

**PORT OF KENNEWICK
BENTON COUNTY, WASHINGTON**



**VISTA FIELD PRELIMINARY AIRPORT
SITING STUDY**

FINAL REPORT

SEPTEMBER 2006



Prepared By:

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Vista Field Preliminary Airport Siting Study **August 2006**

Introduction

Due to increased economic development pressures within the current Vista Field Airport area, public comment has suggested that the Port of Kennewick consider relocating the Vista Field Airport. This report summarizes the criterion that was used in investigating potential sites for relocating the airport. This report contains Exhibits including a Vicinity Map and a Proposed General Airport Layout. An Appendix at the end of this report shows the applicable FAA Design Criteria used in this study.

In accordance with the parameters of the preliminary siting study, the proposed sites were evaluated in regards to airspace and flight patterns. Site selection is important in regards to selecting sites with the least topographic features that would impact the airport's navigable airspace. The centerline profile of the runway was evaluated in regards to runway gradient to meet the FAA Advisory Circular for airport design, and checked for any potential obstructions which might affect a proposed siting. Included in the study is an order of magnitude cost estimate range based on preliminary findings. This limited airport siting study will assist the Port of Kennewick in deciding if a potential site is feasible. Should a site be found to be feasible, a more extensive study and evaluation would need to be done to verify all criteria for the new airport.

Various documents were used in the siting study, including but not limited to Benton County contour drawings, Benton County parcel drawings, aerial drawings, and the Kennewick quadrangle 7.5 minute USGS series topography maps. Although not required, the FAA Advisory Circulars were followed where practical. Information was compiled on the use of airspace and how the proposed airport's air traffic would be managed. This included preliminary checks on operational limitations due to traffic interaction with surrounding airports and potential obstructions.

Design Criteria

According to the 2006 Vista Field Master Plan Update, the existing and future runway design criterion for Vista Field Airport is designated as BI small. The Master Plan Update recommends the airport be upgraded to provide for an occasional BII aircraft. In order to do this, several deficiencies at the current airport would need to be corrected to provide the necessary ground clearances for safe operations of the occasional BII aircraft. While the BII configuration will fit the current needs of the existing airport at a given new site, the new airport site should consider a future CII classification for long-range planning. The CII classification enables adequate facility separations for larger aircraft in the future.

Both temperature and elevation affect runway length based on the site elevation above sea level and the mean daily maximum temperature for the hottest month of the year. Furthermore, the

runway should be oriented in the direction of the prevailing wind. The Nine Canyon Wind Energy Rose throughout the area indicates that the predominant wind direction is 3-21 which would be the optimum orientation of a proposed runway and is similar to the Tri-Cities Airport. Other factors to consider in siting a runway are annual rainfall, average frost penetration, snowfall, smoke or fog, and any other unusual weather conditions.

In the design of the new runway, it is important to receive input from key stakeholders concerning the runway length. They have suggested starting with a 4,000-foot runway with a potential of a future 1,000-foot extension. Some stakeholders thought that trading the current 4,000-foot runway for a new 4,000-foot runway would be a mistake. With the current thinking of more BII type aircraft using the airport and more and more corporate type aviation activity in the forecast, it makes sense to look at a CII runway with an ultimate 5,000-foot runway length. In the long-term, a longer runway should be planned. The FAA Aircraft Reference Code (ARC) defines critical airport dimensions for the specific characteristics of aircraft that are currently using and/or proposed for the airport.

While the art of forecasting aviation demands is not an exact science and is dependant on local conditions and future growth of the surrounding community, it is important to gear the level of forecast effort to the level of the cost at risk. Aviation forecasts have ranged from informed guesses to highly structured projections. If investments are made too late because of underestimation of aviation growth, lost revenues and major inconvenience to the public results. As the mix of aircraft changes in the future, it will affect the design criteria for the length, width, and strength of the runway and its associated connecting taxiways, since all of these factors are tied to the weight, wing span, and speed of the aircraft that will use the facility.

