to allow for various land-based alternatives.

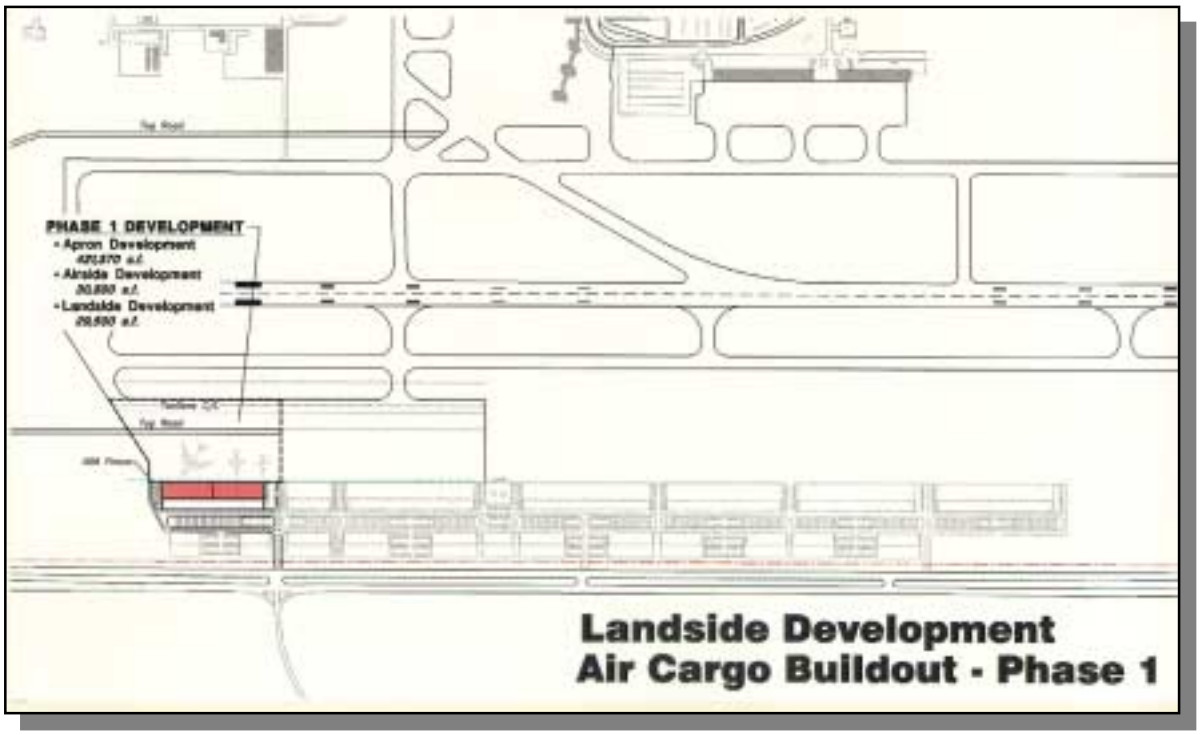


Exhibit 4-14 Proposed Phase I - Cargo Complex

West Cargo Complex Phase II – PAL II

The second part of Phase II development consists of constructing 58,000 square feet of landside warehouse/office complex and associated truck/vehicular parking as shown in **Exhibit 4-15**. In addition, the second part builds an additional 26,000 square feet of airside warehouse space to accommodate the anticipated air cargo demand. With the airside development, approximately 140,000 square feet of apron space is needed.

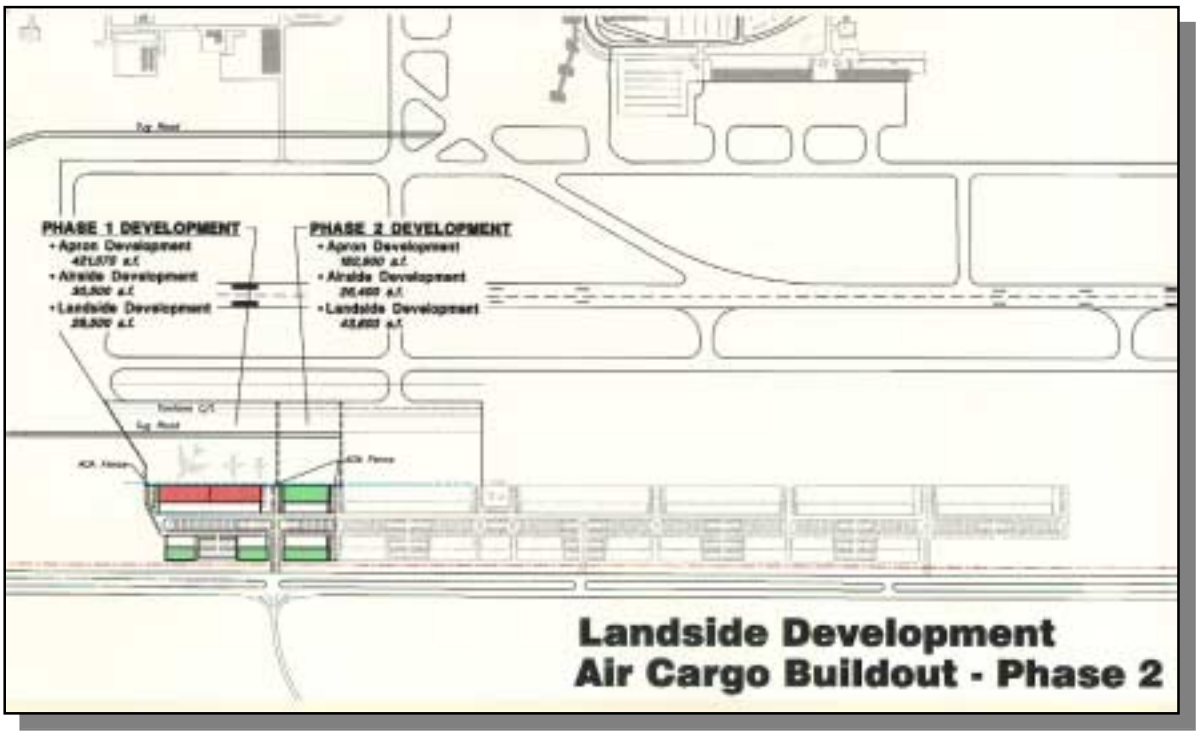


Exhibit 4-15 Proposed Phase II - Cargo Complex

West Cargo Complex Phase III – PAL III

As demand warrants, the development of Phase III should be undertaken as shown in **Exhibit 4-16**. This being the most critical phase, in terms of size, and will accommodate a tremendous amount of growth. It's size, with 43,000 square feet of airside warehouses and 278,000 square feet of landside warehouse/offices, relies on the premise that cargo growth at Jackson International is increasing at a rapid rate. To accommodate the airside facility, an additional 360,000 square feet of apron must be developed for access.

At this point, a centralized fueling facility for ground equipment is necessary to support operations. The facility consists of two 30,000 gallon fuel tanks, which can be operated by either the Airport Authority or private enterprise.

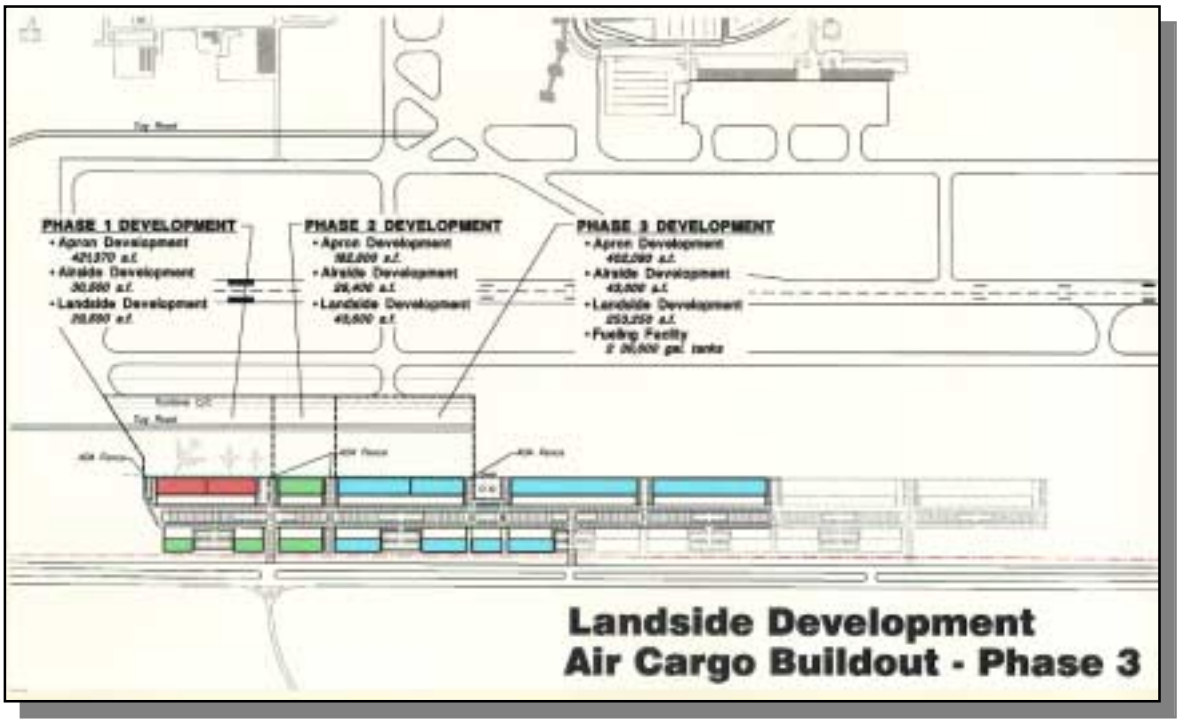


Exhibit 4-16 Proposed Phase III - Cargo Complex

West Cargo Complex Phase IV Year – PAL IV

The final Phase IV, the most complex of all phases, consists of the remaining buildout of the west side cargo complex. An additional 17,600 square feet of airside warehouse development and 198,000 square feet of warehouse/office development are required to meet demand for Planning Activity Level IV as shown in **Exhibit 4-17**.

