Outlook

RE: Comments Draft Master Plan for Aurora State Airport

From MORRIS Alexis <Alexis.MORRIS@odav.oregon.gov>
Date Wed 11/4/2026 8:28 AM
To Andrew Mulkey <andrew@mulkeylegal.com>

Hello Andrew,

Thank you for submitting public comment to the State Aviation Board. I am writing to acknowledge that I have received a total of 2 emails and 3 documents. Your comments will be forwarded to the board for their review, and I will add them to our website before the December 2nd and 3rd board meeting.

Thank you,
Alexis Morris
Communications & Administrative Specialist
State Aviation Board Administrator
Cell: (503) 507-6965
Alexis.morris@odav.oregon.gov

From: Andrew Mulkey <andrew@mulkeylegal.com>
Sent: Tuesday, November 3, 2026 5:21 PM
To: Oregon Department of Aviation <mail.aviation@ODAV.oregon.gov>
Subject: Re: Comments Draft Master Plan for Aurora State Airport

You don't often get email from andrew@mulkeylegal.com. Learn why this is important

This message was sent from outside the organization. Treat attachments, links and requests with caution. Be conscious of the information you share if you respond.

In addition to the letter and attachment that I submitted earlier today, please also include with my comments the attached excerpts of the 2000 Aurora Airport Master Plan update, which were obtained from the State Library of Oregon digital collections.

Please confirm receipt. Thank you.

Andrew

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On Tue, Nov 3, 2026 at 4:57 PM Andrew Mulkey <andrew@mulkeylegal.com> wrote:

Please see the attached comments on the draft Aurora State Airport Master Plan and draft proposed findings. Please include me in any notice of decision.

Thank you, and please let me know if you have any difficulty opening the attached documents. Please confirm receipt.

Andrew

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November 3, 2026

Via Email

State Aviation Board
Oregon Dept. of Aviation
3040 25th Street SE
Salem, OR 97302
mail.aviation@odav.oregon.gov

Re: Draft Aurora State Airport Master Plan and Draft Agency Findings

Dear Chair Stephens and Members of the State Aviation Board,

On behalf of Friends of French Prairie and 1000 Friends of Oregon, please accept the following comments on the Draft Aurora State Airport Master Plan and draft findings.

The May 2025 draft Aurora State Airport Master Plan ("draft plan" or 2025 plan) fails to comply with OAR 660-012-0065(3)(n). The Agency (Aviation Board) last adopted an airport master plan for the Aurora Airport in 2000. The 2000 master plan described the reference design aircraft as B-II. The current draft plan seeks to design for a larger class of aircraft, C-II. Although the Aurora Airport meets the itinerant use threshold to qualify to design for C-II aircraft, the airport has not previously been designed for that category of aircraft. If approved, this would be the first master plan that contemplates expansion of the airport design to accommodate the C-II class of aircraft.

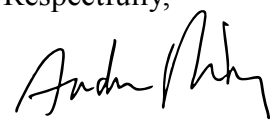
The draft plan explains that the FAA design standards listed in the FAA Advisory Circular 150/5300-13B for AAC/ADG C-II aircraft require an Runway Object Free Area (ROFA or OFA) with a width of 800 feet and 1000 feet of length beyond the runway end. *See* AC 150/5300-13B, Figure 3-1, and Table G-8 (listing design standards matrix for AAC C/D/E and ADG II). In contrast, AAC/ADG B-II aircraft only require an ROFA width of 500 feet and 300 feet of length beyond the runway end. *See* AC 150/5300-13B, Figure 3-1 and Table G-4 (listing design standards matrix for AAC A/B and ADG II).

The draft plan at 4-6 and 4-18 explains that the current ROFA fails to meet the C-II design criteria because "Hubbard Highway is partially located within Runway 17/35 OFA" and "Keil Road is partially located within Runway 17/35 OFA." Draft Plan at 4-6. The draft plan lists other improvements that are located within the RSA (See Figure 3-1, and Table G-4, G-8), including drain fields, drainage ditches, and other features.

Because the draft plan proposes to expand the airport facilities (including the RSA and ROFA) to permit service to a larger class of aircraft (from previous master plan design for B-II to current draft plan C-II), the proposed realignments of Keil Road and Hubbard Highway do not meet the requirements listed in OAR 660-012-0065(3)(n). For that reason, the draft plan cannot rely on OAR 660-012-0065(3)(n) to demonstrate compliance with Goals 3, 4, 11, and 14. ORS 215.283(3)(b). The proposed expansion of the airport facilities shown on the proposed alternative and ALP include road re-alignments therefore require an exception to Goals 3, 11, and 14. ORS 215.283(3)(a). These expansions would occur on rural lands, including EFU, and therefore do not meet the requirements in OAR 660-012-0065(3); *see id.* (1) ("identifying transportation facilities, services, and improvements which may be permitted on rural lands consistent with Goals 3, 4, 11, and 14 without a goal exception.").