The design of the proposed runway and parallel taxiway system follows the ARC criterion for the CII airport design group. The 4000-foot runway design matches the existing length of the current Vista Field Airport. A 1,000-foot future runway and taxiway extension is proposed to accommodate future larger and faster corporate aircraft with shorter minimum visibility landings. The runway is planned for an Instrument Flight Rules (IFR) approach with the idea that if it met IFR approach criteria, it would meet the less demanding Visual Flight Rules (VFR) criteria.

The layout for the new airport is based on FAA Advisory Circular 150/5300-13 (Design Standards), latest change, for a runway with less than 3/4 statute mile approach visibility minimums. Refer to the following definitions and tables in Appendix A of this report that were used for the design criteria:

- Chapter 1, Section 2, Definitions of Aircraft Approach Category
- Table 2-2. “Runway Separation Standards for aircraft approach categories C & D”
- Table 2-3. “Taxiway and taxilane separation standards”
- Table 3-3. “Runway design standards for aircraft approach categories C & D”

Airport Configuration

In keeping with the current and near future aircraft operations at the existing Vista Field, the proposed initial airport dimensional layout includes a 100-foot wide by 4,000-foot long runway

with a 35-foot wide parallel taxiway. The configuration shown in Exhibit “A” is a generalized layout that would meet most of the airport’s operational needs. It includes providing for hangar space and the infrastructure to accommodate them. This generalized layout will provide identification of Airport Operations Areas (AOA). Shown is the 400-foot separation distance between the runway and taxiway, the runway object free area, the runway protection zone, the building restriction line, and the future runway and taxiway extension. Also included is a proposed apron to accommodate projected needs of T-hangars, corporate hangars, small and large aircraft tie downs, a maintenance building, parking lot, and fuel tank. The entire area is anticipated to be fenced for safety. The apron is situated to allow for future development of airside operations on either end of the apron.

Compatible land use around the airport should also be considered and identified. Airports are experiencing considerable pressure and impact from growth around their operations by incompatible land uses such as single family residential. Sufficient area surrounding the airport should be designated with compatible land uses and identified in the City/County comprehensive plan.

