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16. Abstract

This document establishes the goals, objectives, performance measures, entry criteria, design standards and general procedures used to update the Louisiana Airport System Plan. The goals and objectives identified for the airport system are used as a guide to define the service level and role for a LASP airport. The FAA Airport Improvement Program funding categories and priority system, LASP airport development standards, and application of design standards to the LASP role are also laid out in this report.

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1. Statement of Purpose

This document establishes the goals, objectives, performance measures, entry criteria, design standards, and general procedures used to:

a. Revise, update, and prepare the Louisiana Airport System Plan (LASP) for adoption (approval by the Louisiana Department of Transportation and Development [DOTD] of the locations, service levels, roles, and design standards of all airports included in the LASP);

b. Identify aviation facility development requirements for each system location, the timing for the proposed development (short-, medium-, or long-range), and the eligibility for federal or state funding under the policies established by FAA and DOTD;

c. Examine the procedures described in the Louisiana Aviation Program Project Priority Process to determine priorities used among those locations and projects which are eligible to receive federal and state financial assistance and recommend modifications if appropriate; and

d. Develop and recommend a 5-year capital improvement program (CIP) in accordance with the priorities established in the Louisiana Aviation Program Project Priority Process.

2. The Louisiana Airport System Plan (LASP)

The LASP identifies a system of airports that will meet the goals and objectives identified for the state airport system. The purpose of state airport system planning, in its broadest sense, is to determine the location, service level, role, design standard, and timing of airport development needed in the state to establish a viable, balanced, integrated system of airports. The continuous airport system planning process:

a. Identifies the cost and the level of federal, state, and local capital investment required to maintain and develop system airports;

b. Provides guidance for the expenditure of funds under the Federal Aviation Administration (FAA) Airport Improvement Program (AIP);

c. Provides guidance for expenditure of funds by the DOTD Facilities Development Program; and

d. Supports the development of state aviation policy.

This document was prepared for the DOTD by the Louisiana Transportation Research Center (LTRC) as a part of a major update to the LASP undertaken in 1990-1991.

The first LASP was prepared by Airways Engineering Corporation and published in July 1976. A revision (published in 1981) and an update (published in November 1984) to the plan were prepared by PRC Speas. A Louisiana State Heliport System Plan was prepared by Hoyle, Tanner & Associates, Inc. and published in 1984. Additionally, a Southeast Louisiana Airport System Plan was prepared by the Regional Planning Commission and published in 1980. The Southeast Louisiana System Plan was updated by the Regional Planning Commission with assistance from G.C.R. & Associates and published in 1990. From 1984 to 1990, because of state funding limitations, the airport system planning process was largely discontinued.

3. Airport System Goals, Objectives, and Performance Measures

Airport system *goals* state the system's desired accomplishments, but whether actual achievement of the goals is met is difficult to measure. An *objective* can be measured and monitored by applying performance measures. Performance measures gauge to what extent the objectives have been achieved in a specified airport system. The following statements refer to goals and objectives that can be met by building new or developing existing airports:

a. Goals

i. To provide a system that is safe for all users;

ii. To provide adequate access by air to the economic activity centers of the state and to the population;

iii. To provide adequate access by air to the growing tourism, aviation, and aeronautical industries of the state;

iv. To maximize the opportunity for growth in international trade and travel, particularly with Central and South America;

v. To maximize the economic benefits and return on investment to the state from development of the airport system;

vi. To minimize adverse impacts on the environment; and

vii. To integrate the airport system effectively with other transportation systems and thereby provide an efficient multimodal transportation system.

b. Objectives

i. To meet federal and state safety standards;

ii. To provide airports capable of supporting scheduled commercial service (within a 60-minute drive of significant population centers);

iii. To provide airports capable of supporting business jet aircraft (within a 30-minute drive of significant population and mineral resource centers) and capable of supporting the economic activity generated by urban development;

iv. To provide airports capable of supporting single- and twin-engine piston-powered aircraft (within a 30-minute drive of significant agricultural resource centers);

v. To provide adequate airport capacity to meet forecast aviation demand; and

vi. To provide an airport system developed to applicable federal and state design standards.

c. Performance Measures

The development of the Louisiana Airport System is guided by its clearly stated goals and objectives. The extent to which the airport system achieves these goals and objectives through the implementation of the Airport System Plan can be gauged by applying some measures of effectiveness or performance.

One goal of the Louisiana Airport System is to provide adequate air access to all communities in the state. Measures of performance can be developed to gauge access improvements by comparing access provided by the existing aviation system to access provided in the year 2010 through the implementation of the Louisiana Airport System Plan (LASP).

The measures of performance are expressed as percentages of the given demographic or economic centers that are being served by a particular class of airports in the state system. They include the percentage of the state's population served by scheduled commercial service airports, the percentage served by transport airports capable of accommodating business jet aircraft, and the percentage served by all airports. Other access measures indicate the percentage of the state's employment, agricultural and mineral production, and total personal income served by these classes of airports.

In addition to measuring access, the intensity of service coverage provided by the particular class of airports to populations and economic activity areas of the state has been measured. This is accomplished by identifying all the airports in a given class serving the same area of the state. The area of the state served by an airport is indicated by a circle which defines its sphere of influence or service area. The radius of this circle represents the "reasonable" surface access time to reach an airport of a given functional class. For scheduled commercial service airports, the radius is 50 miles, which is about 60 minutes of driving time. For general aviation and transport airports the radius is 25 miles, or about 30 minutes of ground travel time.

The measures of performance are expressed as percentages of the given demographic or economic centers that are being served by a particular class of airports in the state system. There are three general categories of airports: 1) general aviation; 2) transport; and 3) scheduled commercial service. These categories are based on the largest type of aircraft which can use the airport. All airports in the Louisiana Airport System Plan can accommodate general aviation aircraft, therefore this category includes all system airports. For 1990 there are 69 airports; for 2010, with the addition of Ascension-St. James, Vicksburg-Tallulah, and Plaquemines Parish, there are 72 airports. Airports designed as transport airports have runways of sufficient dimension to accommodate business jets. Transport airports can accommodate transport aircraft and general aviation aircraft. For 1990 there are 27 transports. By 2010, 13 general aviation airports will have longer and stronger runways and will be able to accommodate transport aircraft. As of 1990, there are seven airports providing scheduled service commercial flights. This number will remain the same for 2010. These scheduled service airports can also accommodate transport and general aviation aircraft.

The performance measures which have been determined for the airports in the Louisiana Airport System Plan are: parish population served by the airport, percent of the parish's area that is covered, and the parish's employment, personal income, and resource values (mineral and agricultural) which are within the access area of the airport. The population contained in each service area is calculated as described above, using 1990 Census data for Louisiana cities and parishes. The population for 2010 is derived from population forecasts performed by Woods & Poole Economics. To determine the employment measure, the percentage of parish population contained in the service area of the airport is multiplied by the parish's total employment. Parish income is estimated by multiplying the parish's per capita income in current dollars. These data are from Woods & Poole Economics. The resource value served is estimated by multiplying the percentage of a parish's land area included in the service area by the parish's agricultural value or mineral value.