For those reasons, the proposed findings fail to demonstrate compliance with the goal exception process required by ORS 197.732 and LCDC's implementing rules. The draft plan identifies the airport as an urban use, which is not allowed on rural lands. Without demonstration of compliance with Goals 3, 11, and 14 or the exceptions process required by ORS 197.732, the proposed findings fail to comply with the requirements in ORS 197.180 or the agency's State Agency Coordination rules at OAR 738-130-0055. Specifically, the draft plan and findings fail to demonstrate compatibility with the Marion County comprehensive plans that protect farm land or planning Goals 3, 11, and 14, all of which violates OAR 738-130-0055(5) and (6).

Respectfully,



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CHAPTER 3. Runway Design

3.1 General.

The runway design standards, recommendations, design considerations, and requirements in this chapter describe features essential for safe and efficient takeoff and landing operations.

3.2 Runway Design Code (RDC).

The RDC determines the standards that apply to a specific runway and parallel taxiway allowing optimal safe operations by the critical aircraft under desired meteorological conditions. The RDC is based on existing and planned development and does not have any operational application.

3.3 Runway Design Standards.

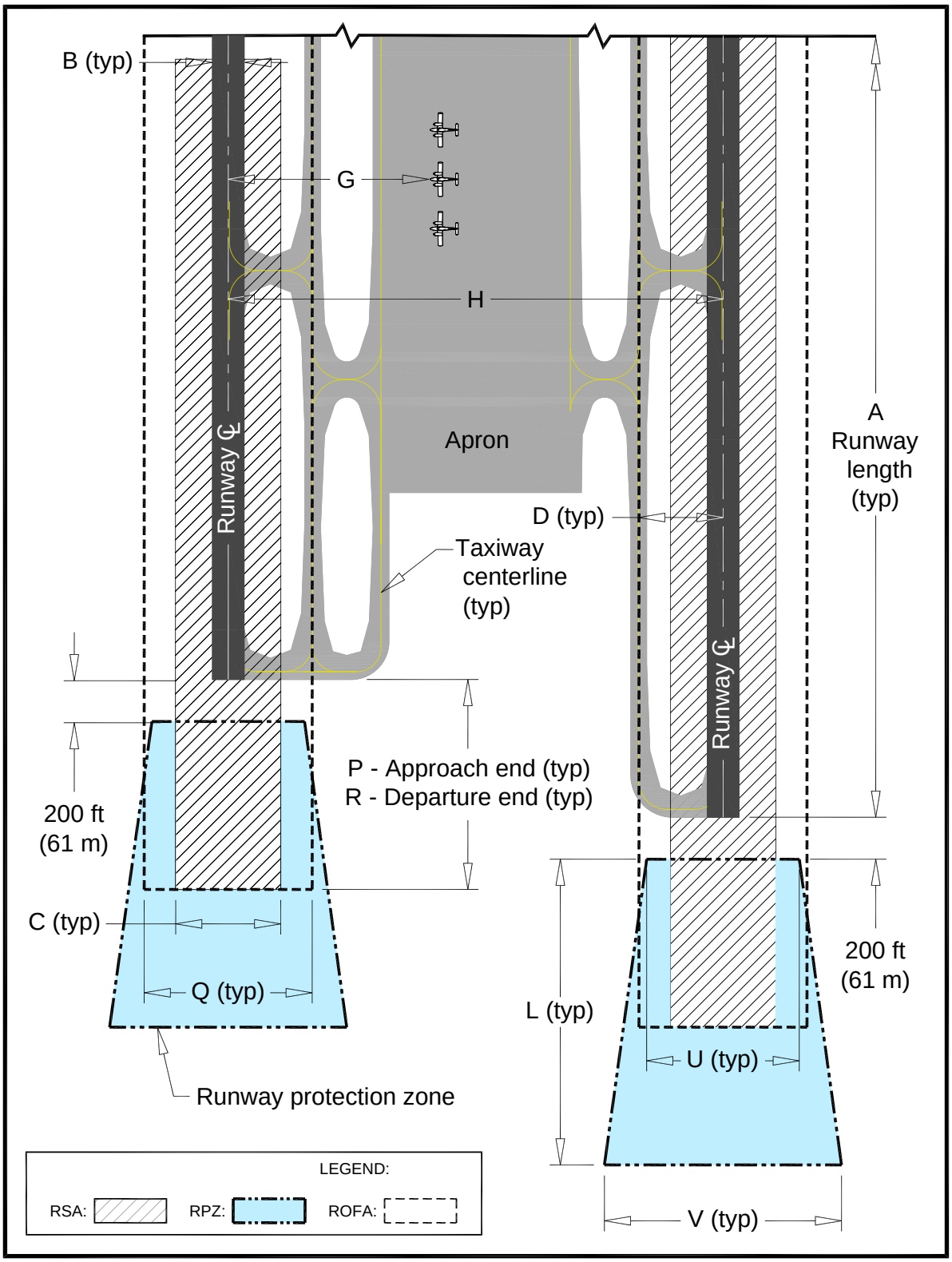
Refer to Appendix G or the online Runway Design Standards Matrix Tool for specific dimensional design standards. Refer to Figure 3-1 for an illustration of design standard dimensions using an airport layout example. Unless otherwise noted, dimensional standards are independent of the surface type of the runway. The links in Table 3-1 navigate the user to the corresponding design code table in Appendix G.