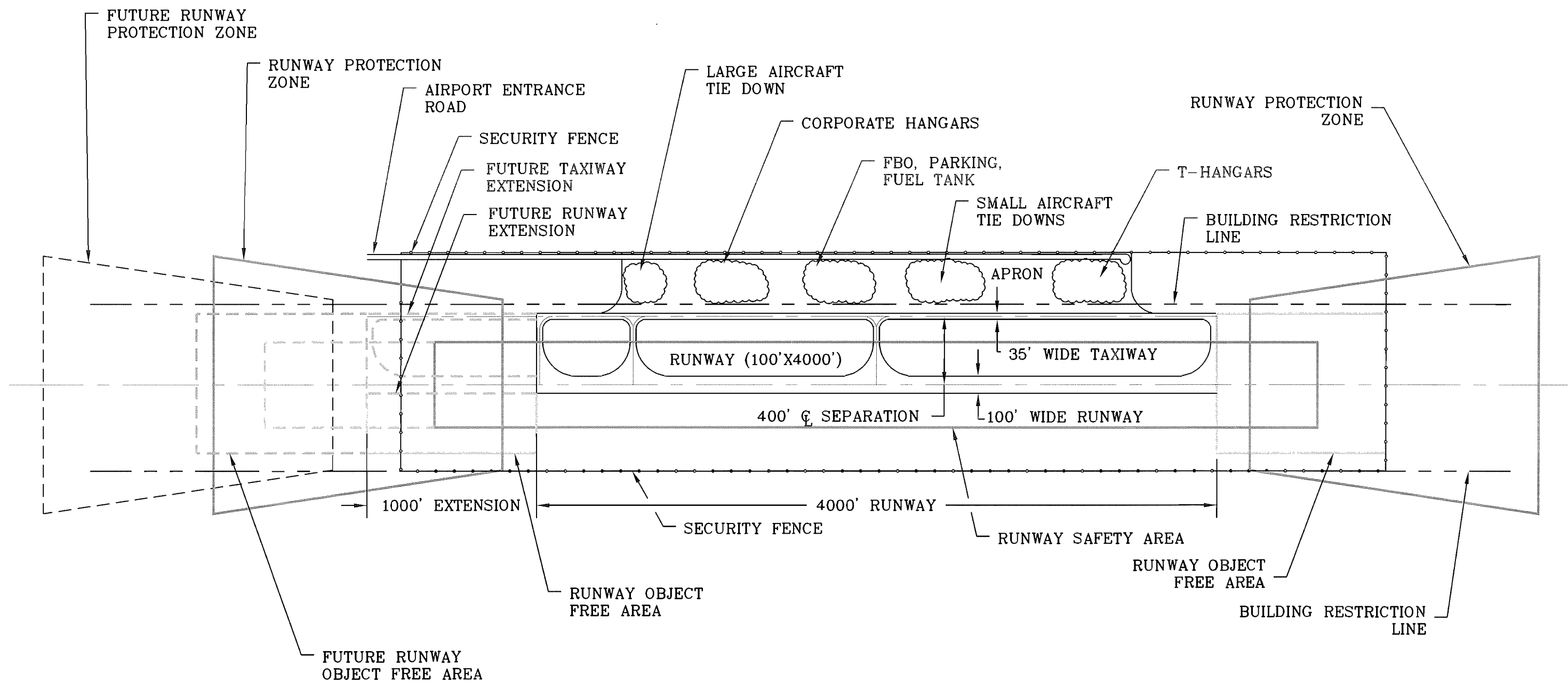
Several sites were looked at south and southeast of the current Vista Field Airport. Refer to Exhibit “B” depicting the general location of the area that was investigated. The order of magnitude cost estimate to construct the new airport based on preliminary findings ranged from \$11,400,000 to \$13,000,000. The cost for utility extensions to the proposed sites and the cost for hangars are not included in these costs. The utilities will need to be provided to the proposed site by the City of Kennewick and other utility companies. Utility costs within each proposed site are included in the cost estimate. All hangars are assumed to be constructed by private development on ground leased from the Port of Kennewick and as such, are not included in the cost estimate; only pavement for the hangars is contained in the cost estimate. No costs are included for land purchase although the acquisition areas are defined as approximately 220 acres to accommodate the 4,000-foot runway/taxiway/apron Airport Operations Area, including its associated runway protection zones. Estimated project costs include imported fill, excavation, runway, taxiway, apron, roadway, and parking lot pavement construction, electrical for lighting and navigational aids, fencing, a maintenance building, site development for hangars, a fuel tank, and on-site utilities. Included in the cost is a Construction Contingency fee and an Engineering and Administration Contingency fee.

Airspace and Approach Discussion

The sites were investigated in regards to airspace and possible residential over flights as well as conflict with the airspace of other local airports. The traditional left hand approaches and takeoffs from both Richland and the Pasco airports with a 3 degree approach angle at an average distance of 4 nautical miles out from the end of the runway was investigated for all proposed sites to check for any conflicts.

The imaginary surfaces of the proposed sites were investigated in regards to FAA Part 77 for Objects Affecting Navigable Airspace. The Part 77 document establishes an imaginary surface that should be protected and clear of objects. This includes the transitional, horizontal, primary, and approach surfaces for each runway end. Canyons, if any, in the vicinity of the airport sites

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PROPOSED GENERAL AIRPORT LAYOUT

PORT OF KENNEWICK
KENNEWICK, WASHINGTON

VISTA FIELD PRELIMINARY
SITING STUDY

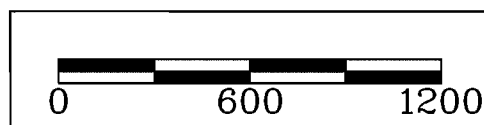


EXHIBIT
"A"