Summaries of the population, employment, personal income, agricultural and mineral values that are served by the three airport classes (scheduled service,

transport, and general aviation) in 1990 and 2010 are listed in Table 1(a) and Table 1(b) respectively. These tables list the total amount of population, employment, personal income, agricultural and mineral value for Louisiana in 1990 and 2010 along with the amounts served and the percentage served by the three airport classes.

Table 1(a)

ACCESS TO STATE ACTIVITY CENTERS PROVIDED BY LASP AIRPORTS

Amount and Percent of Statewide Activity Centers Served in 1990

		Population	Employment	Personal Income	Agricultural Income	Mineral Value
Total Amount for Louisiana in 1990		4,219,973	1,981.44	45,970,340.0	1,947,185.0	4,791,045.2
Scheduled Service:	Amt.Served	4,000,142	1,887.32	44,076,636.0	1,741,444.1	4,255,207.5
	Percent	94.8%	95.2%	95.9%	89.4%	88.8%
Transport:	Amt.Served	3,780,958	1,805.02	41,710,010.1	1,301,921.3	3,554,067.3
	Percent	89.6%	91.1%	90.7%	66.9%	74.2%
General Aviation:	Amt. Served	4,183,883	1,961.49	45,601,003.7	1,992,256.5	4,161,440.1
	Percent	99.1%	99.0%	99.2%	98.7%	86.9%

Table 1(b)

Amount and Percent of Statewide Activity Centers Served in 2010

		Population	Employment	Personal Income	Agricultural Income	Mineral Value
Total Amount for Louisiana in 2010		5,117,850	2,211.64	67,973,230.0	3,771,000.0	4,791,045.2
Scheduled Service:	Amt.Served	4,871,446	2,121.41	65,338,071.5	3,411,800.0	4,255,207.5
	Percent	95.2%	95.9%	96.1%	90.5%	88.8%
Transport:	Amt.Served	4,948,218	2,150.12	66,073,704.7	3,208,950.0	3,960,685.6
	Percent	96.7%	97.2%	97.2%	85.1%	82.7%
General Aviation:	Amt. Served	5,083,671	2,192.42	67,447,253.4	3,718,300.0	4,167,571.5
	Percent	99.3%	99.1%	99.2%	98.6%	87.0%

4. Relationship of the LASP to the National Plan of Integrated Airport Systems

The LASP serves as an important component of the National Plan of Integrated Airport Systems (NPIAS). As such, it includes airport locations that are considered to be important to state air transportation objectives as well as those that are of sufficient national interest to be incorporated in the NPIAS. The state planning process also helps to identify airports that meet national interest criteria but might not be identified as such by the FAA. In addition, the airport development included in the LASP includes both development eligible for federal funding and development eligible for state aid. In fact, to be included in the NPIAS and eligible for federal funding, an airport must first be included in the LASP.

The following information is taken from FAA Order 5090.3B, Field Formulation of the National Plan of Integrated Airport Systems, Section 1.

The NPIAS identifies the composition of a national system of airports along with the airport development and costs necessary to expand and improve the system in order to meet the present and future needs of civil aeronautics, to meet the requirements in support of national defense, and to meet the special needs of the U.S. Postal Service. A major goal of the national airport system, as part of the national transportation system, is to provide for the safe, rapid, and efficient

transportation of passengers and goods by aircraft based on the needs of all segments of civil aviation. The following principles form the basis for the federal role in airport development.

a. The federal interest in safety extends to all airports. The federal interest in national system airports extends only to those public-use airports which make a significant contribution to air transportation needs.

b. The purpose of the air transportation system is the safe and efficient movement of people and goods by air. An important element in this process is the airport. This contribution to the system influences the level of federal interest in airport development.

c. The federal, state, and local interests in air transportation are not always identical and must be distinguished. For any number of reasons, a community might wish to include more airports in its local system or to build more airport capacity or capability than that dictated by national system requirements.

d. The NPIAS, particularly those segments dealing with metropolitan areas, should reflect integrated system planning techniques. Economy and efficiency often warrant some degree of segregation of aircraft by performance characteristics and facility requirements.

e. The federal interest in promoting the development of metropolitan area systems normally favors a limited number of highly developed airports, rather than a larger number of unsophisticated airports.

f. Development of general aviation reliever airports or shorter runways for the exclusive use of general aviation aircraft at existing airports is recommended as a means to improve the capacity of major commercial service airports where congestion is a problem.

g. To operate effectively, a reliever airport should have comparable services and be as accessible as the airport it relieves.

h. Privately-owned airports may be included in the plan when they are open to the public, otherwise meet tests of federal interest, have potential for FAA site approval, and when it is financially feasible to develop them in accordance with FAA standards in order to meet forecast aviation demand.

i. Regional or multi-community airports are advocated when they can be shown to be cost beneficial over two or more airports serving adjacent communities. Regional airports have many potential advantages in terms of efficiency and economy. Consolidation of regional traffic into a single

airport results in higher airport revenues, the potential for better equipped fixed base operators, and more extensive airline service. The cost of redundant airport facilities is eliminated and environmental impact is limited. These must be balanced against the inconvenience to the user, who must travel farther to reach the airport. If the airport is too far from potential users, activity may be reduced considerably.

5. LASP Airport Service Level and Role Criteria

The service level and role identified for a LASP airport is based on its contribution to the goals and objectives identified for the airport system. LASP airports are classified in a hierarchical manner according to their service levels and roles in meeting system goals and objectives. The service level and role definitions used for the LASP are identical to those used by the FAA in the formulation of the NPIAS.

The airport service level reflects the type of service provided by the airport to the community. There are five airport service levels: primary commercial service (PR), other commercial service (CM), reliever airport with commercial service (CR), reliever airport (RL), and general aviation (GA). There are no reliever airports with commercial service in or forecast for Louisiana and this service level will not be used in the LASP.

The role of the airport influences its design and the type of aircraft it can accommodate. In the case of air carrier airports (PR and CM), the role influences the routes and markets which the airport serves nonstop. There are three airport roles associated with primary and commercial service airports: long-haul (over 1,500 miles stage length), medium haul (500 to 1,500 miles stage length), and short haul (less than 500 miles stage length). There are three airport roles associated with reliever and general aviation airports: transport, general utility, and basic utility. General aviation airports with the roles of seaplane base, heliport, or STOLport (Short TakeOff and Landing) will not be evaluated as part of this update of the LASP.