Table 3-1. Runway Design Standards

ADG-I	ADG-II	ADG-III	ADG-IV	ADG-V	ADG-VI
A-I Small	A-II Small	-	-	-	-
A-I	A-II	A-III	-	-	-
B-I Small	B-II Small	-	-	-	-
B-I	B-II	B-III	B-IV	-	-
C-I	C-II	C-III	C-IV	C-V	C-VI
D-I	D-II	D-III	D-IV	D-V	D-VI
E-I	E-II	E-III	E-IV	E-V	E-VI

Note: Alternatively, see the online Runway Design Standards Matrix Tool.

Figure 3-1. Airport Layout Example

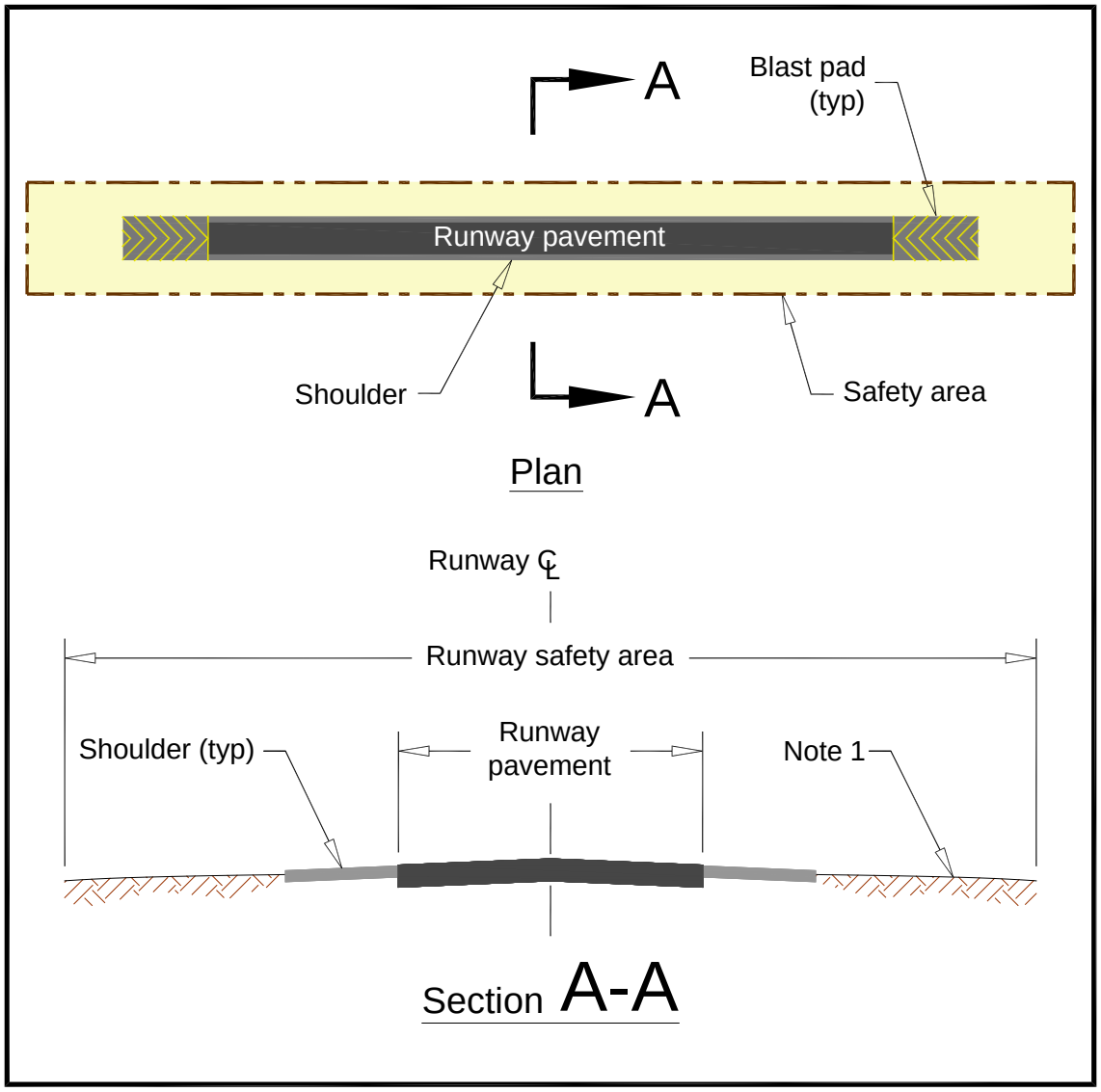


Note: See Appendix G or online Runway Design Standards Matrix Tool for dimensions.