DATE: 06-13-06
PROJECT NO: 30176



RICHLAND AIRPORT

I-182

TRI CITIES AIRPORT



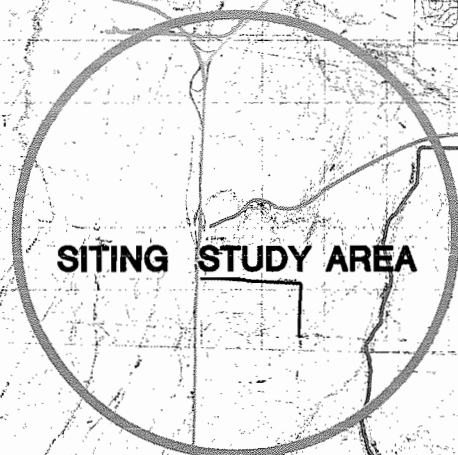
SR 395



VISTA FIELD AIRPORT

I-82

SR 397



SITING STUDY AREA



**PORT OF KENNEWICK, WA
 VISTA FIELD PRELIMINARY AIRPORT
 SITING STUDY
 KENNEWICK, WASHINGTON
 EXHIBIT "B"
 VICINITY MAP**



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DES. RSB	DRN. JBS	CKD. RSB	SHEET 1 OF 1
SCALE: N.T.S.		DATE: 6/13/06	DWG. NO. 30176

were checked for any possible penetration of the imaginary surfaces that would affect the approaches to the airport. Runways were checked in regards to the following surfaces: Transitional Surface at a slope of 7:1; Visual Approach Surface at a slope of 20:1; Non-precision Instrument Runway Approach Surface at a slope of 34:1; and finally, Precision Approach Surface at a slope of 50:1.

Stakeholders Feedback

Interviews were conducted with key stakeholders and discussions were held with FAA and WSDOT representatives for input into this study. A suggestion was made that whatever funds obtained as a result of the Vista Field Airport site closure should be used for the development of a new airport and not for other expenditures. Also discussed was the importance of having the City of Kennewick bring water, sewer, high speed cable, etc. to the site. Having a new airport that could serve as a reliever or alternate airport would be a big benefit to the community. Although not specifically stated, some stakeholders would consider moving their businesses and not just their aircraft to the new airport. Others have built buildings in the past at Vista Field that just fit within the space available. At the new airport, these individuals would be able to build what they wanted rather than just what fits. Some stakeholders may lease out current buildings and hangars and move operations to the new airport. UPS will likely remain at its current location and truck from either a new airport or from Pasco in order to have a central location for their trucks to travel to the majority of their delivery sites. Another attractive feature considered was oftentimes there is fog at Vista Field or Pasco, while there are clear skies at the locations that are under consideration. The airport stakeholders stressed that a decision to move forward on relocation needs to be done quickly.

Discussions were also conducted with the FAA (Carol Keys) and WSDOT Division of Aeronautics (Stan Allison). The sites identified do not meet the minimum travel time between airports of 30 minutes. As such, the airport would not qualify for federal funding nor fit into the National Plan of Integrated Airport Systems (NPIAS). Funding through WSDOT could be accommodated, but their annual allotment per airport is \$150,000. Both agencies are supportive of the move. They encouraged the Port to work with the other regional airports to develop a Regional Airport Master Plan. Both the FAA and WSDOT encouraged ownership of the runway protection zone in these sites. The runway protection zones could extend over the freeway. They stressed that compatible land use and zoning surrounding the airport is critical for long term success of the airport.

Recommendations

It is the recommendation of this report to acquire land that has the best access off a major highway or interchange, that can be easily acquired, and that has topographic site conditions conducive to navigable airspace with the necessary acreage for the proposed 5,000-foot runway. It is important to acquire land with a slope that is also favorable in regards to the proposed runway gradient. Large tracts of land adjacent to the proposed airport, while not suitable for airport usage, would be ideal for potential development of future commercial and/or light industrial growth.

The results of this siting investigation are preliminary and not meant to be a definitive conclusion. If the Port is serious about relocating the airport, detailed surveys, airspace analysis, design, and cost estimating should be accomplished.