The LASP identifies the service level and role for each airport included in the system for the short-, medium- and long-range planning periods. The criteria described in this section will be used to identify the appropriate service level and role for each existing and proposed airport recommended for inclusion in the LASP.

a. Service Level: Primary Commercial Service

i. A public-use airport which receives scheduled passenger service and enplanes 10,000 or more passengers annually as reported by FAA, or

ii. A public-use airport which is forecast to receive scheduled passenger service and to enplane annually 10,000 or more passengers within five years, or

iii. A proposed new public-use airport which is forecast to receive scheduled passenger service and to enplane annually 10,000 or more passengers within five years.

b. Service Level: Other (Non-Primary) Commercial Service

i. A public-use airport which receives scheduled passenger service and enplanes at least 2,500 but less than 10,000 passengers annually as reported by FAA, or

ii. A public-use airport which is forecast to receive scheduled passenger service and to enplane annually at least 2,500 but less than 10,000 passengers within five years, or

iii. A proposed new public-use airport that is forecast to receive scheduled passenger service and to enplane annually at least 2,500 but less than 10,000 passengers within five years.

c. Service Level: Reliever

A reliever airport relieves congestion in a Metropolitan Statistical Area (MSA) as defined by the U.S. Office of Management and Budget (OMB) by providing the general aviation user with alternative airport facilities. A reliever airport may have a role of transport or general utility. A reliever airport must meet criteria i and ii or criterion iii below.

i. The reliever airport must provide substantial capacity or instrument training relief, as evidenced by:

(1) A current or forecast activity level of at least 50 based aircraft or 25,000 annual itinerant or 35,000 annual local operations, or

(2) The installation or proposed installation of a precision instrument landing system (ILS or MLS) for instrument training activity, and

ii. The relieved airport:

(1) Must be a commercial service airport serving a MSA with a population of 250,000 or having at least 250,000 enplaned passengers annually, and

(2) Must operate at 60 percent of its capacity before being relieved by one or more reliever airports or be subject to restrictions that limit activity that would otherwise reach 60 percent of capacity, or

iii. Be designated by FAA based on special justification.

d. Service Level: General Aviation

General aviation airports are classified according to the function they perform in providing access to the state's population and economic activity centers. An objective of the LASP is to provide air access within a reasonable surface access time to significant population and mineral resource centers for business jet aircraft and to agricultural resource centers by piston-powered aircraft. Reasonable surface access time is defined as 30 minutes or less average ground travel time (FAA Order 5090.3B). For system planning purposes, a 25-statute-mile radius is used to estimate an average ground travel time of 30 minutes.

e. Role: Transport

Transport airports provide access to turboprop and turbojet business aircraft and most single- and twin-engine piston-powered aircraft. These airports are located where there is sufficient population or economic activity to support a moderate to high level of business jet activity and/or to provide capacity in metropolitan areas. Different role criteria are applied depending on whether the airport is or is not located within a MSA.

i. MSA Transport Airport

An existing or planned airport must meet criteria (1), (2), and (3) to be classified as a transport airport:

(1) Be located in an MSA; and

(2) Have, or be forecast to have within five years, 500 or more annual itinerant operations by business jet aircraft; and

(3) One or more of the commercial service airports serving the MSA must operate at 60 percent of its capacity before construction of the transport service airport.

Note: Designation of multiple transport airports in the New Orleans MSA is based on the regional system plan study prepared by the Regional Planning Commission.

ii. Non-MSA Transport Airport

An existing or planned airport must meet criteria (1) and (2) and one of criteria (3) through (5) to be classified as a transport airport:

(1) Serve a community located beyond a 25-mile radius (average ground travel time of 30 minutes) from the nearest commercial service or reliever airport having or scheduled for business jet capability; and

(2) Be located beyond a 25-mile radius (average ground travel time of 30 minutes) of the nearest previously designated transport airport; and

(3) Serve an area of significant population or a mineral resource center;

(4) Have, or be forecast to have within five years, 500 or more annual itinerant operations by business jet aircraft; or

(5) Have two jet aircraft that are expected to be permanently based at the airport for the next five years.

f. Role: General Utility

General utility airports provide primary access to smaller communities, capacity in metropolitan areas, and access to the state's agricultural production, generally by single- and twin-engine piston-powered aircraft. An existing or planned airport must meet criterion i or criterion ii and one of criteria iii through v to be classified as a general utility airport:

i. Provide capacity within the service area of an existing commercial, reliever, or general aviation transport airport that is forecast to be at 60 percent of its annual capacity; or

ii. Serve a community located beyond a 25-mile radius (average ground travel time of 30 minutes) from the nearest commercial service, reliever, or general aviation transport airport; and

iii. Serve an area of significant agricultural production value; or

iv. Have, or be forecast to have within five years, at least 10 based aircraft; or

v. Have, or be forecast to have within five years, 6,000 annual itinerant operations.

Note: Designation of multiple general utility airports in the New Orleans MSA will be based on the regional system plan study prepared by the Regional Planning Commission.

g. Role: Basic Utility

Existing publicly-owned airports that have not been classified as commercial service, reliever, general aviation transport, or general aviation general utility airports are included in the LASP as basic utility airports if they meet the criteria stated below. These airports are included in the plan because they represent a public investment that should be preserved. These airports also provide an opportunity to preserve airspace that may be needed in the future. Many basic utility airports have received state and/or federal grants and are therefore subject to grant conditions providing that they are maintained for at least 20 years from the date of the grant.

An existing airport must meet the following two criteria to be classified as a basic utility airport:

i. Be publicly-owned; and

ii. Be capable of being economically developed to basic utility design standards.

6. LASP Airport Entry Criteria

The entry criteria used for the LASP are strongly influenced by the NPIAS principles discussed in Section 4 and the service level and role criteria discussed in Section 5. The LASP entry criteria extend these principles to recognize airport locations that are of state (but not federal) interest. Airports were brought into the LASP based on the criteria described below:

a. Primary Commercial Service Airports
All primary commercial service airports are included in the LASP.

b. Other (Non-Primary) Commercial Service
All other commercial service airports are included in the LASP.

c. Reliever Airports
All reliever airports are included in the LASP.

d. General Aviation Airports

i. Existing Publicly-Owned Airports

As a matter of policy, all publicly-owned airports that have a paved runway or are located on a site that meets minimum airport development standards or could be economically developed to meet the standards are included in the LASP.

ii. Existing Privately-Owned Airports

To be included in the plan, privately-owned general aviation airports that are not relievers must meet the following three criteria:

(1) The airport serves a community located within a 25-mile radius (30-minute driving time) from the nearest existing or planned publicly-owned airport, or the airport provides needed capacity within a MSA; and

(2) The airport could be economically developed to the standards applicable to the role identified for the airport; and

(3) The airport site is suitable for public acquisition and acquisition would be preferable to replacing the airport with a new airport on a different site.

iii. Proposed New Airports

Proposed new airports are brought into the LASP based on the system goals and objectives discussed in Section 3 and the service level and role criteria discussed in Section 5.

7. FAA Airport Improvement Program (AIP) Funding Categories and Priority System

a. AIP Funding Categories

AIP funds are divided by statute into primary commercial service, non-primary commercial service, reliever, and other general aviation categories that reflect congressional policy. This ensures that airport projects will be programmed within each category, regardless of the magnitude of the needs within any one category.

b. AIP Priority System

The Washington Office of FAA provides guidance to Regional Offices for establishing priorities for airport development and planning projects. The guidance is not interpreted rigidly by the Regional Office staff. Professional judgment is used in its application. Priorities change from time to time to reflect changing program emphasis.