3.10 Runway Safety Area (RSA).

The RSA enhances the safety of aircraft that undershoot, overrun, or veer off the runway, and provides greater accessibility for ARFF equipment during such incidents. Figure 3-19 depicts the RSA. Refer to Appendix H for the effect declared distances may have on runway safety areas. See Appendix I for historical and background information.

Figure 3-19. Runway Safety Area (RSA)



Note 1: The width and length beyond the runway end vary per the RDC. See Appendix G.

3.10.1 Standards.

3.10.1.1 **Location.**

The RSA is symmetrical to the runway centerline and runway extended centerline.

3.10.1.2 **Dimensions.**

Appendix G and the online Runway Design Standards Matrix Tool present RSA dimensional standards.

3.10.1.3 **Grading.**

Provide an RSA that is:

1. Cleared and graded with no potentially hazardous ruts, humps, depressions, or other surface variations;
2. Drained by grading or storm sewers to prevent water accumulation;
3. Capable, under dry conditions, of supporting snow removal equipment, ARFF equipment, and the occasional passage of aircraft without causing major damage to the aircraft; and
4. Graded to the longitudinal and transverse grades in paragraph 3.16.5.

3.10.1.4 **Object Clearing.**

Provide an RSA free of objects excluding those objects that need to reside in the RSA because of function (e.g., fixed-by-function).

1. Configure airfield geometries to keep the RSA clear during an aircraft operation of:
   a. All portions of a holding or taxiing aircraft.
   b. All portions of a holding or moving ground vehicle.
2. Design objects in the RSA with a height greater than 3 inches (76 mm) above the surrounding grade to have a frangible point no higher than 3 inches (76 mm) above the surrounding grade. See AC 150/5220-23.
3. Design foundations, concrete pads, and handholes that need to reside in the RSA:
   a. To be capable of supporting snow removal equipment (SRE) vehicles, ARFF vehicles, and occasional passage of the most demanding aircraft.
   b. Such that the top elevation is within a range between flush with grade and a height of 1-inch (25 mm) above immediate surrounding grade.
4. Locate objects outside the RSA if it is not essential for the object to reside within the RSA.

5. Do not locate objects, including NAVAIDs not fixed-by-function, inside the standard RSA dimensions even when the RSA does not meet the existing dimensional standards.

3.10.1.5 **Construction.**

Comply with compaction criteria in Specification P-152, Excavation, Subgrade and Embankment, found in AC 150/5370-10. Refer to AC 150/5320-6 for design guidance for foundations, inlets, and manholes located within the RSA to support occasional loads by the most demanding aircraft.

3.10.2 Design Considerations.

3.10.2.1 **Non-Standard RSAs.**

In accordance with FAA Order 5300.1, *Modifications to Agency Airport Design, Construction, and Equipment Standards*, the FAA will not consider a modification of standard to address non-standard RSA dimensions. RSA dimensional standards remain in effect regardless of the presence of natural objects, man-made objects, or surface conditions that preclude meeting full RSA standard dimensions.

1. Evaluate all practicable alternatives and opportunities to improve a non-standard RSA until it meets all standards for grade, construction, and object frangibility.
2. On the ALP, identify future development necessary to attain a standard RSA.
3. FAA Order 5200.8, *Runway Safety Area Program*, establishes FAA policy for the RSA determination process when assessing non-standard RSAs and identifies alternatives that may enhance safety.

3.10.2.2 **NAVAIDs.**

Consider the impact NAVAIDs have on the effectiveness of the RSA.

1. Evaluate practicable RSA construction at a grade that precludes the need for non-frangible towers for portions of approach lighting systems or the localizer antenna array.
    a. Non-frangible towers pose a hazard risk to aircraft and may represent a potential interference source to LOC performance.
    b. Construction to a lesser grade may allow installation on frangible or low impact resistant structures.
2. When practical, grade beyond the standard RSA dimensions to avoid abrupt drop-offs that can affect the location and performance of ILS components (GSs and LOCs).
    a. GS facilities need a graded area in front of the antenna to serve as an image-forming surface for the signal.

b. Extend the graded area past the RSA limits, if needed, to avoid placing the localizer within the RSA.