APPENDIX A
FAA Design Criteria

Chapter 1. REGULATORY REQUIREMENTS AND DEFINITION OF TERMS

1. GENERAL. Section 103 of the Federal Aviation Act of 1958 states in part, "In the exercise and performance of his power and duties under this Act, the Secretary of Transportation shall consider the following, among other things, as being in the public interest: (a) The regulation of air commerce in such manner as to best promote its development and safety and fulfill the requirements of defense; (b) The promotion, encouragement, and development of civil aeronautics"

This public charge, in effect, requires the development and maintenance of a national system of safe, delay-free, and cost-effective airports. The use of the standards and recommendations contained in this publication in the design of airports supports this public charge. These standards and recommendations, however, do not limit or regulate the operations of aircraft.

2. DEFINITIONS. As used in this publication, the following terms mean:

Aircraft Approach Category. A grouping of aircraft based on 1.3 times their stall speed in the landing configuration at the certificated maximum flap setting and maximum landing weight at standard atmospheric conditions. The categories are as follows:

Category A: Speed less than 91 knots.

Category B: Speed 91 knots or more but less than 121 knots.

Category C: Speed 121 knots or more but less than 141 knots.

Category D: Speed 141 knots or more but less than 166 knots.

Category E: Speed 166 knots or more.

Airplane Design Group (ADG). A grouping of airplanes based on wingspan. The groups are as follows:

Group I: Up to but not including 49 feet (15 m).

Group II: 49 feet (15 m) up to but not including 79 feet (24 m).

Group III: 79 feet (24 m) up to but not including 118 feet (36 m).

Group IV: 118 feet (36 m) up to but not including 171 feet (52 m).

Group V: 171 feet (52 m) up to but not including 214 feet (65 m).

Group VI: 214 feet (65 m) up to but not including 262 feet (80 m).

Airport Elevation. The highest point on an airport's usable runway expressed in feet above mean sea level (MSL).

Airport Layout Plan (ALP). The plan of an airport showing the layout of existing and proposed airport facilities.

Airport Reference Point (ARP). The latitude and longitude of the approximate center of the airport.

Blast Fence. A barrier used to divert or dissipate jet blast or propeller wash.

Building Restriction Line (BRL). A line which identifies suitable building area locations on airports.

Clear Zone. See Runway Protection Zone.

Clearway (CWY). A defined rectangular area beyond the end of a runway cleared or suitable for use in lieu of runway to satisfy takeoff distance requirements.

Compass Calibration Pad. An airport facility used for calibrating an aircraft compass.

Declared Distances. The distances the airport owner declares available for the airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

Takeoff run available (TORA) - the runway length declared available and suitable for the ground run of an airplane taking off;

Takeoff distance available (TODA) - the TORA plus the length of any remaining runway or clearway (CWY) beyond the far end of the TORA;

Accelerate-stop distance available (ASDA) - the runway plus stopway (SWY) length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff; and

Table 2-2. Runway Separation Standards for aircraft approach categories C & D

ITEM	DIM <u>1/</u>	AIRPLANE DESIGN GROUP					
		I	II	III	IV	V	VI
<i>Visual runways and runways with not lower than 3/4-statute mile (1 200 m) approach visibility minimums</i>							
Runway Centerline to:							
Parallel Runway Centerline	H	- Refer to paragraphs 207 and 208 -					
Holdline		- Refer to Advisory Circular 150/5340-1 -					
Taxiway/Taxilane Centerline <u>2/</u>	D	300 ft 90 m	300 ft 90 m	400 ft 120 m	400 ft 120 m	<u>3/</u> <u>3/</u>	600 FT 180 M
Aircraft Parking Area	G	400 ft 120 m	400 ft 120 m	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m
Helicopter Touchdown Pad		- Refer to Advisory Circular 150/5390-2 -					
<i>Runways with lower than 3/4-statute mile (1200 m) approach visibility minimums</i>							
Parallel Runway Centerline	H	- Refer to paragraphs 207 and 208 -					
Holdline		- Refer to Advisory Circular 150/5340-1 -					
Taxiway/Taxilane Centerline <u>2/</u>	D	400 ft 120 m	400 ft 120 m	400 ft 120 m	400 ft 120 m	<u>3/</u> <u>3/</u>	600 FT 180 M
Aircraft Parking Area	G	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m
Helicopter Touchdown Pad		- Refer to Advisory Circular 150/5390-2 -					

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

2/ The taxiway/taxilane centerline separation standards are for sea level. At higher elevations, an increase to these separation distances may be required to keep taxiing and holding airplanes clear of the OFZ (refer to paragraph 206).