The FAA priority system distinguishes among four airport types: Primary commercial service airports in large and medium hubs and their relievers, and non-commercial airports with 100 or more based aircraft are Type W; primary commercial service airports in small and non-hubs and their relievers, and non-commercial airports with 50 or more based aircraft or 20,000 to 40,000 annual itinerant operations are Type X; non-primary commercial service airports and non-commercial airports with 20 or more based aircraft or 8,000 to 20,000 annual itinerant operations are Type Y; and non-commercial airports with less than 20 based aircraft or less than 8,000 annual itinerant operations are Type Z.

Each AIP-eligible project is assigned a letter, number, letter combination. The first letter identifies the development category. The number is based on the development category, the development item, and the airport type. The second letter is based on the airport type. The lower the number, the higher the priority. For two projects with the same number, the project with the letter (associated with airport type) higher in the alphabet has the higher priority. The FAA priority system is shown in Table 1.

The development categories in relative numerical order are safety/special programs, preservation/reconstruction, standards, upgrade, capacity, new airport capacity, and new airport community. These categories are identical to the LASP categories defined in Section 7. Within each development category, add-on values are used to distinguish among development items.

The following examples illustrate the application of the FAA priority system:

i. A project to reconstruct the primary runway at New Orleans Lakefront airport (a non-commercial airport with 100 or more based aircraft, Type W) would have a priority of B03W.
ii. A project to reconstruct the primary runway at Ruston Municipal Airport (a non-commercial airport with 20 to 49 based aircraft, Type Y) would have a priority of B04Y.
iii. A project to reconstruct the primary runway at Sulphur's Southland Field (a non-commercial airport with less than 20 based aircraft, Type Z) would have a priority of B08Z.

Table 2
FAA Airport Improvement Program
Development Priorities

DEVELOPMENT CATEGORY	AIRPORT TYPE W*	AIRPORT TYPE X**	AIRPORT TYPE Y***	AIRPORT TYPE Z****
A. Safety/Special Programs	1	1	1	1
B. Reconstruction	2	2	3	7
C. Standards	2	3	4	9
D. Upgrade	3	4	5	10
E. Capacity	3	4	5	12
F. New Airport Capacity	3	5	7	12
G. New Airport Community	5	6	7	12

DEVELOPMENT ITEMS: Add the following amounts to each value above (except Special Programs which never get an add-on):

Primary runway, taxiway, and approaches	+1
Aprons, secondary runway, taxiway, and approaches	+2
Fundamental configuration; noise compatibility (75 Ldn)	+3
ARFF maintenance building; electronic Navigational Aids (NAVAIDS), Automatic Weather Observation System (AWOS), snow removal equipment	+4
Primary access roads, noise (65-74 Ldn)	+5
Equipment storage buildings	+6
Other (service road, secondary access roads, fencing, etc.)	+7

* Type W: Primary commercial airports in large and medium hubs and their relievers. Non-commercial with 100 or more based aircraft.

** Type X: Primary commercial service airports in small and non-hubs and their relievers. Non-commercial with 50 or more based aircraft or 20,000 to 40,000 itinerant operations.

*** Type Y: Non-primary commercial service airports. Non-commercial airports with 20 or more based aircraft or 8,000 to 20,000 itinerant operations.

****Type Z: Non-commercial with less than 20 based aircraft or less than 8,000 itinerant operations.

8. LASP Airport Development Standards

An airport's functional classification or role in the LASP (see Section 5) is based on the type of service it is expected to provide and consequently, the types of aircraft that should be accommodated. Within each functional classification, the LASP identifies the types of aircraft that are expected to use the facility. In general, commercial service airports are designed to serve the larger jet transport aircraft used for scheduled passenger service while transport airports are designed to handle business jets and turboprop aircraft. General and basic utility airports are designed to accommodate light twin turboprop aircraft and light twin-engine piston aircraft, respectively.

Development needed at a particular airport is identified by a comparison of the current design of the airport with fundamental airport development and the design standards desired for that airport for each time period. The LASP airport development standards provide guidance for making this comparison. The standards provide guidance on: fundamental airport development (Table 2); activity levels for capacity development (Table 3); the timing of upgrade projects; the relationship between the airport design standard and the operational and physical characteristics of the aircraft intended to operate at the airport; and the minimum airport dimensional standards associated with each design standard.

The standards and recommendations contained in FAA advisory circulars are recommended by FAA for use in the design of civil airports. For airport projects receiving federal grant-in-aid assistance, the use of these standards is mandatory. At certificated airports, the standards may be used to satisfy specific requirements of FAR Part 139, "Certification and Operations: Land Airports Serving Certain Air Carriers," Subpart D. The DOTD will generally follow these standards and recommendations for all projects in which it participates.

a. Runway Lengths Recommended for Design

The airport design or development standard is determined by the type of aircraft using or forecast to use the facility. In accordance with FAA AC 150/5300-13 "Airport Design" and AC 150/5325-4A "Runway Length Requirements", runway lengths recommended for design depend on a number of factors including the approach speed, wingspan, and maximum certificated takeoff weight of the aircraft forecasted to use the facility; airport elevation; mean daily maximum

temperature of the hottest month; maximum difference in runway elevation; whether the airport is for small or large airplanes; if for small airplanes whether the airport is designed for airplanes with 10 or more passenger seats (for smaller airplanes); and depend on the percent of the fleet and the percent useful load (for large airplanes).

The following definitions adapted from FAA AC 150/5300-13 are used in this section.

i. Airport Reference Code (ARC)

The ARC is a coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport.

The code has two components relating to the airport design aircraft. The first component, depicted by a letter, is the Aircraft Approach Category and relates to aircraft approach speed (operational characteristic). The second component, depicted by a Roman numeral, is the Airplane Design Group and relates to airplane wingspan (physical characteristic). Generally, aircraft approach speed applies to runways and related facilities. Airplane wingspan primarily relates to separation criteria for taxiways and taxilanes.

ii. Aircraft Approach Category

A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

(1) Category A: Speed less than 91 knots.
(2) Category B: Speed 91 knots or more but less than 121 knots.
(3) Category C: Speed 121 knots or more but less than 141 knots.
(4) Category D: Speed 141 knots or more but less than 166 knots.
(5) Category E: Speed 166 knots or more.

iii. Airplane Design Group (ADG)

A grouping of airplanes based on wingspan. The groups are as follows:

(1)	Group I:	Up to but not including 49 feet.
(2)	Group II:	49 feet up to but not including 79 feet.
(3)	Group III:	79 feet up to but not including 118 feet.
(4)	Group IV:	118 feet up to but not including 171 feet.
(5)	Group V:	171 feet up to but not including 214 feet.
(6)	Group VI:	214 feet up to but not including 262 feet.