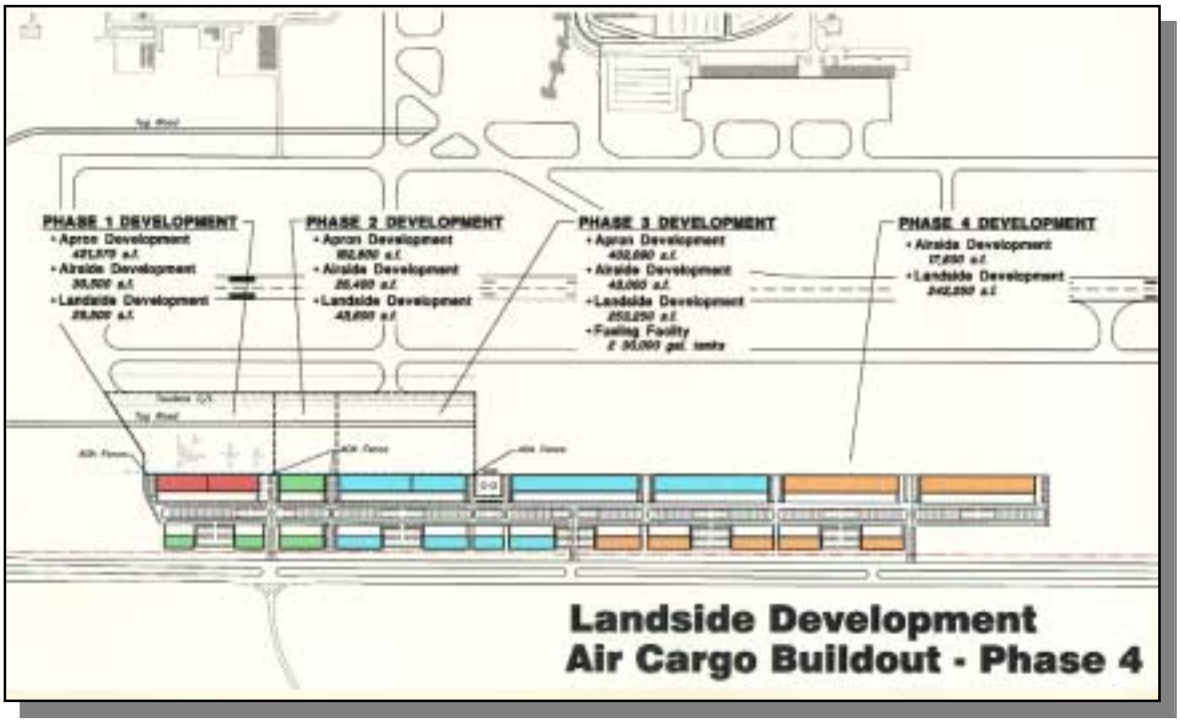


Exhibit 4-17 Proposed Phase IV - Cargo Complex

Fuel Farms

The existing fuel storage farm is owned by Delta Airlines and occupies an area of approximately one-half acre on the northern area of the Airport. Aircraft Service International (ASI) is the fuel provider for air carrier, cargo operators and select charter services at the airport. Aircraft at the airport are refueled via mobile fuel trucks, which are loaded from a fuel loading rack facility.

The existing fuel farm has a Jet-A storage capacity of approximately 90 thousand gallons, stored in three (3) above ground storage tanks. Since 10% of the tank capacity is reserved for fuel expansion and equipment, total storage tank capacity is actually less than the maximum volume. Therefore, the net storage capacity is 81,000 gallons of Jet-A fuel. Daily demand for fuel is estimated to average 54,000 gallons. The industry preferred norm for fuel farm storage capacity is 3 to 5 days of daily aircraft fuel requirements. The existing fuel storage capacity, however, represents only 1.5 days of fuel requirements at present aircraft activity levels, which is approximately half of the industry standard.

Table 4-16 presents the future requirements of the fuel farm at future activity levels.

Table 4-16: JIA Daily Fuel Requirements (1999 to 2020)

	1999	2005	2010	2020
Anticipated Operations(1)	109,241	126,222	136,885	159,189
Daily Fuel Requirements (Jet A - gal.)(2)	54,000	62,394	67,665	78,690
Existing Jet-A Storage Capacity (gal.)(3)	81,000			
Required Storage Minimum Capacity (1.5 days)	81,000	93,591	101,497	118,035

Note:

1) Source: GCR projections, an assumption is made that the % of fueling aircraft operations will remain consistent.

2) Based on an average of (3) 18,000 gal. Refill truck deliveries per day.

3) It is assumed that any future GA fuel facility would still source from the airports central pumping station.

4) Assumes net use of fuel tanks at 90% gross capacity.

Future daily fuel requirements are projected based on maintaining the existing ratio of fuel use to the number of operations as applied to future operations. This analysis does not factor in any change in operations occurring at the Airport, such as hubbing or larger aircraft fleets. As presented in **Table 4-16**, daily fuel use will exceed storage capacity by 2005 operation levels. Storage capacity of the fuel farm is presently .5 days of existing demand.

Required capacity was gauged at 1.5 days storage capacity for planning purposes. This level is anticipated to represent an absolute minimum standard. Of the airports surveyed, it was found that a two (2) day storage capacity was maintained. Using the 1.5 days minimum standard, the Airport would not have adequate storage capacity by the 2005 operation levels. Fuel storage capacity is further reduced to 1.16 days capacity by 2010 operation levels. It is suggested that the fuel farm be equipped with an additional 30,000-gallon tank as it approaches 2006 operational levels. This additional tank would provide a total storage capacity of 120,000 gallons, or 108,0000 gallons after reducing capacity by 10 percent for fuel expansion, equipment and settling.

General Aviation Facilities Analysis

General Aviation Facilities

Jackson International Airport currently has one Fixed Base Operator (FBO) providing aircraft apron parking, maintenance, storage and fueling services for general aviation aircraft operating at the Airport. The FBO, Mercury Air Center, uses apron space at the General Aviation Apron, which is located southeast of the terminal facility. There are several privately owned corporate aviation hangars operated either by Mercury Air Center or other companies.

Management and Operation

The general aviation FBO had been operated by Walker Aviation until 1995, when it was purchased by Jackson Air Center. Jackson Air Center subsequently reorganized and the FBO is now operating under the name of Mercury Air Group. Jackson Air Charter, the GA charter business, however, remains owned and operated by Walker Aviation.

JIA's GA operations have been experiencing a significant level of growth that began during the early 1990's. This trend continues today with annual GA operations reaching 32,191 in 1999. FBO representatives anticipate this trend to continue into the near future and then level off gradually. General Aviation development plans, as outlined below, are short and intermediate-term in nature. The FBO lease was renewed in March of 1996, with a ten-year initial term (two years of which has already expired), plus two 5-year options. Construction of a new hangar, which is currently in the planning stage, triggers resetting of 10-year lease plus two 5-year options.

Existing Facilities and Services

The general aviation operation exists on approximately 12 acres of land between the airport's access road and Runway 16L/34R. Mercury Air and Jackson Air Center currently share a building with the FAA ADO operations. A new FAA facility, located south of the terminal and patron parking area, is currently under construction, and will allow the FAA Operations to be relocated from the existing facility. The portion of the existing building which houses the pilot services facility, lobby, administrative offices, and support spaces are newly renovated. It is anticipated that when the FAA moves to the new facility, the remaining 6,000 sqft. of the existing building will be renovated and the FBO operations will be expanded.

The existing GA facilities include 20 tie-down spaces, 7 spaces of which are reserved for based aircraft. Mercury Air manages approximately 40,000 sqft of hangar space, which includes a full size hangar dedicated to GA maintenance. Twenty-four hour emergency on-call services are also provided.

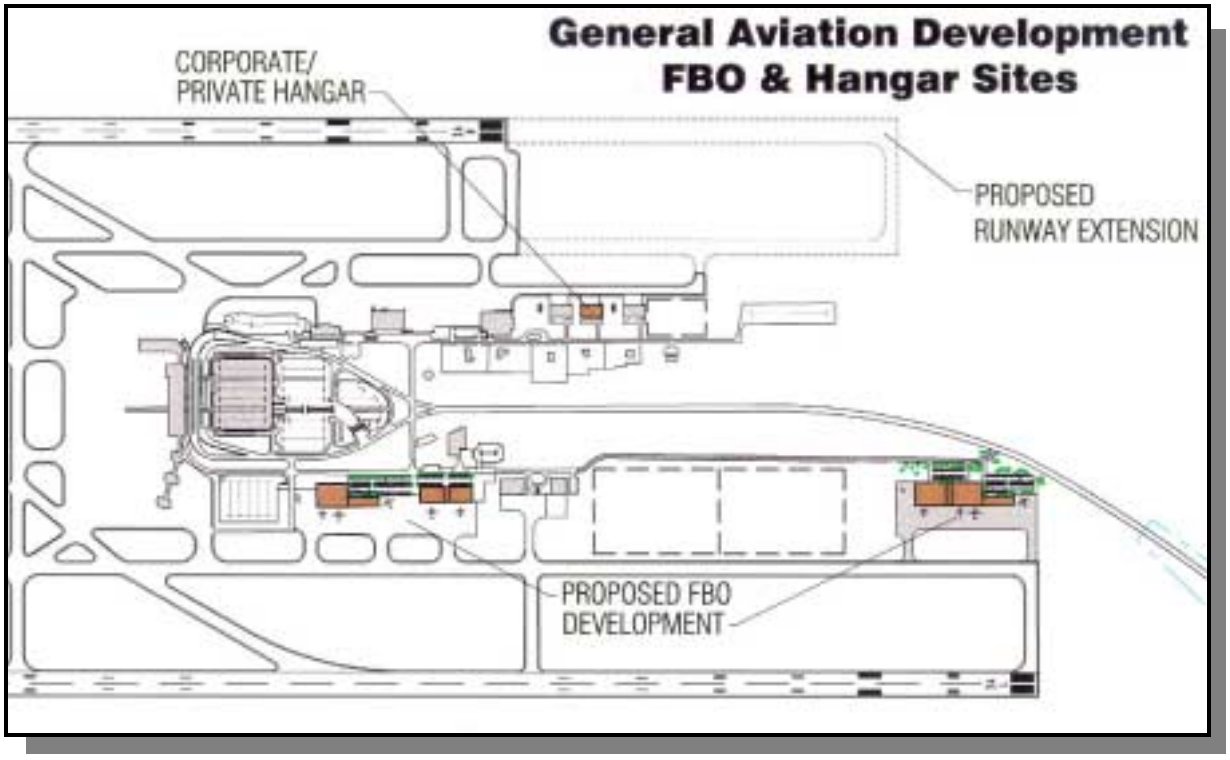


Exhibit 4-18 Existing and Future General Aviation Facilities

Exhibit 4-18 outlines existing GA facilities and those that are currently planned by the FBO. The apron area included **Table 4-16** is a gross figure of paved operation area. It includes a 613 lf segment of Taxiway D that has been decommissioned to expand the pavement available for GA operations. This segment adds approximately 61,318 sqft of pavement to

the GA facility. Significant long-term improvements are planned for this area of the airport. The Runway 34R extension is an example of the significant airport facility improvements that will increase surface traffic in that part of the airfield. As improvements are made in this area, it is anticipated this section of Taxiway D will be reopened to provide direct access to the southeastern corner of the airfield. For the purposes of this study, this section of Taxiway D is not included in the area available for tie-downs, circulation and other GA operations. In addition, these quantities do not include facility improvements recommended within the current Master Plan Update. The existing and proposed improvements in **Table 4-17** are limited to those located or planned for the existing GA site.