3.10.2.3 **Engineered Materials Arresting Systems (EMAS).**

Installing EMAS is an acceptable alternative where it is not practicable to obtain the standard RSA dimensions. A properly designed EMAS decelerates an aircraft during an excursion incident without damaging the landing gears, thus providing an equivalent level of safety to a standard RSA. The presence of an EMAS does not diminish the standard RSA width. Refer to AC 150/5220-22, *Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns*, for guidance on planning, design, installation, and maintenance of EMAS. Refer to FAA Order 5200.9, *Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems*, to determine the best practical and financially feasible alternative. Key design considerations for EMAS performance include:

1. Aircraft weight, landing gear configuration, tire pressure, and entry speed.
2. Stopping the "EMAS critical aircraft" upon exiting the runway at 70 knots is a primary design condition.
3. Application of a standard EMAS may maximize the available runway length.

3.11 Obstacle Free Zone (OFZ).

The OFZ is a design surface kept clear during aircraft operations. This clearing standard does not allow aircraft and other object penetrations, except for locating frangible NAVAIDs in the OFZ because of their function. The FAA will not consider modification of the OFZ surface. The OFZ, when applicable, is composed of four components:

1. the Runway OFZ (ROFZ),
2. the Precision Obstacle Free Zone (POFZ),
3. the inner-approach OFZ (IA-OFZ), and
4. the inner-transitional OFZ (IT-OFZ).

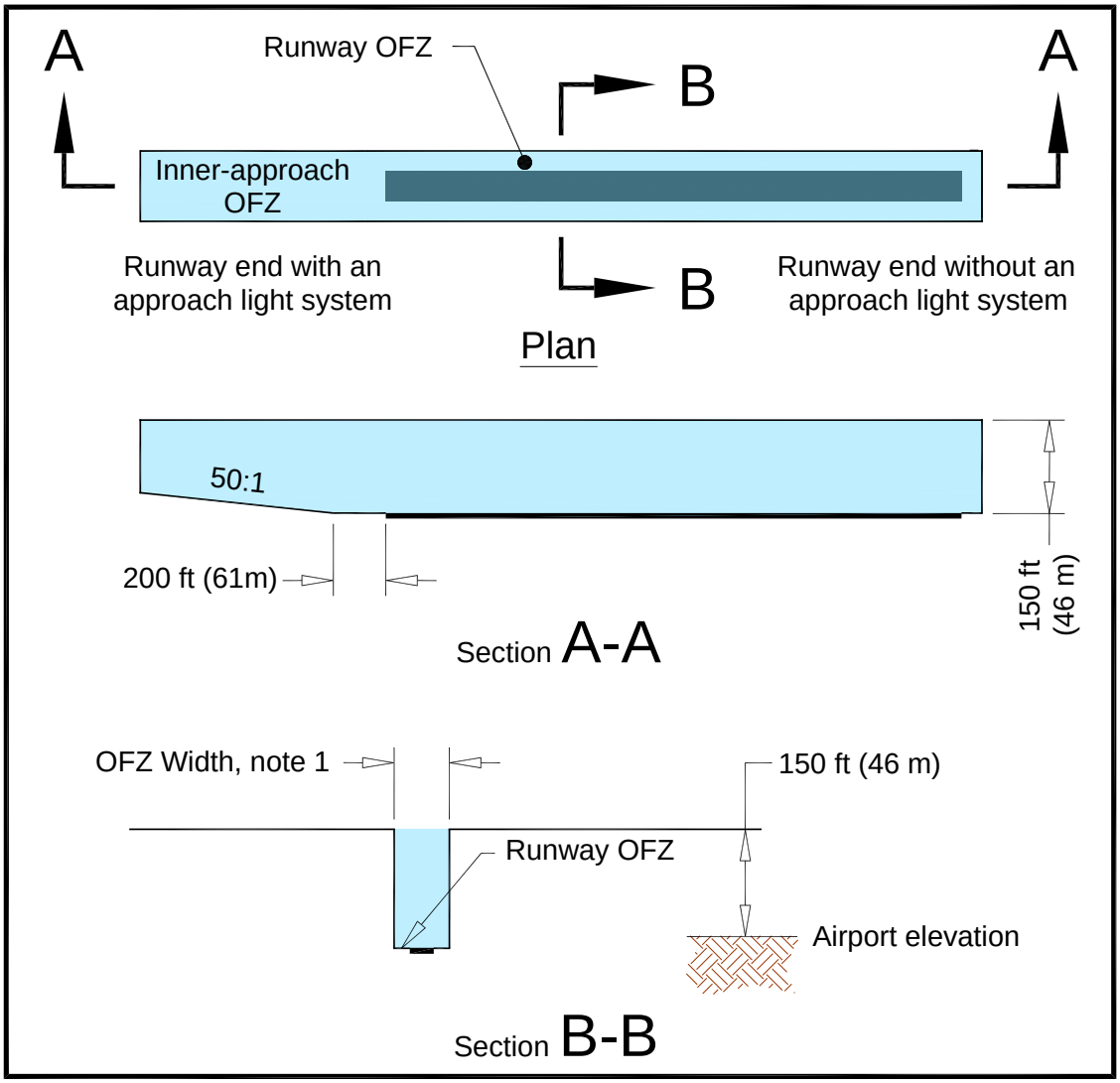
3.11.1 Design Considerations.