Table 3
Fundamental Airport Development

Development Items	Commercial Service	Other
Land - Airfield Development, Building Area, Clear Zones	Y	Y
Single Runway - Lighted	Y 1/	Y 1/
Crosswind Runway - Lighted	Y 1/, 2/	Y1/,2/
Full Parallel Taxiway - Lighted	Y 1/	Y1/,3/
Stub/Connecting Taxiways - Lighted/Reflectors	Y 1/	Y 1/
PAPI/PLASI	Y 4/	Y 4/
REILS	Y 5/	Y 6/
Runway Marking	Y	Y
Apron - Lighted	Y	Y
Runway Grooving	Y	N
ILS or MLS with Approach Lighting System	Y 7/	Y 7/
Rotating Beacon	Y	Y
Lighted Wind Cone; Segmented Circle	Y 8/	Y 8/
Obstruction Lighting and Marking	Y	Y
Access Roads and Service Roads	Y	Y
Auto Parking	Y	Y9/
Fencing	Y	Y10/

Table 3 (Continued)

Notes:

1. LIRL - for use on runways at visual flight rule (VFR) airports having no planned instrument approach procedures.
   MIRL - for use on runways having an existing or planned non-precision instrument flight rule (IFR) procedure for either circling or straight-in approaches.
   High Intensity Runway Lights (HIRL) - for use on runways having an existing or planned precision IFR approach procedure, for runways utilizing runway visual range (RVR), and for runways with straight-in approaches that are regularly used by scheduled airlines.
   Low Intensity Taxiway Lights (LITL) - for use on taxiways and aprons where LIRL are used on the runways.
   Medium Intensity Taxiway Lights (MITL) - for use on taxiways and aprons on airports using either MIRL or HIRL on the runways.
   Taxiway centerline or edge reflector lighting may be used at transport and utility airports with less than 100 based aircraft.
2. Applies when the wind coverage on the main runway is less than 95 percent. The allowable crosswind component is 10.5 knots for runways less than 75 feet in width, 13 knots for runways of 75 feet up to but not including 100 feet in width, 16 knots for runways of 100 feet up to but not including 150 feet in width, and 20 knots for runways of 150 feet or more in width. If one crosswind runway exists and is being utilized, it is eligible for programming regardless of wind coverage. For airports with a primary runway and more than one non-parallel runway, only one non-parallel runway will be eligible for programming. One crosswind runway is eligible for lighting if it is determined that wind coverage between sunset and sunrise is less than 95 percent.
3. For utility airports, construction of a *partial* parallel taxiway can be deferred until activity reaches 10,000 annual operations or 14 based aircraft and construction of a *full* parallel taxiway can be deferred until activity reaches 20,000 annual operations or 28 based aircraft.
4. Precision Approach Path Indicator (PAPI)/Pulsed Light Approach Slope Indicator (PLASI) - For Basic Utility--Stage II and General Utility--Stage I, should be installed on one end of the primary runway; for General Utility--Stage II, should be installed on both ends of the primary runway:
   Type L-881 for utility runways used by small, non-jet general aviation aircraft.
   Type L-880 for runways used by jet aircraft.
5. Runway End Identifier Lights (REIL) for each runway that does not have an existing or planned approach lighting system.
6. REIL where there is a visual deficiency and the runway does not have an existing or planned approach lighting system.

Table 3 (Continued)

7. An Instrument Landing System (ILS) or Microwave Landing System (MLS) is required if the runway meets or is forecast to meet the criteria contained in FAA Order 7031.2B, "Airway Planning Standard Number One - Terminal Air Navigation Facilities and Air Traffic Control Services" (APS#1) within five years, and a request for aid is expected for the installation of an ILS or MLS under the AIP.
8. Segmented circles are optional for all airports with standard patterns or with 24-hour control towers. A lighted primary wind cone is required at all lighted airports except those with 24-hour control towers.
9. Minimum auto parking - five spaces required, with an additional five spaces for every 20 based aircraft.
10. Fencing - required when necessary to separate possible incompatible land uses from the airport (such as roadways, livestock use, and urban development).

Table 4
Activity Levels For Capacity Development

Capacity Development Item	Activity Level	Remarks
Runway (Additional)	60% annual capacity [1]	1.Parallel preferred 2.Same length and strength as primary if serving same aircraft.
Short Runway	75,000 total operations including 30,000 or more transport type aircraft	1.Small aircraft only 2.Not necessarily parallel
Extension of Short Runway	60% annual capacity	
Additional Exit Taxiways	60% x hourly capacity	
Holding Aprons/By-Pass Taxiway	75,000 total operations 20,000 itinerant operations or 30 peak hour operations	1.Need dependent upon mix 2.Consider effect on NAVAIDS 3.Limit holding apron to four positions
Terminal Aprons, Aircraft Loading Aprons, Parking Aprons	60% x hourly capacity	
Replacement/Supplemental Airports	Not later than 60% x annual capacity	1.Degree of timing depends upon forecasts, type of airport, location (metropolitan area), etc.
Additional Instrumentation	Installation recommended five years before airport is forecast to reach activity levels specified in FAA Order 7031.2B (APS #1)	

[1] See FAA AC 150/5060-5, "Airport Capacity and Delay"

iv. Large Airplane

An airplane of more than 12,500 pounds maximum certificated takeoff weight.

v. Small Airplane

An airplane of 12,500 or less maximum certificated takeoff weight.

vi. Transport Airport

An airport designed, constructed, and maintained to serve airplanes in Aircraft Approach Categories C and D.

vii. Utility Airport

An airport designed, constructed, and maintained to serve airplanes in Aircraft Approach Categories A and B. A utility airport can have the following kinds of activity:

(1) Basic Utility--Stage I:
This type of airport serves 75 percent of the small single-engine and twin-engine airplane fleet in Aircraft Approach Categories A and B used for personal and business purposes. Precision approach operations are not usually anticipated. This airport is designed for small airplanes in Airport Reference Code B-I.

(2) Basic Utility--Stage II:
This type of airport serves 95 percent of the small single-engine and twin-engine airplane fleet in Aircraft Approach Categories A and B. This includes all the airplanes served by a Basic Utility--Stage I airport, plus some small business and air-taxi twin-engine airplanes. Precision approach operations are not usually anticipated. This airport is designed for small airplanes in Airport Reference Code B-I.

(3) General Utility--Stage I: (less than 10 passenger seats)
This type of airport serves 100 percent of the small single-engine and twin-engine airplane fleet in Aircraft Approach Categories A and B. Precision approach operations are not usually anticipated. This airport is designed for airplanes in Airport Reference Code B-II.

(4) General Utility--Stage I: (10 or more passenger seats)
This type of airport serves 100 percent of the small single-engine and twin-engine airplane fleet in Aircraft Approach Categories A and B. Precision approach operations are not usually anticipated. This airport is designed for airplanes in Airport Reference Code B-II.

(5) General Utility--Stage II:
This type of airport serves large airplanes in Aircraft Approach Categories A and B and may have the capability for precision approach operations. This airport is normally designed for airplanes in Airport Reference Code B-III.

b. Typical Runway Lengths

Tables 5 through 9 provide typical runway lengths. Table 9 is uncorrected for gradient or wet and slippery conditions. The runway gradient correction adds ten feet in length for each foot of elevation difference between the high and low points of the runway centerline and is added on a case-by-case basis. For wet and slippery runways, runway lengths taken from the 60 percent useful load curves are increased by 15 percent, or up to 5,500, whichever is less. Runway gradient and wet and slippery runway condition corrections are not applied to the utility runway lengths shown in Tables 5, 6, 7, or 8.