Table 4-17 General Aviation Space

JIA GA Facilities	Existing	Future	Total
Terminal Area (sf)	5,000	6,000	11,000
Gross Apron Area (sf)	261,360	(61,318)	200,042
Hangar Areas (sf)			
Mercury Air Managed	40,000	30,000	70,000
Other	2,000	-	2,000
Fueling Facilities	Cntrl. Airport Facil.	GA Area Loc.	-

Note: Table includes improvements planned as of print date.

GA Fueling Services

GA fueling operations currently require acquisition of fuel from the airport's primary, Delta Airline owned fueling facility. Worldwide Services refills and operates the tank system, while Mercury Air leases one of the 30,000-gallon tanks and uses its own equipment and personnel for all GA related fuel handling. Mercury Air pays a .05 cents/gal. flowage fee to the Jackson Municipal Airport Authority.

Airports throughout the southeast were surveyed with regard to fuel prices. The average fuel costs of the airports surveyed were $1.94 for Avgas and $2.17 for Jet Fuel A.

Current GA, FBO fuel prices are as follows:

Jet Fuel A $2.36

Avgas $2.51

By comparison, Hawkins Field Airport has average fuel costs of $1.91 for Avgas and $2.10 for Jet Fuel A. It is important to note the fuel prices may have the most significant impact on "discretionary" or leisure flights, as these flights de-prioritize the destination and fuel prices become a significant factor in flight plan selection. Fuel costs are also of more significant impact to cost-conscious pilots, as well as the segment of pilots which have schedules that are undaunted by the 30 minute driving distance to and from Hawkins Field.

General Aviation Terminal Building Requirements

The prescribed FAA standard for assessing terminal building area requirements utilizes a Design Hour Passenger (DHP) multiple. The multiple for a particular terminal is developed by a factor of the following:

DHP = 1.8 x net Busy Hour operations

The net Busy Hour is defined as the total number of operations, less "touch and go"(T&G) training runs. It was researched that JIA's GA touch and go operations account for less than 5% of its total operations. Therefore the total operation figure is used at this analysis. Military, and military "T&G" operations are also excluded from these calculations, as these pilots would not utilize the GA terminal building. Using this formula and the forecasting projections delineated above, the following **Table 4-18** is shown for projecting GA terminal area requirements for the planning period.

Table 4-18 General Aviation Terminal Building Area Requirements

Projections by Forecast Year	SF/pass.	1999	2005	2010	2020
Design Hour Passengers		**26.6**	**29.9**	**32.9**	**40.3**
Wait Area/Lounge	15	400	448	494	605
Management/Operations	3	80	90	99	121
Public Convenience	2	53	60	66	81
Concessions	5	133	149	165	202
Circulation, Mech. & Storage	25	666	747	824	1,008
Total Terminal Area Requirements (SF)		**1,332**	**1,494**	**1,647**	**2,016**

Design Hour Passengers = 1.8 x net busy hour operations, excludes military operations

Source: g.c.r. & associates, inc. analysis, 1999.

The existing 5000 sqft of GA pilot services FBO office has recently undergone a substantial renovation. Upon exodus of FAA staff that shares the building, the FBO will have approximately 6,000 sqft of expansion space available. As indicated in the table above, no expansion of the existing FBO terminal is needed within the forecast period.

General Aviation Forecasts

The recently released, Mississippi Statewide Airport Study conducted in-depth forecasting analysis, which focused on statewide economic and demographic trends, more so than national trends. According to this study, general aviation activities have enjoyed a long rebound, which is largely attributed to the General Aviation Revitalization Act of 1994. It is believed that this Act spurred an increase in the order and production of single and twin-engine aircraft over the past 5 years. This trend is bolstered by strong statewide and national economies. This study also indicated that increases in the occurrence of "fractional aircraft ownership" would further increase the manufacture of GA aircraft. Not unlike real-estate timeshares, these aircraft would be owned and operated by a number of companies on a cooperative basis.

In association with this study, aircraft operational forecasts were conducted to anticipate future general aviation facility requirements at JIA. Projections were made for each year within the planning period, and planning year figures are presented below. These forecasts are analyzed in conjunction with other relevant national and regional analysis, planned airport developments and planned airport vicinity commercial and infrastructure developments.

Based on these and other factors, the following **Table 4-19** outlines the projected operations during the planning period:

Table 4-19 Projected JIA GA Operations

Planning Year	Projected Operations
1999	32191
2005	36252
2010	40025
2020	48790

Operational increases projected at 2% per year.

Source: GCR & Assoc.

Note: The operation projections above represent the figures that are principally utilized at this section. Other figures and planning years are included to supplement the analysis and may be used at some formula calculations.

Historically, general aviation operations at JIA account for approximately 14% of all GA operations. As this figure is a long-term average, it is maintained for planning purposes at this study. The remaining 86% are itinerant operations, and non-military, GA touch and go operations are negligible (less than 5% according to ATC estimates).

ADDITIONAL FORECASTING CONSIDERATIONS

JIA has planned for an airport business park located near the General Aviation facilities. With this expansion a number of anticipated aircraft operations is forecasted in support of the business park.

The extension of Runway 34R and the construction of the east parallel taxiway are examples of airport sponsored improvements that will serve to increase aircraft activity at Jackson International. The Airport authority is also aggressively increasing the number of destinations served by JIA. Airport CIP and operational improvements are complemented by recent air carrier initiatives such as JIA's American Eagle service upgrades and the new United Express service augment JIA's business travel profile.

Busy hour calculations are based on FAA formulas. Annual operation projections are used to determine peak operational demands. Projected, GA Busy Day and Busy Hour demands are summarized at the table below. Busy Hour calculations are utilized in the assessment of itinerant aircraft facility requirements as shown in **Table 4-20**.

Table 4-20 GA Busy Hour Calculations

GA Aircraft Busy Hour Calculations				
Planning Year	Annual Operations	Peak Month Ave. Day	Busy Day	Busy Hour
1999	32,191	89	98	15
2005	36,252	101	111	17
2010	40,025	111	122	18
2020	48,790	136	149	22

Based on current FAA AC formulas:
Average Day = Average day of peak month
Busy Day = 110% of an Average Day
Busy Hour = 15% of the Busy Day

General Aviation Facilities Recommendations

East General Aviation Development

Exhibit 4-19 East GA Development

Continue expanding Corporate hangar development as demand warrants. Two sites are available for construction just south of the current Fixed Base Operator.

West General Aviation – Phase II

Exhibit 4-20 West Side GA Development

After the relocation of cargo operations on the west side of the airfield, the location can be transformed into a second Fixed Base Operator site. It would give an additional 200,000 sqft of ramp space and approximately 45,000 sqft of hangar space. This would give added capacity for General Aviation at Jackson International Airport during the planning period.

Corporate Aircraft Center and Maintenance Facility

As demand warrants, private aircraft hangars and aircraft maintenance facilities should be developed south of the general aviation. If large-scale facilities are needed, the area south of the general aviation complex should be utilized.

Exhibit 4-21 Corporate Aircraft Center and Maintenance Center

Section Five

AIRPORT ENVIRONS AND TRANSPORTATION INFRASTRUCTURE

AIRPORT ACCESS ROADWAYS/TRANSPORTATION LINKS

Introduction

Jackson Urbanized Area's Transportation Plan for the Year 2020, Final Report, June 1997, developed by the Central Mississippi Planning & Development District (CMPDD), is the primary document currently used by local and state transportation officials to determine existing and future transportation needs in the area. The plan specifically addresses current and future transportation needs in Hinds, Madison and Rankin counties. Jackson International Airport's Thompson Field is located in this Urbanized Area.

Exhibit 5-1 – Proposed Airport Access Arterv

In considering the impact of transportation to and from the Jackson International Airport, an initial examination of railways and roadways was conducted. In many larger cities, a railway system (light rail transportation service, for instance) would warrant evaluation. The reality in the Jackson Urbanized Area is that roadway transportation is the only currently viable means of travel to and from Thompson Field.

Airport Entrance Improvements

As part of the overall improvement plans of the airport, a new major arterial access system from Interstate 20 is proposed for development. This artery, illustrated on **Exhibit 5-1**, will provide greatly improved access to the airport, as well as to the proposed Jackson Inter-modal Corridor Project (**Exhibit 5-2**). This roadway will provide a new four lane , grade-separated roadway directly into the airport terminal, as well as to Highway 475. Highway 475 will be the primary artery for the Mississippi

International Air Cargo Center on the west side of the airport, as well as a key connector to the Jackson Intermodal Corridor Project.

This proposal also assumes a relocation of Old Brandon Road south toward U.S. 80, which will allow a common at-grade entrance for both Old Brandon and U.S. 80. The configuration of this interchange integrates well with the alignment of the Jackson Intermodal Corridor Project, as well as other transportation projects planned for the immediate area.

Existing and Future Public Non-Airport Transportation

Exhibit 5-2 – Proposed Jackson Intermodal Corridor Project

Since the 1940s, the City of Jackson has been responsible for the operation of the public transportation system, JATRAN. In 1994, officials estimated that 1,156,600 passengers used JATRAN, traveling an average of 3.5 miles per individual. The current system, while primarily a conventional passenger bus fleet, includes Para transit service that provides lift-equipped vans for individuals with special physical needs. At present, Jackson has fourteen fixed routes with hours of operation from 5:05 a.m. to 6:55 p.m., Monday through Saturday. The current routing plan, however, does not include transportation to and from the Jackson International Airport.

Plans to include mass transportation service from Jackson to the Jackson International Airport are not as speculative as assumed. Admittedly, the Central Mississippi Planning & Development District, in discussing public transportation, made no mention of service expansion to the Jackson International Airport in its Jackson Urbanized Area Transportation Plan through 2020. However, the City of Jackson Planning Department is presently collaborating with the Mississippi Department of Transportation (MDOT) and CMPDD on a Regional Transit Study scheduled for release in January 2000. Participating City officials indicate that the plan will address the issue of JATRAN connecting with some or all of the existing tri-county rural transportation providers to extend public transportation beyond Jackson's city limits. Specifically, the study considers the possibility of a hub or connector in the Lakeland Drive-Flowood area, with potential service via a rural provider to the Airport.

Of greater note, however, is the intermodal transportation (mass transit buses, rail, taxi and potentially long-haul passenger buses) facility on which the Metropolitan Planning Organization and the City of Jackson have been working. The intermodal operation will

be housed in the old train station in downtown Jackson. Already, funds have been secured for the capital improvements and construction has begun. Funding for the vehicles and shelters has been secured also. But operational dollars remain a challenge. Thus, exactly when and where JATRAN passengers can board and de-board is still at issue. Nonetheless, the City Administration has shown considerable interest in developing a route that provides direct shuttle service from the station to the Airport, or, at a minimum, to some type of connector service on Lakeland Drive with some other rural provider service to the airport. Therefore, although still in the developmental stages, mass transit service to the Jackson International Airport may eventually come to fruition if the City of Jackson and rural providers reach some accord.

Without such an arrangement, using local mass transportation from the municipalities abutting the Airport's property to get passengers to and from Thompson Field is highly unlikely. Although their geographic boundaries are closer to the Airport than Jackson's, neither Flowood, Pearl or Brandon currently has mass transit service and has no known plans to create a system for their residents.