3/ For Airplane Design Group V, the standard runway centerline to parallel taxiway centerline separation distance is 400 ft (120 m) for airports at or below an elevation of 1,345 feet (410 m); 450 feet (135 m) for airports between elevations of 1,345 feet (410 m) and 6,560 feet (2 000 m); and 500 feet (150 m) for airports above an elevation of 6,560 feet (2 000 m).

Table 2-3. Taxiway and taxilane separation standards

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

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

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

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

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

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

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

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

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

Table 3-3. Runway design standards for aircraft approach categories C & D
 (Refer also to Appendix 16 for the establishment of new approaches)

ITEM	DIM ¹	AIRPLANE DESIGN GROUP					
		I	II	III	IV	V	VI
Runway Length	A	- Refer to paragraph 301 -					
Runway Width	B	100 ft 30 m	100 ft 30 m	100 ft ² 30 m ²	150 ft 45 m	150 ft 45 m	200 ft 60 m
Runway Shoulder Width ³		10 ft 3 m	10 ft 3 m	20 ft ² 6 m ²	25 ft 7.5 m	35 ft 10.5 m	40 FT 12 M
Runway Blast Pad Width		120 ft 36 m	120 ft 36 m	140 ft ² 42 m ²	200 ft 60 m	220 ft 66 m	280 ft 84 m
Runway Blast Pad length		100 ft 30 m	150 ft 45 m	200 ft 60 m	200 ft 60 m	400 ft 120 m	400 ft 120 m
Runway Safety Area Width ⁴	C	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m
Runway Safety Area Length Prior to Landing Threshold		600 ft 180 m	600 ft 180 m	600 ft 180 m	600 ft 180 m	600 ft 180 m	600 ft 180 m
Runway Safety Area Length Beyond RW End ⁵	P	1,000 ft 300 m	1,000 ft 300 m	1,000 ft 300 m	1,000 ft 300 m	1,000 ft 300 m	1,000 ft 300 m
Obstacle Free Zone Width and length		- Refer to paragraph 306 -					
Runway Object Free Area Width	Q	800 ft 240 m	800 ft 240 m	800 ft 240 m	800 ft 240 m	800 ft 240	800 ft 240
Runway Object Free Area Length Beyond RW End ⁵	R	1000 ft 300 m	1000 ft 300 m	1000 ft 300 m	1000 ft 300 m	1,000 ft 300 m	1000 ft 300

- 1/ Letters correspond to the dimensions on figures 2-1 and 2-3.
- 2/ For Airplane Design Group III serving airplanes with maximum certificated takeoff weight greater than 150,000 pounds (68 100 kg), the standard runway width is 150 feet (45 m), the shoulder width is 25 feet (7.5 m), and the runway blast pad width is 200 feet (60 m).
- 3/ Design Groups V and VI normally require stabilized or paved shoulder surfaces.
- 4/ For Airport Reference Code C-I and C-II, a runway safety area width of 400 feet (120 m) is permissible. For runways designed after 2/28/83 to serve Aircraft Approach Category D, the runway safety area width increases 20 feet (6 m) for each 1,000 feet (300 m) of airport elevation above MSL. Refer to paragraph 305.
- 5/ The runway safety area and runway object free area lengths begin at each runway end when stopway is not provided. When stopway is provided, these lengths begin at the stopway end. The runway safety area length and the object free area length are the same for each runway end. Use the table (3-1 or 3-2) that results in the longest dimension. RSA length beyond the runway end standards may be met by provision of an Engineered Materials Arresting System or other FAA approved arresting system providing the ability to stop the critical aircraft using the runway exiting the end of the runway at 70 knots. See AC 150/5220-22.