Typical runway lengths for the following types of airports are presented in the tables:

(1) Basic Utility--Stage I airports (Table 5).

(2) Basic Utility--Stage II airports (Table 6).

(3) General Utility--Stage I airports serving aircraft with less than 10 passenger seats (Table 7).

(4) General Utility--Stage I airports serving aircraft with 10 or more passenger seats (Table 8).

(5) General Utility--Stage II airports serving 75 percent of the large airplane fleet of 60,000 pounds or less at 60 percent useful load (Table 9).

Table 5
Runway Lengths for Basic Utility--Stage I

Runway Elevation (feet)	Temperature (Degrees Fahrenheit)					
	90	92	94	96	98	100
Sea Level	2,500	2,500	2,500	2,600	2,600	2,600
200	2,500	2,500	2,600	2,600	2,600	2,600
400	2,600	2,600	2,700	2,700	2,700	2,700
600	2,700	2,700	2,800	2,800	2,800	2,800
800	2,800	2,800	2,900	2,900	2,900	2,900
1000	2,800	2,900	2,900	2,900	3,000	3,000
1200	2,900	2,900	3,000	3,000	3,000	3,000
1400	3,000	3,000	3,000	3,100	3,100	3,100
1600	3,000	3,100	3,100	3,100	3,200	3,200
1800	3,100	3,200	3,200	3,200	3,300	3,300
2000	3,200	3,200	3,200	3,300	3,300	3,300
2200	3,300	3,300	3,300	3,300	3,400	3,400
2400	3,300	3,400	3,400	3,400	3,500	3,500
2600	3,400	3,500	3,500	3,500	3,500	3,600
2800	3,500	3,600	3,600	3,600	3,600	3,700
3000	3,600	3,600	3,600	3,700	3,700	3,700
3200	3,600	3,700	3,700	3,700	3,800	3,800
3400	3,700	3,800	3,800	3,800	3,900	3,900
3600	3,800	3,900	3,900	3,900	4,000	4,000
3800	4,000	4,000	4,000	4,000	4,100	4,100
4000	4,000	4,000	4,100	4,100	4,200	4,200
4200	4,100	4,100	4,200	4,200	4,300	4,300
4400	4,200	4,200	4,300	4,300	4,400	4,400
4600	4,400	4,400	4,500	4,500	4,600	4,600
4800	4,500	4,500	4,600	4,600	4,700	4,700
5000	4,600	4,600	4,700	4,700	4,800	4,800

Source: FAA AC 150/5300-13, Appendix 11 Software

Table 8
Runway Lengths for General Utility--Stage I
(10 or more passenger seats)

Runway Elevation (feet)	Temperature (Degrees Fahrenheit)					
	90	92	94	96	98	100
Sea Level	4,300	4,300	4,300	4,400	4,400	4,400
200	4,300	4,300	4,400	4,400	4,400	4,500
400	4,300	4,400	4,400	4,400	4,500	4,500
600	4,400	4,400	4,400	4,500	4,600	4,600
800	4,400	4,500	4,500	4,500	4,600	4,600
1000	4,500	4,500	4,500	4,600	4,600	4,600
1200	4,500	4,500	4,600	4,600	4,600	4,700
1400	4,500	4,600	4,600	4,600	4,700	4,700
1600	4,600	4,600	4,600	4,700	4,700	4,700
1800	4,600	4,700	4,700	4,700	4,800	4,800
2000	4,700	4,700	4,700	4,800	4,800	4,800
2200	4,500	4,700	4,800	4,800	4,900	4,900
2400	4,800	4,800	4,800	4,900	4,900	4,900
2600	4,800	4,900	4,900	4,900	5,000	5,000
2800	4,900	4,900	4,900	5,000	5,000	5,100
3000	4,900	5,000	5,000	5,000	5,100	5,100
3200	5,000	5,100	5,100	5,200	5,200	5,200
3400	5,100	5,200	5,200	5,300	5,300	5,300
3600	5,300	5,300	5,300	5,400	5,400	5,500
3800	5,400	5,400	5,500	5,500	5,600	5,600
4000	5,500	5,600	5,600	5,700	5,700	5,700
4200	5,700	5,700	5,800	5,800	5,900	5,900
4400	5,800	5,900	5,900	6,000	6,000	6,100
4600	6,000	6,100	6,100	6,200	6,200	6,300
4800	6,200	6,200	6,300	6,300	6,400	6,400
5000	6,400	6,400	6,500	6,500	6,600	6,600

Source: FAA AC 150/5300-13, Appendix 11 Software

Table 9
Runway Lengths for General Utility--Stage II
(75 percent of large airplanes of less than 60,000 pounds at 60 percent useful load)

Runway Elevation (feet)	Temperature (Degrees Fahrenheit)					
	90	92	94	96	98	100
Sea Level	4,600	4,700	4,700	4,700	4,800	4,800
200	4,700	4,700	4,800	4,800	4,800	4,800
400	4,700	4,800	4,800	4,800	4,800	4,900
600	4,800	4,800	4,800	4,800	4,800	4,900
800	4,800	4,800	4,800	4,900	4,900	5,000
1000	4,800	4,900	4,900	4,900	5,000	5,000
1200	4,800	5,000	5,000	5,000	5,000	5,000
1400	4,900	5,000	5,000	5,000	5,000	5,000
1600	5,000	5,000	5,000	5,000	5,100	5,100
1800	5,000	5,000	5,000	5,100	5,100	5,200
2000	5,000	5,000	5,100	5,100	5,200	5,200
2200	5,100	5,200	5,200	5,200	5,300	5,400
2400	5,200	5,300	5,300	5,300	5,500	5,500
2600	5,400	5,400	5,400	5,500	5,500	5,600
2800	5,500	5,500	5,600	5,600	5,700	5,700
3000	5,600	5,600	5,700	5,700	5,800	5,800
3200	5,700	5,800	5,800	5,900	5,900	6,000
3400	5,800	5,900	5,900	6,000	6,000	6,100
3600	5,900	6,000	6,100	6,100	6,200	6,200
3800	6,100	6,100	6,200	6,200	6,300	6,400
4000	6,200	6,200	6,300	6,400	6,400	6,500
4200	6,300	6,300	6,400	6,500	6,500	6,600
4400	6,400	6,400	6,500	6,600	6,700	6,700
4600	6,500	6,500	6,600	6,700	6,800	6,800
4800	6,600	6,600	6,700	6,800	6,900	7,000
5000	6,700	6,700	6,800	6,900	7,000	7,100

Source: These lengths are interpolations from curves in FAA AC 150/5325-4A.