Existing External Roadways

Generally, when traveling to the Jackson International Airport from the tri-county area of Hinds, Rankin and Madison Counties, travelers take one of four routes:

- From North or Central Jackson, Ridgeland and Madison:

  Interstate 55 to Lakeland Drive (MS Highway 25) East to Airport Road (MS Highway 475) South; then Airport Road (MS Highway 475) South to Old Brandon Road; finally, Old Brandon Road easterly to International Drive.

- From South or Central Jackson and West Pearl:

  Interstate 20 East or Highway 80 East to MS Highway 475 North; then northerly to International Drive.

- From East Pearl and Brandon:

  Interstate 20 West or Highway 80 West to MS Highway 475 North; then northerly to International Drive.

- From West Flowood:

  Lakeland Drive (MS Highway 25) East to MS Highway 475 South; then southerly to Old Brandon Road; finally, Old Brandon Road easterly to International Drive.

- From East Flowood:

MS Highway 25 West to MS Highway 475 South; then southerly to Old Brandon Road; finally, Old Brandon Road easterly to International Drive.

Planned and Funded Roadway Activities

According to the Transportation Plan for the three-county metropolitan area of Hinds, Madison and Rankin counties, there is roadwork that will directly or indirectly impact the aforementioned routes to the Jackson International Airport. This activity, which has been funded in part, will occur over a twenty-year period. A synopsis of the funded activities based on the routes impacted and projected construction period is provided below. The activities that are unfunded are provided at the end of this section.

Construction Period: 1999-2000

- Freeways and Expressways:

There is no new construction or expansion of existing freeways or expressways planned during this period.

- Arterials:

MS Highway 25 (Lakeland Drive): Widening is slated for completion during the Year 2000. At present, construction to expand this thoroughfare (a four-lane highway) from Interstate 55 easterly to MS Highway 475 is well underway.

Construction Period: 2001-2010

- Freeways and Expressways:

There is no new construction or expansion of existing freeways or expressways planned during this period.

- Arterials:

MS Highway 475: New construction from Highway 80 to the intersection of Old Brandon Road and a widened Metro Jackson Parkway.

Old Fannin Road: Slated to be widened.

Gulf-Line Road Extension (a north-south arterial): New construction project that would allow passage to Highway 80 East, then to MS Highway 475 North to the Jackson International Airport. Eventually, however, the Gulf-Line Road Extension will merge with the proposed but un-funded new construction of Tree

Top Boulevard that will feed into MS Highway 25, providing yet another route for access to the Airport.

Construction Period: 2011-2020

- Freeways

Interstate 20: This east-west interstate will be expanded between MS Highway 468 (a.k.a. Pearson Road) and Greenfield Road. Six lanes will be needed to handle the forecasted traffic increases by the year 2020.

- Expressways

There is no new construction or expansion of existing expressways planned during this period.

- Arterials

MS Highway 25: Additional widening of this highway will occur several decades from now. When undertaken, MS Highway 25 from Grant Ferry Road in Brandon westerly to MS Highway 475 will be widened to four lanes.

Highway 80: This east-west highway is slated for widening in two intervals: (1) the stretch of Highway 80 beginning at MS Highway 468 easterly to MS Highway 475; and (2) the stretch of Highway 80 beginning at MS Highway 475 easterly to Crossgates Boulevard.

MS Highway 475: This north-south highway is slated for widening, with Highway 80 as the northern border and Interstate 20 as the southern border.

Old Brandon Road: Plans are for this road, which runs northeasterly, to be widened between MS Highway 468 (as the southwestern border) and MS Highway 475 (as the northeastern border).

Planned But Unfunded Roadway Projects

- Expressways

Metro Jackson Parkway: Also known as the Airport Parkway/MS Highway 25 Connectors, this expressway would be a new construction project and would require a funding source. At present, there is no major thoroughfare running from the Jackson Central Business District to the Jackson International Airport and the developing areas of Rankin County. Thus, although currently un-funded, both the *Jackson Urbanized Area's Transportation Plan for the Year 2020* and an earlier feasibility study recommend construction of this expressway. This proposed

construction would be a 9.3-mile (14.9-kilometer) limited-access interstate type facility. It would begin at the existing intersection of High Street and Interstate 55 in the City of Jackson. Then it would proceed eastward across the Pearl River for 2.6 miles (4.3 kilometers) to an interchange. At this point, it would split into northeastern and southwestern forks. The northeastern branch (to be called the MS 25 Connector) would eventually intersect at the north with MS Highway 25 (Lakeland Drive) that runs east and west. The southeastern branch (to be called the Airport Parkway Connector) would intersect at the south with Old Brandon Road. Once constructed, travelers to the Jackson International Airport could take Old Brandon Road (cross over MS Highway 475) to International Drive, the main airport (Thompson Field) road. The MS Highway 25 Connect would begin at 2.6 miles (4.2 kilometers) east of the western terminus of the Airport Parkway Connector. Then, the MS Highway 25 Connect would proceed northeasterly for 4.0 miles or (6.4 kilometers) ending at MS Highway 25 (Lakeland Drive) community of Luckney.

- Arterials

East Metropolitan Access Road: New construction.

Interchange at Interstate 20 and Pirates Cove: New construction.

Interchange at (Un-funded) Metro Jackson Parkway and (Funded) Gulf-Line Road: New construction.

Liberty Road: This un-funded project would involve the widening of a road that runs east and west between Old Fannin Road and MS Highway 25 on the northern side of the Jackson International Airport. Actually, the proposed Metro Jackson Parkway eventually runs into Liberty Road, providing yet another means for residents of Madison and Upper Rankin Counties to access the Metro Jackson Parkway or the East Metropolitan Access Road.

Conclusion

It is apparent that considerable development of the roadway system impacting the Jackson International Airport is on the horizon. Although existing thoroughfares currently provide adequate ingress and egress, the East Metropolitan Access Road and the Metro Jackson Parkway, if constructed, will enhance opportunities for expanded air cargo facilities and further commercial development at the Jackson International Airport and should address future transportation needs in the growing tri-county area sufficiently. Users of the aviation facilities will have several accessible roadways to travel to and from the Airport. However, mass transportation, although seemingly inevitable, poses a political and financial challenge.

EXISTING AND FUTURE LAND USE

Introduction

Although within the jurisdiction of the City of Jackson (Hinds County), the Jackson International Airport is surrounded by the cities of Pearl and Flowood (Rankin County). Pearl is south of the Airport; and Flowood is west and north of the Airport. East of the Airport is an unincorporated portion of Rankin County.

Airport Land Uses

Located on the east side of the airport, a subdivision plan has been created for the ultimate development of approximately 400 acres of land for airport/aviation related purposes (**Exhibit 5-3**). The existing undeveloped tract of land is ideally suited for large industrial/commercial or corporate development, with excellent access to the airfield and new transportation arteries planned for surface access.

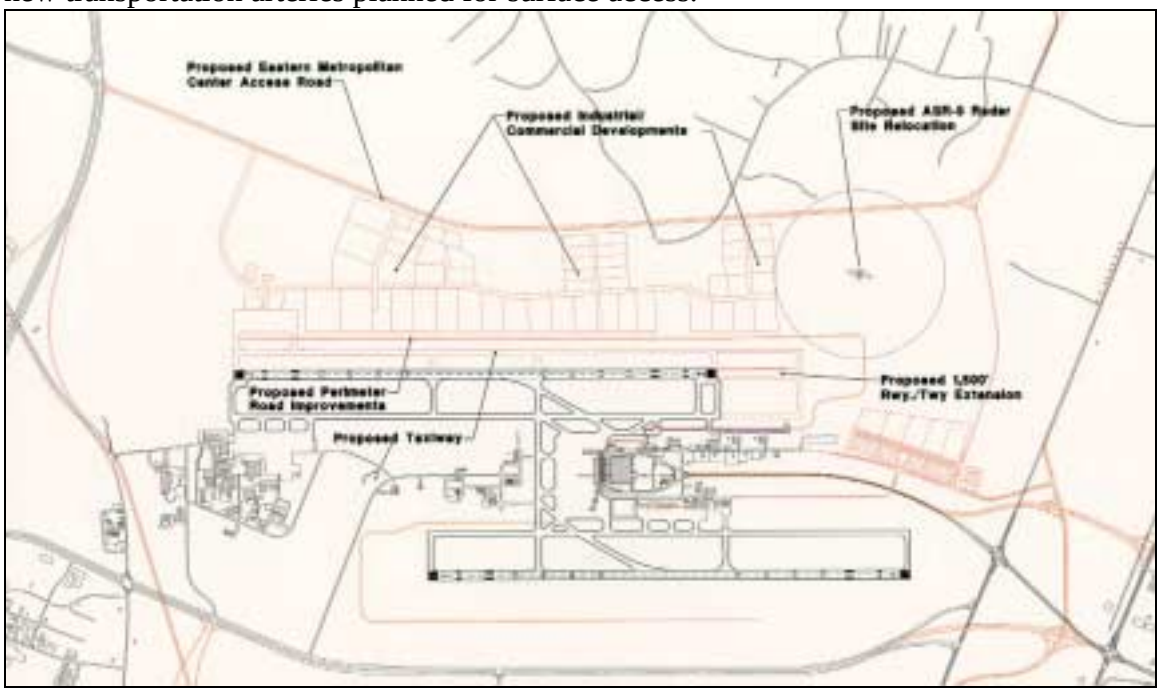


Exhibit 5-3 – Eastside Commercial/Industrial Subdivision

This plan includes 52 individual, sub-divided parcels of land, ranging from 1.7 to 10 acres in size. A central artery will traverse the site, separating airside access tenants from non-airside tenants. Sufficient green and open spaces are provided to maintain the aesthetic treatments, which would be desired in such a campus. All parcels can be re-subdivided or combined to form larger pieces, if necessary.

In addition to the undeveloped east side of the airport, a significant amount of undeveloped land is available in the south central part of the airfield, near the intersection of Old Brandon Road and the Airport Roadway. This site is located near the airport entrance and the Transportation Center and is ideally suited for the development of a Hotel Complex. Under this proposal, a first class, on-airport hotel complex and Business Park near the entrance to the airport can be developed. The area would be accessed from the new regional transportation center roadway and would have a separate entrance onto Old Brandon Road. This recommendation is illustrated on **Exhibit 5-4**.

Exhibit 5-4 – Business Park/Hotel Complex

Regional Land Use

In 1999, Pearl and Flowood each adopted a Comprehensive Plan that was prepared by Central Mississippi Planning and Development District. (The Pearl Comprehensive Plan included the unincorporated area east of the Airport.) Contained in the Comprehensive Plan was a Land Use Plan. The Land Use Plan designates, in map form, the proposed distribution and extent of land use for residential, commercial, industrial and recreational lands; public and quasi-public facilities; and open space. In developing each city's Land Use Plan Map, Central Mississippi Planning and Development District considered the following factors:

- Existing land use patterns and growth trends;
- Projected future land use needs based on projected future population and employment converted to the number of acres needed to accommodate projected growth levels;
- Flood plains, excessive slopes (over 12 percent) and soil types; and
- Location of major streets and open space

The land use maps for the cities of Pearl and Flowood are provided in **Exhibit 5-5**. The land uses depicted on these color-coded maps are summarized below.