1. Use the critical aircraft when selecting the applicable OFZ for runway design.
2. The OFZ standard is dependent on the approach minimums for the runway end and the aircraft on approach, thus the OFZ for a specific aircraft operation may not be the same shape as that used for design purposes.
3. Procedures to protect the OFZ during operations by aircraft more demanding than used for the design of the runway are beyond the scope of this AC. Consultation

with the appropriate offices of the FAA Office of Airports, Flight Standards, and/or ATO will identify any applicable adjustments to operational procedures.

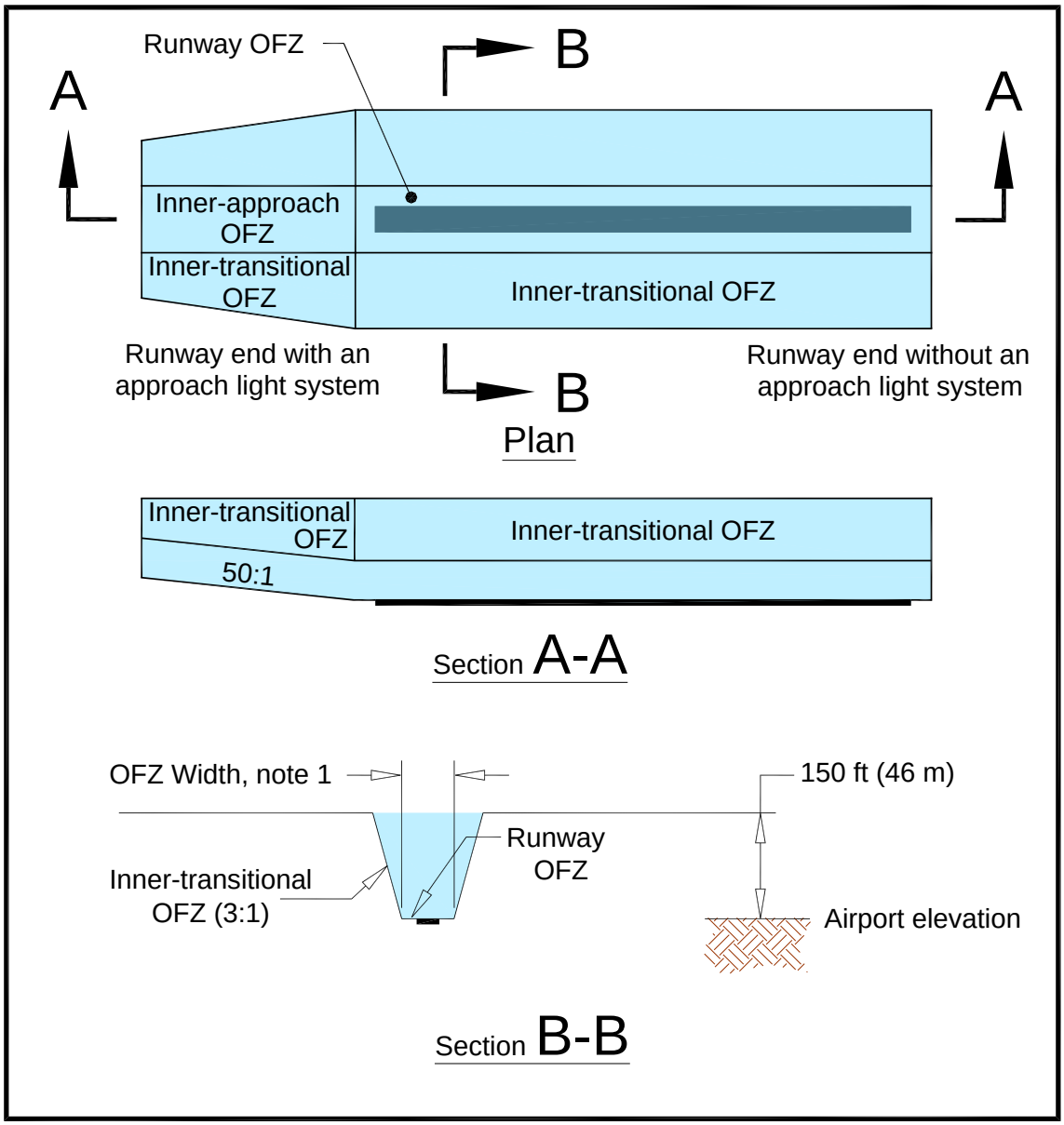
4. See Figure 3-20, Figure 3-21, Figure 3-22, and Figure 3-23 for various OFZ based on aircraft size and visibility minimums.