Table 6
Runway Lengths for Basic Utility--Stage II

Runway Elevation (feet)	Temperature (Degrees Fahrenheit)					
	90	92	94	96	98	100
Sea Level	3,100	3,100	3,100	3,100	3,200	3,200
200	3,100	3,100	3,200	3,200	3,200	3,200
400	3,200	3,200	3,200	3,200	3,300	3,300
600	3,200	3,300	3,300	3,300	3,400	3,400
800	3,300	3,300	3,400	3,400	3,500	3,400
1000	3,400	3,400	3,400	3,500	3,500	3,500
1200	3,500	3,500	3,500	3,500	3,600	3,600
1400	3,500	3,600	3,600	3,600	3,700	3,700
1600	3,600	3,700	3,700	3,700	3,700	3,800
1800	3,700	3,800	3,800	3,800	3,800	3,900
2000	3,800	3,900	3,900	3,900	3,900	4,000
2200	4,000	4,000	4,000	4,000	4,100	4,100
2400	4,100	4,100	4,100	4,200	4,200	4,200
2600	4,200	4,200	4,300	4,300	4,300	4,400
2800	4,300	4,400	4,400	4,400	4,500	4,500
3000	4,400	4,500	4,500	4,600	4,600	4,600
3200	4,600	4,600	4,700	4,700	4,700	4,800
3400	4,700	4,800	4,800	4,800	4,900	4,900
3600	4,900	4,900	5,000	5,000	5,000	5,100
3800	5,000	5,100	5,100	5,200	5,200	5,200
4000	5,200	5,200	5,300	5,300	5,400	5,400
4200	5,400	5,400	5,500	5,500	5,600	5,600
4400	5,600	5,600	5,700	5,700	5,800	5,800
4600	5,800	5,800	5,900	5,900	6,000	6,000
4800	6,000	6,000	6,100	6,100	6,200	6,200
5000	6,200	6,200	6,300	6,300	6,400	6,400

Source: FAA AC 150/5300-13, Appendix 11 Software

Table 7
Runway Lengths for General Utility--Stage I
(less than 10 passenger seats)

Runway Elevation (feet)	Temperature (Degrees Fahrenheit)					
	90	92	94	96	98	100
Sea Level	3,600	3,700	3,700	3,700	3,700	3,800
200	3,700	3,700	3,800	3,800	3,800	3,900
400	3,800	3,800	3,900	3,900	4,000	3,900
600	3,900	3,900	3,900	4,000	4,100	4,000
800	3,900	4,000	4,000	4,000	4,100	4,100
1000	4,000	4,000	4,100	4,100	4,100	4,200
1200	4,100	4,100	4,200	4,200	4,200	4,200
1400	4,200	4,200	4,200	4,300	4,300	4,300
1600	4,300	4,300	4,300	4,400	4,400	4,400
1800	4,400	4,400	4,400	4,500	4,500	4,500
2000	4,500	4,500	4,500	4,600	4,600	4,600
2200	4,500	4,600	4,600	4,600	4,700	4,700
2400	4,600	4,700	4,700	4,700	4,800	4,800
2600	4,700	4,800	4,800	4,800	4,900	4,900
2800	4,800	4,900	4,900	4,900	5,000	5,000
3000	4,900	5,000	5,000	5,000	5,100	5,100
3200	5,000	5,100	5,100	5,100	5,200	5,200
3400	5,100	5,200	5,200	5,300	5,300	5,300
3600	5,300	5,300	5,300	5,400	5,400	5,500
3800	5,400	5,400	5,500	5,500	5,600	5,600
4000	5,500	5,600	5,600	5,700	5,700	5,700
4200	5,700	5,700	5,800	5,800	5,900	5,900
4400	5,800	5,900	5,900	6,000	6,000	6,100
4600	6,000	6,100	6,100	6,200	6,200	6,300
4800	6,200	6,200	6,300	6,300	6,400	6,400
5000	6,400	6,400	6,500	6,500	6,600	6,600

Source: FAA AC 150/5300-13, Appendix 11 Software

9. Application of Design Standards to LASP Role

As discussed in Section 9, an airport's role is based on the type of aircraft expected to use the facility; therefore, the design standard must be appropriate to the projected uses. Certain design standards are associated with each role. Following are descriptions by role of minimum facilities appropriate to meet applicable design standards.

a. Role: Basic Utility
Applicable Design Standard: Basic Utility--Stage II, ARC B-I

i. Minimum Runway:
Length - Design for Aircraft Approach Category B and Airplane Design Group I aircraft and 95 percent of small airplanes with less than 10 passenger seats (Table 5).
Width - 60 feet.
Strength - 12,500 pounds.

ii. Minimum Taxiway: Stub taxiway to apron and runway end turnarounds.

iii. Minimum Apron: Per AC 150/5300-13 "Airport Design" - Appendix 5 based on area needed for itinerant and local parking.
Justification for Expansion - Expand when ramp survey indicates that existing apron is 60 percent occupied on at least 15 days per month.

iv. Minimum Approach: Visual.

v. Minimum Lighting: LIRL, taxiway turnout lights, lighted wind indicator, rotating beacon, and segmented circle.

vi. Minimum Service: Telephone.

Typical Aircraft:

Typical small airplanes in Aircraft Approach Categories A and B and Airplane Design Group I with less than 10 passenger seats:

Typical Aircraft: The aircraft served by basic service airports plus the following:

Typical small airplanes in Aircraft Approach Categories A and B and Airplane Design Group II with less than 10 passenger seats:

Cessna 441 Conquest	Nomad N22B
Nomad N 24A	Pilatus PC-6 Porter
Rockwell 840	

Typical small airplanes in Aircraft Approach Categories A and B and Airplane Design Groups I and II with 10 or more passenger seats:

Beech Airliner C99	Beech King Air F90
Beech King Air C90-1	Beech Super King Air B200
Beech Turbo 18	De Havilland Twin Otter
Embraer 120	Embraer-121 Xingu
Embraer-326 Xavante	Fairchild Merlin IV
Fairchild Metro II	Piper 400LS Cheyenne
Short Brothers SC.7	Volpar Centennial

Source: FAA AC 150/5300-13

c. Role: Transport:

Applicable Design Standards: General Utility--Stage II, ARC B-II;
General Utility--Stage II, ARC B-III;
Transport, ARC C-II;
Transport, ARC C-III.

i. Minimum Runway:
Length: Design for Aircraft Approach Category B and Airplane Design Group II, 75 percent of the fleet and 60 percent useful load (Table 9).
Width - 75 feet.
Strength - 29,500 pounds.

Justification for Development Beyond Minimums- Development beyond the minimum runway design requires additional justification. FAA requires justification for development from Basis Utility--Stage II or General Utility--Stage I to minimum runway standards as shown above. When it is documented that there will be 250 annual itinerant operations within one year of project construction requiring the minimum runway or when 500 or more annual itinerant operations are forecast within five years, develop to minimum runway standards.

Length: When it is documented that there will be 250 annual itinerant operations within one year of construction of the project by aircraft in Approach Categories C and D and when 500 or more annual itinerant operations by aircraft in Aircraft Approach Categories C and D are forecast within five years, extend to accommodate the critical aircraft.