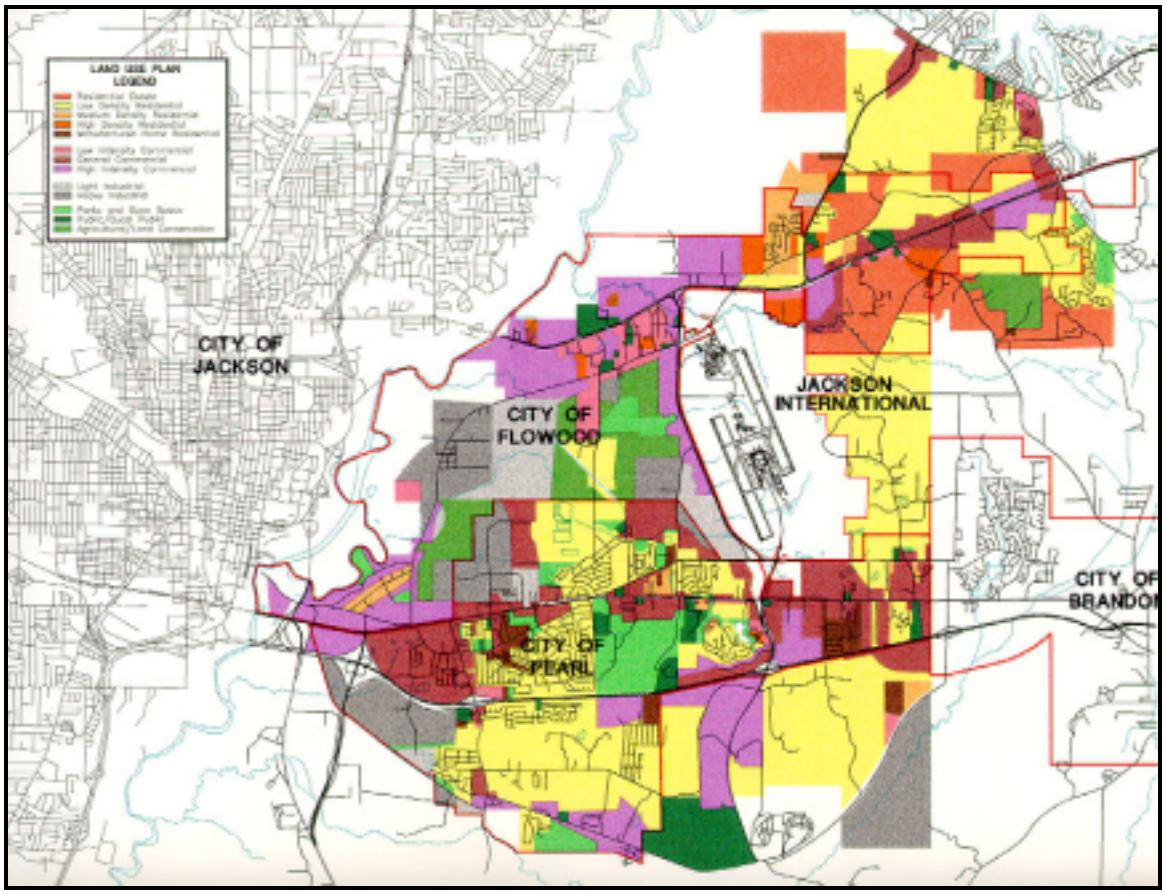


Exhibit 5-5 – Land Use Map

Residential Land Uses

Residential land uses are classified into the following groups:

- Residential Estate (light rust on Flowood map only)—depicts single-family detached dwellings on large lots with a maximum density of one detached residence per acre. Dogwood Estates, situated northeast of the Jackson International Airport, is one such residential estate.

- Low Density Residential (yellow on both Pearl and Flowood maps)—designates single-family detached dwellings on relatively large lots (approximately 10,000 square feet); the maximum density is three single-family detached residences per acre. In the vicinity of the Airport, residences at Laurel Wood (central Flowood), Country Place (central Pearl), Crossgates West (east Pearl) and Longwood Estates (unincorporated area east of the Airport) fall into this category.

- Moderate or Medium Density Residential (tan on both Pearl and Flowood maps)—indicates single-family detached dwellings on moderately sized lots (at least 8,500

square feet); the maximum density is six single-family detached residential units per acre. Patio homes and townhouses like those at Breckenridge (southeast of the Airport in Pearl) are examples of dwellings in this class that are in proximity to the Airport.

- High Density Residential (orange on both Pearl and Flowood maps)—designates multi-family residential units such as apartments or condominiums on arterial streets, roads or highways, which are capable of carrying higher traffic volumes; the maximum density is twelve dwelling units per acre. Such residential units in the Airport's vicinity include, in Flowood, Laurel Park Apartments (northeast of the Airport) and, in Pearl, Pearlwood Apartments (southwest of the Airport), Village at Crossgates and Crosswinds Apartments (both southeast of the Airport).

- Residential Manufactured Homes (brown on both Pearl and Flowood maps)—designates mobile or manufactured home subdivisions and parks.

Commercial Land Uses

Commercial land uses consist of:

- Low Intensity Commercial (light purple on both Pearl and Flowood maps)—indicates restricted commercial areas that include business and professional offices; personal services businesses; floral shops; and other similar uses that do not generate high vehicular traffic (i.e., more than 70 average daily trips per 1,000 square feet of Gross Floor Area) or high noise levels (i.e., exceeding a DNL of 65 decibels).

- General Commercial (reddish-brown on both Pearl and Flowood maps)—designates enclosed commercial areas that mainly include businesses whose principal activity is conducted indoors. Shopping centers are examples of establishments included in this classification. Much of the area immediately south of the Jackson International Airport falls in this category.

- High Intensity Commercial (light pink on both Pearl and Flowood maps)—encompasses all types of commercial uses, including outdoor commercial activities. The areas immediately west and north of the Airport are in this land use classification, although the area west of the Airport is mostly undeveloped at present.

Industrial Land Uses

Industrial land uses are categorized as:

- Limited or Light Industrial (light gray on both Pearl and Flowood maps)—designates enclosed industrial activities that include manufacturing and warehousing uses conducted indoors primarily. The manufacturing uses are those that do not produce noise, vibration or offensive odors that can be sensed off the premises by humans.

The area immediately southwest of the Jackson International Airport is classified as Limited or Light Industrial.

- Heavy Industrial (dark gray on both Pearl and Flowood maps)—encompasses all types of industrial uses, including outdoor activities. This classification includes manufacturing uses where large volumes of water are needed or noise, vibration or offensive odors can be detected off the premises. An area so classed is situated west of the Airport in Flowood.

Public and Quasi-Public Land Uses

This land use category (dark green on Pearl map and dark green on Flowood map) includes all existing and proposed public and quasi-public uses such as schools, colleges and other educational institutions; churches and other religious institutions; governmental buildings and facilities; hospitals and similar health care institutions; and cemeteries.

Parks and Open Spaces

This land use classification (lime on both Pearl and Flowood maps) consists of all public and private parks, ball fields, golf courses, and other related open space. The Refuge Golf Course, west of the Jackson International Airport, in Flowood is located in this area.

Agricultural and Rural Land Uses

This land use category (green on both Pearl and Flowood maps) designates agricultural or rural areas that are absent of significant concentrations of residential, commercial, industrial or other development and are not expected to be served by municipal sewer service or public facilities by the year 2020. The maximum development in these areas is one residential unit for every three acres.

ZONING ORDINANCES

Surrounded by the cities of Flowood and Pearl, Jackson International Airport sits on more than 3,000 acres of property located in Rankin County. However, the City of Jackson, situated in Hinds County, owns the Airport. Thus, in reality, there are two sets of zoning ordinances that could impact the Airport; ordinances over which the City of Jackson has no authority. Hence, to assay the impact of these zoning ordinances, each municipality's zoning regulations were examined separately. A careful review finds no reference of the Airport or air hazard zoning in any of the ordinances. Most merely discuss the height of billboards and the like.

Given the absence of local zoning ordinances impacting the Jackson International Airport, a real need exists to develop uniform standards around which each municipality could subscribe. Perhaps the best method of achieving this end is for each city to collaborate with the Central Mississippi Planning & Development District (CMPDD) and utilize the comprehensive plans adopted by each city to develop meaningful zoning ordinances. Enacting reasonable and defensible ordinances would avert a situation that will have an adverse impact on the Airport and result in the expenditure of considerable resources that could be redirected to more productive uses.

Zoning Maps

Since Pearl is south of the Jackson International Airport and Flowood is west and north of it, the official zoning maps of both cities were utilized in evaluating the zoning of the Airport environs. (The area east of the Airport is an incorporated portion of Rankin County for which no zoning exists. Nonetheless, the Comprehensive Plan for the City of Pearl designates the land use for this area as Low Density Residential.) Following is a review of the zoning designations in the vicinity of the Airport as shown in **Exhibit 5-6**.