Figure 3-20. Obstacle Free Zone (OFZ) for Visual Runways and Runways with Not Lower Than ¾ Statute Mile (1.2 km) Approach Visibility Minimums



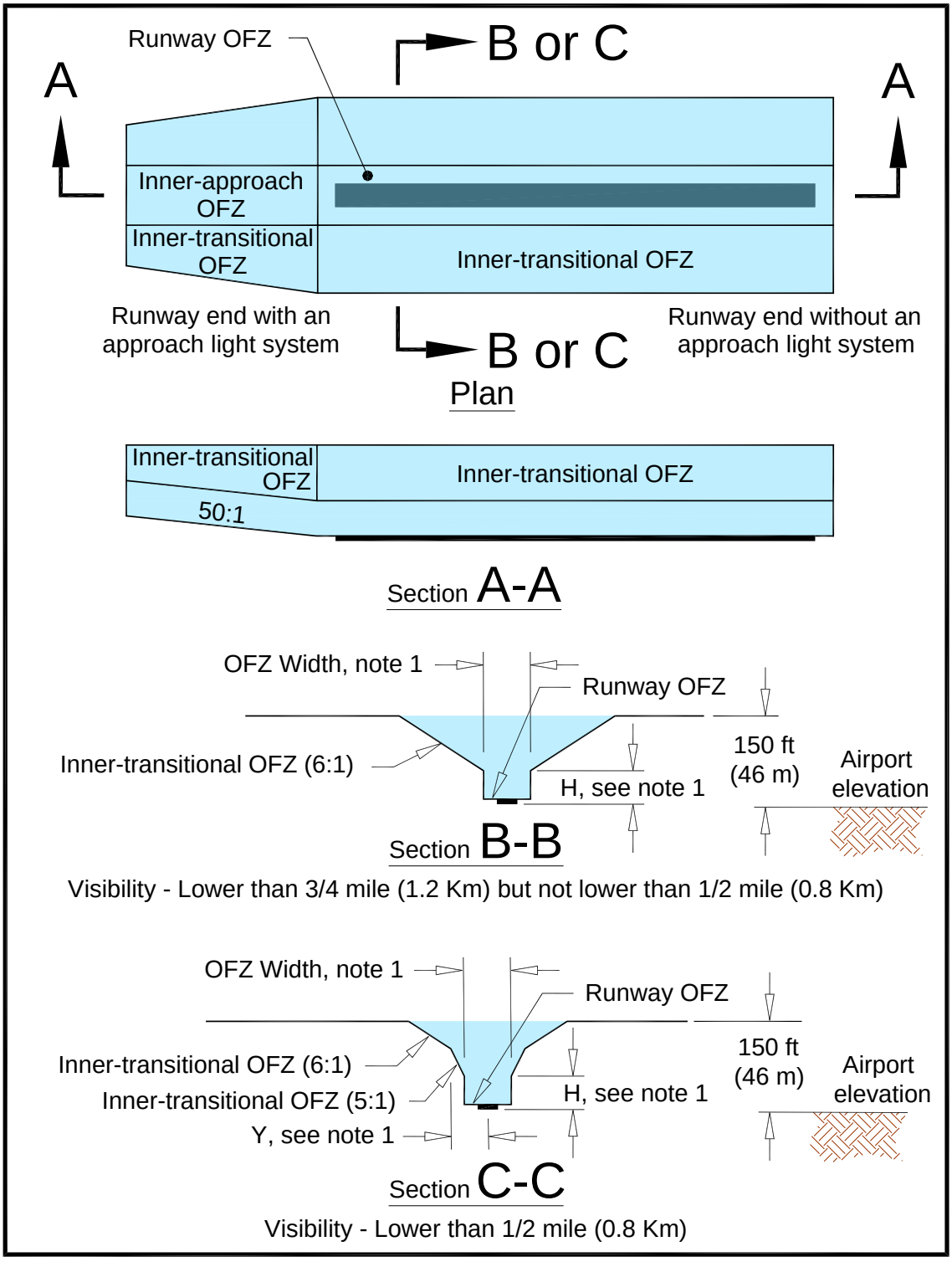
Note 1: Refer to paragraphs 3.11.2, 3.11.3, and 3.11.4 for dimensional values.