Width: When it is documented that there will be 250 annual itinerant operations within one year of project construction by aircraft in Airplane Design Group II and when 500 or more annual itinerant operations by aircraft in Airplane Design Group III are forecast within five years, widen within General Utility--Stage II or Transport.

Critical Aircraft	Design Standard	Length	Width(ft)
ARC B-II	General Utility--Stage II	see Table 8	75
ARC B-III	General Utility--Stage II	see Table 8	100
ARC C-II	Transport	AC 150/5325-4A	100
ARC C-III	Transport	AC 150/5325-4A	100

Strength: When it is documented that there will be 250 annual itinerant operations within one year of construction of the project by aircraft heavier than 30,000 pounds maximum certified takeoff weight and when 500 or more annual itinerant operations of these aircraft are forecast within five years, strengthen to accommodate the critical aircraft up to 60,000 pounds.

ii. Minimum Taxiway: Full parallel taxiway.

iii. Minimum Apron: Per AC 150/5300-13, "Airport Design" - Appendix 5 based on area needed for local and itinerant parking.
Justification for Expansion - Expand when ramp survey indicates that existing apron is 60 percent occupied on at least 15 days per month.

iv. Minimum Approach: Straight-in, non-precision instrument, 600 ft.-1 mile, for Category A and B aircraft.

v. Minimum Lighting: MIRL and taxiway turnout lights. MITL if 100 or more based aircraft. If less than 100 based aircraft, taxiway centerline or edge reflectors on taxiways to instrument runway. Lighted wind indicator, rotating beacon, and segmented circle.

vi. Approach Aids: PAPI

vii. Minimum Service: Terminal with restrooms and telephone, aviation gasoline and Jet A fuel, 18 hours attendance, and a local altimeter.

For justification for terminal building development--to be eligible for state funding--the following criteria must be met:

- minimum of 20,000 annual operations, and
- one active FBO and/or full time manager, and
- aviation gasoline fuel available.

At airports that meet the above criteria, the number of based aircraft will be used as a guide to determine the necessary size of the building:

0 to 50 based aircraft: 800 sf
51 to 100 based aircraft: 1000 sf
over 100 based aircraft: 1200 sf

Typical Aircraft: The aircraft served by Basic Utility and General Utility airports plus the large airplanes in Aircraft Approach Categories A and B and Airplane Design Group I, II, or III and weighing 30,000 pounds or less:

Cessna Citation II	Cessna Citation III
Dassault Falcon-10	Dassault Falcon-20
Embraer-110 Bandeirante	Gates Learjet 28
Gates Learjet 29	Mitsubishi Diamond MU-300
Piaggio PD-808	Rockwell Sabre 40
Rockwell Sabre 60	Rockwell Sabre 65
Shorts 330	Shorts 360

Typical large airplanes in Aircraft Approach Categories A and B and Airplane Design Group I, II or III and weighing between 30,000 and 60,000 pounds:

Casa C-207A Azor	Convair 340
Convair 440	Convair 580
De Havilland Dash 7-100	De Havilland Dash 8-300
Dassault 941	Dassault Falcon-50
Dassault Falcon-200	Dassault Falcon-900
Fairchild F-27 A, J	Fairchild FH-227 B,D
Fokker F-27-500	Fokker F-28-1000

Source: FAA AC 150/5300-13

d. Role: Reliever
Applicable Design Standards: General Utility--Stage I, ARC B-II; General Utility--Stage II, ARC B-II; General Utility--Stage II, ARC B-III; Transport, ARC C-II.

There are no design standards, as such, for reliever airports. Reliever airports will be developed to either transport or general utility standards, depending on their specific role in the LASP and the type of aircraft expected to use the facility.

e. Role: Non-Primary Commercial Service
Applicable Design Standard: Transport, ARC C-II

i. Minimum Runway:
Length: Per AC 150/5325-4A, "Runway Length Requirements for Airport Design" based on the critical aircraft forecast to use the airport or the runway length curve for large aircraft less than 60,000 pounds and 75 percent of the fleet 60 percent useful load, whichever is greater.
Width - 100 feet minimum.
Strength - Based on the weight of the critical aircraft forecast to use the airport.

ii. Minimum Taxiway: Full parallel taxiway.

iii. Minimum Apron: Per AC 150/5360-13, "Planning and Design Guidelines for Airport Terminal Facilities."

iv. Minimum Approach: Precision instrument (ILS), 200 ft.-1/2 mile

FAA Order 7031.2B "Airway Planning Standard Number One - Terminal Air Navigation Facilities and Air Traffic Control Services" establishes minimum criteria for an ILS based on annual instrument approaches (AIA) by air carrier, air taxi, and general aviation aircraft.

v. Minimum Lighting: MIRL, MITL to instrument runway, MALSR with ILS, lighted wind indicator, and rotating beacon. Segmented circle at non-towered airports with non-standard traffic patterns.

vi. Minimum Service: Terminal with restrooms and telephone, aviation gasoline and Jet A fuel, 18 hours attendance, and a local altimeter.

FAA AC 150/5360-9, "Planning and Design of Airport Terminal Building Facilities and Nonhub Locations" and AC 150/5350-13, "Planning And

Design Guidelines for Airport Terminal Facilities" establish guidance for airport terminal building development.

f. Role: Primary Commercial Service

Applicable Design Standard: Transport, ARC C-II

i. Minimum Runway:
Length: Per AC 150/5325-4A, "Runway Length Requirements for Airport Design" based on the critical aircraft forecast to use the airport or the runway length curve for large aircraft less than 60,000 pounds and 75 percent of the fleet 60 percent useful load, whichever is greater.
Width: 100 feet.
Strength: Based on the weight of the critical aircraft forecast to use the airport.

ii. Minimum Taxiway: Full parallel taxiway for all runways used by scheduled air carriers.

iii. Minimum Apron: Per AC 150/5360-13, "Planning and Design Guidelines for Airport Terminal Facilities".

iv. Minimum Approach: Precision instrument (ILS), 200 ft.-1/2 mile

FAA Order 7031.2B, "Airway Planning Standard Number One - Terminal Air Navigation Facilities and Air Traffic Control Services" establishes minimum criteria for an ILS based on annual instrument approaches (AIA) by air carrier, air taxi, and general aviation aircraft.

v. Minimum Lighting: Medium Intensity Approach Light System with Runway Alignment Indicator Lights (MALSR), Medium Intensity Runway Lights (MIRL), and Medium Intensity Taxiway Lights (MITL) to the precision instrument runway. Lighted wind indicator and rotating beacon. Segmented circle at non-towered airports with non-standard traffic patterns.

vi. Minimum Service: Terminal with telephone and rest rooms, aviation gasoline and Jet A fuel, 24 hours attendance, and a local altimeter.

FAA AC 150/5360-9, "Planning and Design of Airport Terminal Buildings Facilities and Nonhub Locations" and AC 150/5350-13, "Planning And Design Guidelines for Airport Terminal Facilities" establish guidance for airport terminal building development.

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