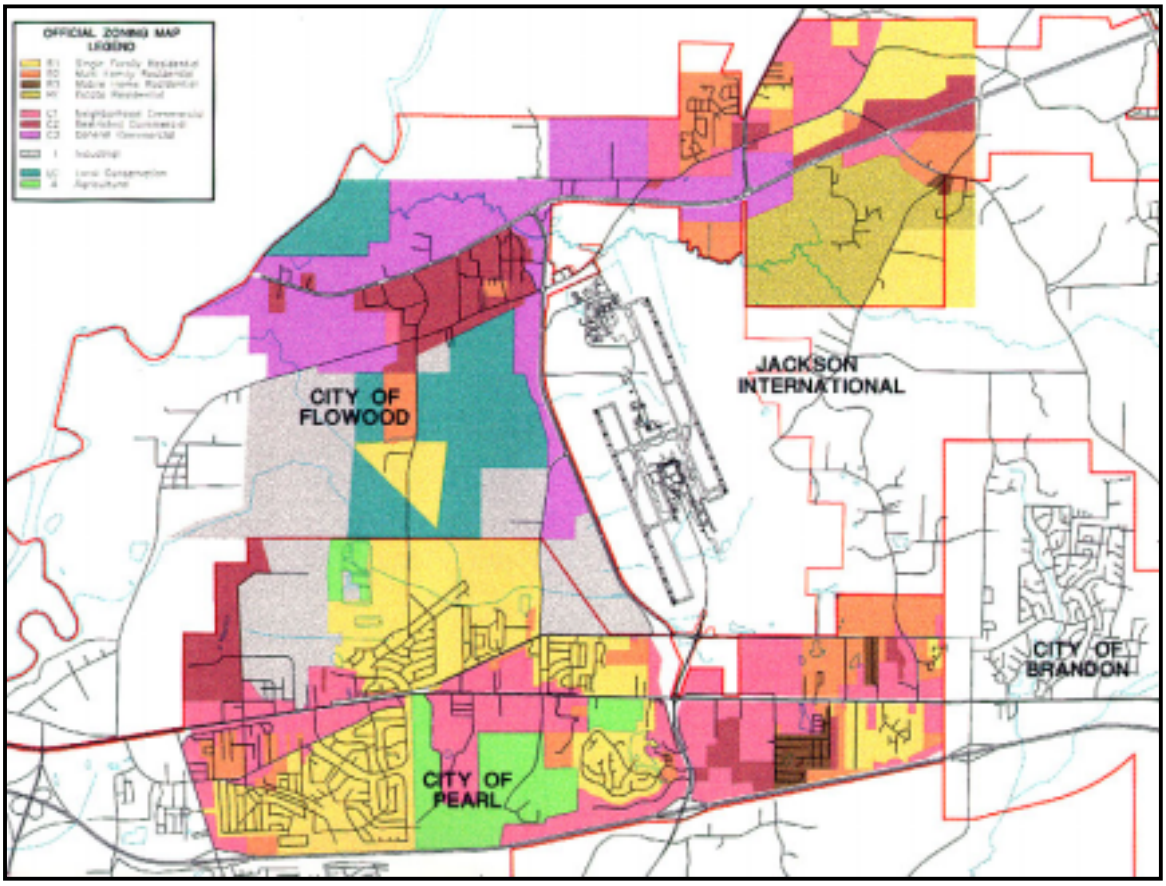


Exhibit 5-6 Existing Zoning Map

Flowood

Although there are eleven zoning designations established by the City of Flowood, there are only six designations of land immediately abutting Jackson International Airport grounds, as seen from **Exhibit 5-7**:

- L-C: Land Conservation District (turquoise on zoning map)
- R-E: Estate Residential District (tan on zoning map)
- R-3: Unlimited Multifamily Residential District (orange background on zoning map)
- C-3: General Commercial District (pink on zoning map)
- I-1: Light Industrial District (purple on zoning map)
- I-2: Heavy Industrial District (purple on zoning map)

Starting from the southwestern border of the Airport (along MS Highway 475) and moving clockwise, there is an area zoned I-1 or Light Industrial District. North of this zone is a narrow but long General Commercial District (C-3) zone that stretches all the way to Lakeland Drive (MS Highway 25) and beyond.

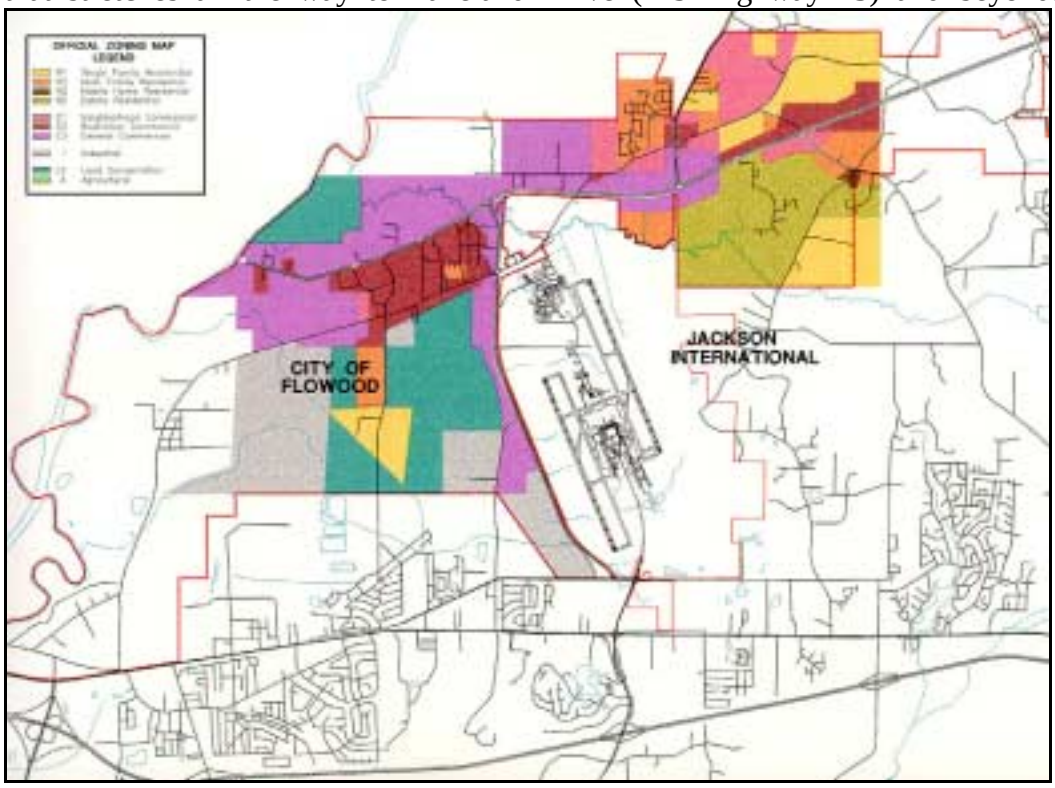


Exhibit 5-7 Flowood Zoning Map

West of this zone is a large area whose southernmost portion is zoned for Heavy Industrial District (I-2), with the remainder zoned for Land Conservation District (L-C).

The region bordering the Airport to the north (along Lakeland Drive) is zoned in order from west to east as follows: Land Conservation District (L-C), General Commercial District (C-3), Unlimited Multifamily Residential District (R-3), and Estate Residential District (R-E).

Pearl

There are seven established zoning designations in the City of Pearl. Six of these designations impact the area immediately south of the Jackson International Airport and north of MS Highway 80, as depicted on **Exhibit 5-8**:

- R-1: Single Family Residential (yellow on zoning map)
- R-2: Multi Family Residential (orange on zoning map)
- R-3: Mobile Home Subdivisions–Residential (brown on zoning map)
- C-1: Commercial–General (pink on zoning map)
- C-2: Commercial–High Intensity (reddish-brown on zoning map)
- I: Industrial (purple on zoning map)

Moving eastward from the Airport's southwestern border to its southeastern border, the land is zoned in order as follows: Industrial, Single Family Residential, Multi Family Residential, Commercial–General, Multi Family Residential, Mobile Home Subdivisions–Residential, Commercial–High Intensity, Commercial–General, Multi Family Residential, and Single Family Residential.

Farther south of the Jackson International Airport and to the west of MS Highway 475 (Airport Road), in the region north of Interstate 20 and south of MS Highway 80, are areas zoned for Single Family Residential, Multi Family Residential, Commercial–General, and Agriculture (green on zoning map). East of MS Highway 475 are additional concentrations of areas zoned for Commercial (General and High Intensity), Mobile Home Subdivisions–Residential, Multi Family Residential, and Single Family Residential.

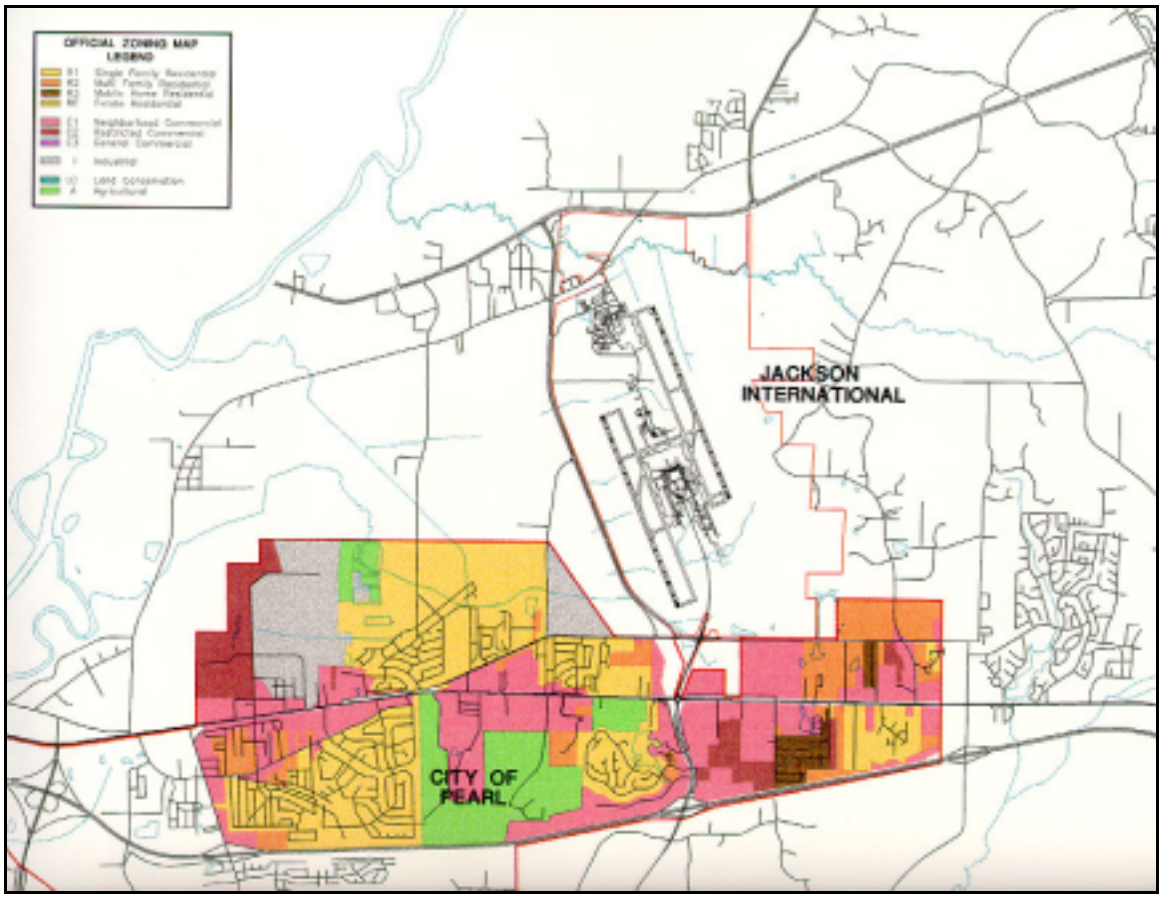


Exhibit 5-8 Pearl Zoning Map

Conclusion

The official zoning maps of the cities of Flowood and Pearl reviewed here are not entirely consistent with the Land Use Plan Maps contained in the Comprehensive Plans adopted by each city in 1999. Consequently, the Central Mississippi Planning and Development District (CMPDD), a regional planning agency for the eight counties including Rankin, has requested that the cities of Flowood and Pearl make their zoning maps and zoning ordinances consistent with their adopted land use plans and maps. As a result, the cities are collaborating with CMPDD to revise their zoning maps and zoning ordinances, where applicable. As this effort is undertaken, it will be critical for Flowood and Pearl to adopt air hazard zoning ordinances and other regulations that would be compatible with the current and future operations of the Jackson International Airport. Furthermore, given the absence of any zoning restrictions in the unincorporated area east of the Jackson International Airport, there is a need for the County of Rankin to adopt its own zoning ordinances and other regulations.

Section Seven

FINANCIAL PLAN

Introduction

The purpose of the financial plan is to present the proposed project implementation and funding schedules for the capital improvements developed as part of this Action Plan. The financial plan represents an assessment of future implications of the capital program in light of existing financial commitments. This is a proposed funding scenario and should be considered preliminary in nature. Potential funding sources will be identified with particular attention paid to the impact of financing the proposed Capital Improvement Program.

The principal funding sources for airport capital improvement projects are: (1) Federal Grants-In-Aid, (2) Passenger Facility Charges, (3) Debt Financing, (4) Airport Revenues, and (5) State Grants-In-Aid. All these funding sources have there own positive qualities, yet they all face constraints that limit their funding potential. Federal grants-in-aid, which are financed through aviation user based taxes, are highly sought after and are often limited by legislative appropriation and authorization levels. Passenger Facility Charge funds, which are derived through a user fee charged to traveling passengers, are a function of enplanement levels and limitations on the fee applied to passengers. Debt financing, typically in the form of bonded indebtedness, is limited by the airport's ability to produce revenues to cover debt service cost or airlines' power to veto additional capital improvements. Additionally, airport user agreements and leases can significantly impact the airport's ability to accumulate and retain revenues.

The lack of availability of any one of these funding sources increases demand for another. A decrease in federal or state grants-in-aid could increase cost of airports, airlines and air passengers due to debt financing replacing the required funds. Airports pass the cost associated with debt financing on to the airlines through higher rates and fees.

Sources of Financing

FAA Airport Improvement Program Grants

The Airport Improvement Program was created by the Airport and Airway Improvement Act of 1982 with the objective of providing financial assistance in the development of a nationwide system of public use airports adequate to meet the projected growth of civil aviation. The AIP program served to consolidate the preceding Airport Development Aid and the Planning Grant Programs, in addition to allowing for planning and implementation of noise compatibility programs.

The AIP program is a "contract authority" program that allows the FAA, once the AIP Program has received its annual funding appropriation, to enter into contracts with public agencies for federal grants. Those agencies must pledge to operate the facility according to FAA guidelines. Revenues used by the AIP program are provided through the Airport and Airway Trust Fund, primarily the passenger ticket tax collected on all tickets. AIP funds are distributed in the form of apportionments and discretionary funds by formula according to guidelines established in legislative acts. JIA is eligible to receive apportioned funds or "entitlement funds" based on its level of enplanements and its landed weight of cargo. Remaining, non-apportioned funds are awarded at the discretion of the FAA, based on a project priority rating system. AIP grants are eligible to fund terminal, roadway and airfield development, land acquisition, noise mitigation, planning projects, and certain projects that maintain or improve safety and capacity at an airport.

Debt Financing

Airport Revenue Bonds represent the issuer's obligation to repay a principle amount and interest within a stated period through the dedication of specific funds for repayment. The sale of bonds has historically been the most common source of private investment capital for municipal enterprises. Bond financing is considered to be long term, or permanent financing in that the time from the issuance to the maturity of the bond tends to match the economic life of the facilities being financed. For most commercial service airports, the agreement to repay debt is provided through the issuance of revenue bonds. Revenue bonds are payable from a specific source of revenue and are not secured by the full faith and credit of the issuer. Revenue bonds do not permit the bondholders to compel taxation or legislative appropriation of funds not pledged for payment of debt service. Pledged revenues can be from the operation of the financed project, or from the operation of the airport. For Jackson International, airport revenue bonds are secured through rates and charges paid by the air carriers operating at the Airport. Specifically, the air carriers agree to pay a landing fee that covers expenses in addition to those covered by other airport revenues as part of an residual lease agreement with the Airport.

Alternative forms of debt financing that may be relevant to the proposed development program include:

- Special Facility Bonds - Special facility bonds are debts issued by an airport to finance a specific facility on behalf of an air carrier who directly secures the debt. Revenues from the constructed facility rather than revenues of the airport would pay the debt service.
- Nonprofit Corporation Bonds - Nonprofit Corporation Bonds are issued by a specially created nonprofit corporation and are backed by special-use taxes that effectively create interest rates lower than revenue bonds. This method is usually used to finance maintenance hangars and air cargo facilities. The improvements financed typically are returned to the airport upon retirement of the bond.
- Industrial Development Authorities - Industrial Development Authority bonds are issued and underwritten by a separate corporate entity located on the airport. These

bonds allow for non-aeronautical development without the involvement of the airport.

- Third Party Financing - Third Party private financing relieves the airport of the responsibility of raising the capital for developing such things as hangars and hotels.

Passenger Facility Charge

A passenger facility charge (PFC) is a $3 fee charged to each passenger enplaning at JIA to finance eligible FAA approved airport improvement projects. As a result of continued growth of air traffic, capacity of the existing aviation infrastructure was strained and delays were increasing. Funding sources in addition to the AIP were needed to meet the growing need for airport development to expand capacity of the national airport system. Congress allowed for public agencies operating a commercial service airport to charge passengers boarding planes at their airport a $1, $2 or $3 facility charge to finance eligible FAA approved airport improvement projects as part of the Aviation Safety and Capacity Act of 1990.

Passenger facility charge revenues are intended to finance airport related projects that (1) preserve or enhance safety, capacity or security of the national airport system, (2) mitigate noise impacts resulting from an airport, or (3) furnish opportunities for enhanced competition between air carriers. Projects eligible for PFC funding include all AIP eligible planning and development projects, noise compatibility projects, and construction of gates and related areas associated with the movement of passengers and baggage within airports.

In addition, PFC revenue can be used to cover debt service and finance costs of bonds issued to fund eligible airport development. Non-federal shares or local matching funds of AIP approved projects may also be funded with PFC revenue. Additionally, PFCs provide airports with a source of revenue independent of airline veto power over proposed capital improvement projects.

In 1993, Jackson International received authority to impose a $3 passenger facility charge to collect over $9 million to finance eligible projects, in part, at the Airport. **Table 7-1** presents the projects within the Airport's PFC program.

Table 7-1 Passenger Facility Charge Budget

Capital Projects	Budget Carry Forward	PFC's	Total
FY 1999 Projects			
Rehab West Concourse Roof	$ 370,131	$ 370,131	$ 370,131
Security	$ 4,269,056	$ 1,007,498	$ 1,007,498
Signage	$ 775,639	$ 775,639	$ 775,639
Communication	$ 46,481	$ 46,481	$ 46,481
Update Master Plan & Part 150	$ 511,050	$ 511,050	$ 511,050
Update Master Plan & Part 150	$ 176,124	$ 176,124	$ 176,124
FIDS/BIDS	$ 250,000	$ 250,000	$ 250,000
FY 99 Totals	**$ 6,398,481**	**$ 3,136,923**	**$ 3,136,923**
FY 2000 Projects	**Budget Carry Forward**	**PFC's**	**Total**
West Concourse and Term.	$ 700,000	$ 700,000	$ 700,000
Rehab East Taxiway	$ 3,100,000	$ 3,100,000	$ 3,100,000
Restrooms & Escalators/Seating	$ 950,000	$ 950,000	$ 950,000
East Concourse Carpeting	$ 60,000	$ 60,000	$ 60,000
Ricondo	$ 20,000	$ 20,000	$ 20,000
FY 00 Totals	**$ 4,830,000**	**$4,830,000**	**$4,830,000**
Grand Totals	**$11,228,481**	**$7,966,923**	**$7,966,923**

Analysis by g.c.r. & associates, inc.

Capital Improvement Program

The financial plan will identify funding scenarios for three categories of the Action Plan development program:

- Planning Period I - Ongoing/Funded projects, Present – 2000; Short Term Capital Projects (including the 5-year Capital Program), 2001-2005

- Planning Period II - Intermediate Capital Projects, 2006 -2010
- Planning Period III - Long Term Capital Projects, 2010 - 2020

Action Plan Development Program

Phase I – Ongoing and Short Term Projects

The Airport envisions completing over $40 million of capital improvements by 2005. Funding for these projects will include traditional sources of airport revenue, with the addition of certain airside projects, a air-cargo complex and additional general aviation facilities, being funded through a combination of revenue bonding and third party financing. Certain projects currently in design have funding commitments as part of the Airport's on-going Passenger Facility Charge, terminal improvements, airfield safety, major maintenance projects, and cargo capacity enhancements account for the majority of ongoing/funded and short-term projects.

Phase II – Intermediate Capital Projects

Within intermediate planning period (five to ten years), JIA anticipates the need for additional airside improvements including improvements to operating efficiency of runways and taxiway exits, enhancing the ARFF perimeter road system safety, initiating construction projects for a east runway extension and upgraded instrument landing systems. Landside improvements address anticipated growth on the access and terminal roadway systems and provides additional cargo facilities to position the Jackson Region as a major entity in domestic and international trade. Terminal improvements include a West Concourse buildout and parking garage expansion Additionally, a hotel and business park complex are anticipated during this period totaling more than $80 million in private funding. Intermediate capital projects total over $100 million.

Phase III – Long Term Capital Projects

Projects included in the long-term capital program address future goals of the Airport to provide additional service and accommodate increased cargo activity. The airport envisions itself as a major contributor of trade for the Mississippi region and for international trade. The Airport will develop an intermodal transportation facility to facilitate anticipated growth in trade. Long-term projects include completing elements related to constructing a parallel taxiway allowing access to a new business park on the east side of the airport, and completing buildout of the Mississippi Air Cargo complex on the west side of the airport. Additionally the airport will complete buildout of the terminal providing additional space for anticipated growth in passenger traffic. Long term capital projects total over $200 million.

Section Eight

CAPITAL FACILITIES PROGRAM

A Capital Facilities Program is a plan of capital and major maintenance expenses to be incurred over a multi-year period. The purpose of this section is to provide a framework for developing the Capital Facilities Program, through an assessment of the future needs of the Airport. It includes repairs to existing facilities, new construction, both airside and landside; land acquisition for Airport expansion, and terminal improvements and renovations.

The Capital Facilities Program will serve as the road map that leads the Airport to improved air cargo and passenger service, as well as new intermodal facilities, to serve the anticipated increased traffic of the new millennium. It will establish a strategy for placing projects in a framework of three phases: Fiscal Years 1999-2005, Fiscal Years 2005-2010, and Fiscal Years 2010-2020. The new program, developed in conjunction with this Master Plan, will update and extend the program currently underway.

Advantages of a Capital Improvement Program

- It shows that the Airport has a specific plan for implementing the Master Plan and for the improvement and regular maintenance of the Airport's infrastructure.

- It is a good community relations tool. Information can be made available as to when projects are scheduled and where they rank in priority. It assists in explaining how the schedule was developed and why projects take place when they do.

- It allows flexibility in scheduling of bond issues, which may result in a more favorable interest rate.

- It allows more efficient debt management since projects can be spread over a multi-year period and financed wholly or in part through federal grants, PFCs, and/or the sale of bonds.

- It allows coordination between project expenditures and state and federal grant programs.

- It helps the Airport plan for the provision of adequate personnel for project management, whether through temporary employees, outside consultants, or in-house staff.

Capital Improvement Program Process

1. Identify and formulate potential projects and capital purchase items.

2. Formulate projects, including scope definition, justification preliminary budget estimate, duration of project, and location.

3. Identify capital purchase items.

4. Review projects for compatibility with master plan and for operational impacts.

5. Identify funding sources, coordinate projects with finance, administration, and procurement.

6. Prepare draft program report, with master program schedule and cash flow analysis.

7. Construction committee reviews and approves projects: prioritization of work, reconciliation with available funding, and identification of new funding needs.

8. Airline technical committee reviews program and presents recommendations on projects requiring airline approval.

9. Prepare final capital improvement program report; combine with O&M (Operations and Maintenance) projects.

10. Jackson Municipal Airport Authority reviews and adopts Capital Improvement Program.

11. Board approves bonded projects and other program funding.

12. Implement program, through procurement, planning and development, financing, and reporting.

Capital Facilities Implementation Schedule

Phase I: 1999-2005

Project Name:	**Safety Roads**
Project Scope:	A safety road is needed for the west and east side of the Terminal Air Carrier Ramp, which will connect to the general aviation and air cargo Areas. A suitable road for fuel trucks is not available forcing trucks to get clearance from the FAA Control Tower to access the taxiway in order to transition from the general aviation area to the air carrier ramp. A critical step in alleviating this situation involves separating vehicle operations with aircraft operations.
Cost Estimate:	$240,000
Eligible Funding:	$216,000
Completion Date:	1999-2005

Project Name:	**Hangar Improvement Construction - Phase I**
Project Scope:	Includes a number of elements designed to meet anticipated general aviation aircraft storage requirements. These include 1) 30,000 sf. conventional hangar; 2) 15,000 sf. conventional hangars; and 3) a 5,250 sf. office structure. This Phase I FBO expansion is to utilize the existing commercial cargo area located near the central portion of Taxiway A. The existing cargo apron and a new local parking lot are to be utilized at this development.
Cost Estimate:	$5,600,000
Eligible Funding:	$ 0
Completion Date:	1999-2005

Project Name:	**Alternative I: Air Cargo Buildout Phase I**
Project Scope:	The Phase I development plan will include the relocation of all cargo operations in the consolidated cargo facility. This new facility allows a total of 60,000 square feet of warehouse operational space and 380,000 square feet of apron space for air cargo operations.
Cost Estimate:	$23,000,000
Eligible Funding:	$14,000,000
Completion Date:	1999-2005

Project Name:	**Alternate I: Commuter Concourse Buildout** (center concourse) **Phase I**
Project Scope:	This development is to be comprised of the addition of four-commuter gate positions design for regional jet aircraft and one multi-airline passenger processing area. For flexibility and efficiency, this development will include a single common aircraft service corridor. The additional gates at the central concourse will assist in meeting anticipated facility requirements beyond 2005.
Cost Estimate:	$2,600,000
Eligible Funding:	$1,300,000
Completion Date:	1999-2005

Capital Facilities Implementation Schedule

Phase II: 2005-2010

Project Name:	**1500 Foot Extension to Runway 34R**
Project Scope:	Located at the southeast corner of the airfield, this 1,500 ft. extension will serve to accommodate anticipated cargo and other larger aircraft (such as the B-757 and B-767) in a variety of demand conditions. The extension will bring the total runway length to 10,000 lf.
Cost Estimate:	$7,200,000
Eligible Funding:	$6,400,000
Completion Date:	2005-2010

Project Name:	**Parallel Taxiway and Fill Excavation**
Project Scope:	Associated taxiway and fill dirt for connection to previous runway extension.
Cost Estimate:	$3,800,000
Eligible Funding:	$3,400,000
Completion Date:	2005-2010

Project Name:	**Connector Taxiway** (Taxiway C extension)
Project Scope:	This taxiway improvement is to be conducted in association with the planned 16L/34R runway extension and will provide access to the relocated 34R runway end. It will also provide access to existing, planned and future developments in that area.
Cost Estimate:	$4,000,000
Eligible Funding:	$3,600,000
Completion Date:	2005-2010

Project Name:	**ASR Radar Relocation** (ASR-9 upgrade installation)
Project Scope:	The airport surveillance radar will be relocated to provide clearance for the commercial air cargo area currently under development. The new ASR-9 location is planned in the northeast corner of the airfield, approximately 2,000' northeast of the end of 16L.
Cost Estimate:	$4,000,000
Eligible Funding:	$3,600,000
Completion Date:	2005-02010
Project Name:	**Perimeter/ARFF Road Construction**
Project Scope:	This airport perimeter road addition is to be aligned parallel to 16l/34R. This road will provide complete security, safety and fire fighting access to the airport.
Cost Estimate:	$2,800,000
Eligible Funding:	$2,500,000
Completion Date:	2005-2010
Project Name:	**Approach Lighting System – MALSR**
Project Scope:	This system is to be installed at 34R and will require relocation upon the relocation of the runway end.
Cost Estimate:	$200,000
Eligible Funding:	$180,000
Completion Date:	2005-2010
Project Name:	**Instrument Landing System – Cat. I**
Project Scope:	One Cat. I system is planned for 16R and the other will be installation at 34R.
Cost Estimate:	$5,600,000
Eligible Funding:	$5,000,000
Completion Date:	2005-2010

Project Name:	**Instrument Landing System – Cat. II**
Project Scope:	Upgrade to existing Cat. I system on runway 16R to allow for all 0' visibility weather into Jackson International.
Cost Estimate:	$2,800,000
Eligible Funding:	$2,500,000
Completion Date:	2005-2010

Project Name:	**Regional Transportation Center and Employee Parking Lot Relocation**
Project Scope:	As part of the major expansion of the airport facilities and the services provided, a new Regional Transportation Center is proposed on the southeast corner of the airport. This facility will serve as the central point for all transit based and commuting activities in the region. This facility will be multi-faceted and multi-purposed. It will serve as the terminating node of the Jackson Intermodal Corridor Project, and will be ideally suited to serve as a common distribution and consolidation point for both inbound and outbound transit based trips.
Cost Estimate:	$13,000,000
Eligible Funding:	$ 0
Completion Date:	2005-2010

Project Name:	**Hangar Improvement Construction - Phase II**
Project Scope:	This development is to include two 30,000 sf. conventional hangars, (20) T-Hangars and 5,250 sf. of office space. As this phase is located at a remote area of the airport, it will also to include a small terminal building. Approximately 260,000 sf. of new apron space and a vehicular parking lot will also be constructed as part of this phase.
Cost Estimate:	$16,700,000
Eligible Funding:	$ 0
Completion Date:	2005-2010

Project Name:	**Four Lane Airport Entrance Road**
Project Scope:	As passenger traffic increases at the airport, vehicular traffic congestion on the airport entrance road is inevitable. A recommendation to increase the number of traffic lanes from two to four is essential. The proposed Regional Transportation Facility near the airport entrance necessitates a planned expansion capable of accommodating the traffic created at the airport's entrance.
Cost Estimate:	$1,200,000
Eligible Funding:	$ 121,000
Completion Date:	2005-2010

Project Name:	**Alternate I: Terminal West Concourse Buildout - Phase II**
Project Scope:	This improvement includes the complete demolition and re-development of the existing West Concourse structure. This aggressive approach will serve the dual objectives of updating the dated infrastructure and attainment of projected gate requirements. The overall gate capacity of the airport will affectively be increased by four new wide body aircraft at the West Concourse. The new layout will make way for the construction of two additional gates at the central concourse. In this scenario, (14) gates would be achieved by calendar 2010.
Cost Estimate:	$36,000,000
Eligible Funding:	$17,500,000
Completion Date:	2005-2010

Project Name:	**Alternative I: Air Cargo Buildout - Phase II**
Project Scope:	The first part of Phase II development consists of constructing one new 26,400 square foot warehouse building and 275,000 square feet of apron adjacent to the new taxiway. This development will accommodate truck and automobile parking areas and will also accommodate future expansion as the demand grows.
Cost Estimate:	$13,600,000
Eligible Funding:	$6,000,000
Completion Date:	1999-2005

Project Name:	**Business Park Development East Side**
Project Scope:	A planned business/industrial park development of 400 acres on the east side of the airport.
Cost Estimate:	$46,000,000
Eligible Funding:	$ 0
Completion Date:	1999-2005

Capital Facilities Implementation Schedule

Phase III: 2010-2020

Project Name:	**East Parallel Taxiway (9,500')**
Project Scope:	This taxiway is to be located 400 ft. east of 16L/34R. This new taxiway will serve to access future private development along the east edge of the airport and supplement taxing activities at Taxiway C.
Cost Estimate:	$23,700,000
Eligible Funding:	$21,300,000
Completion Date:	2010-2020

Project Name:	**Proposed Corporate/Private Hangar Construction**
Project Scope:	This structure is scheduled to be a 10,000 sf. conventional hangar structure. The planned location is along Taxiway C, beyond the end of 34R. The new hangar will be positioned between the existing First Mississippi Power and MCI/WorldCom hangars. This location will provide access to the planned Taxiway D extension.
Cost Estimate:	$1,000,000
Eligible Funding:	$ 0
Completion Date:	2010-2020

Project Name:	**Alternative I: Phase III Terminal Long-Term Buildout**
Project Scope:	This phase includes several concourse additions and conversions designed to meet the airport's projected requirements at year 2020. These improvements include a second west concourse buildout (+5 gates & gate conversions), an extension to the center concourse (+4 gates) and an extension and conversions to the east concourse (+5 gates). These improvements will ultimately provide seven wide body, nine regional and twelve commuter positions. Improvements at this phase also include the widening of the east concourse connection to the main terminal.
Cost Estimate:	$56,000,000
Eligible Funding:	$28,000,000
Completion Date:	2010-2020

Project Name:	**Alternative I: Air Cargo Buildout Phase III and IV**
Project Scope:	Phase III is the most critical phase in terms of size, and will accommodate a tremendous amount of growth. It's size, with two 75,000 square foot air cargo warehouses and associated aprons, will accommodate a rapid growth of air cargo at the airport in future years. The final Phase IV, the most complex of all phases, consists of a buildout of the West Side cargo complex. An additional 240,000 square feet of warehouses and 130,000 square feet of land based office space would be required to meet demand by the fourth planning period. The remaining ramp area of 990,000 square feet would be built to accommodate the expected increased air cargo aircraft and staging areas.
Cost Estimate:	$140,000,000
Eligible Funding:	$68,000,000
Completion Date:	1999-2005