Figure 3-21. OFZ for Operations on Runways by Small Aircraft with Lower Than ¾ Statute Mile (1.2 km) Approach Visibility Minimums



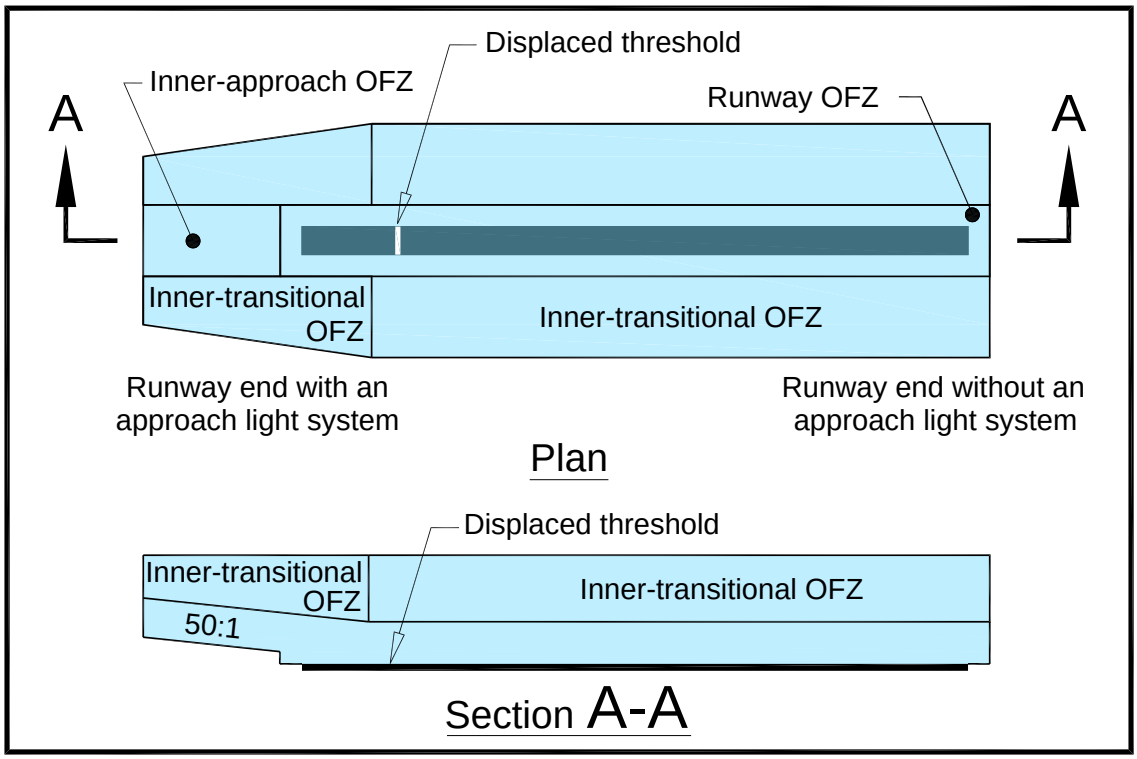
Note 1: Refer to paragraphs 3.11.2, 3.11.3, and 3.11.4 for dimensional values.

Figure 3-22. OFZ for Operations on Runways by Large Aircraft with Lower Than ¾ Statute Mile (1.2 km) Approach Visibility Minimums



Note 1: Refer to paragraphs 3.11.2, 3.11.3, and 3.11.4 for dimensional values.

Figure 3-23. OFZ for Operations on Runways by Large Aircraft with Lower Than ¾ Statute Mile (1.2 km) Approach Visibility Minimums and Displaced Threshold



Note 1: Refer to paragraphs 3.11.2, 3.11.3, and 3.11.4 for dimensional values.

3.11.2 Runway Obstacle Free Zone (ROFZ).

The ROFZ is a defined volume of airspace centered on the runway centerline, whose base elevation is that of the highest runway elevation at that particular location. The ROFZ extends 200 feet (61 m) beyond each end of the runway.

3.11.2.1 **Standards.**

1. For operations by small aircraft:
   a. 300 feet (91 m) wide for runways with lower than ¾ statute mile (1.2 km) approach visibility minimums.
   b. 250 feet (76 m) wide for operations on other runways by small aircraft with approach speeds of 50 knots or more.
   c. 120 feet (37 m) wide for operations on other runways by small aircraft with approach speeds of less than 50 knots.
2. For operations by large aircraft:
   a. 400 feet (122 m) wide for operations.

3.11.3 Inner-approach OFZ (IA-OFZ).

The IA-OFZ is a defined volume of airspace centered on the approach area. It only applies to runways with an ALS. The IA-OFZ begins 200 feet (61 m) from the runway threshold at the same elevation as the runway threshold and extends 200 feet (61 m) beyond the last light unit in the ALS. Its width is the same as the ROFZ and rises at a slope of 50 (horizontal) to 1 (vertical) from its beginning.

3.11.4 Inner-transitional OFZ (IT-OFZ).

The IT-OFZ is a defined volume of airspace along the sides of the ROFZ and IA-OFZ. It only applies to runways with lower than ¾ statute mile (1.2 km) approach visibility minimums. Aircraft tails may not violate the IT-OFZ. It is not acceptable to apply the OFZ criteria as support to decrease a runway to taxiway separation from the standard value.

3.11.4.1 For operations on runways by small aircraft, the IT-OFZ slopes 3 (horizontal) to 1 (vertical) out from the edges of the ROFZ and IA-OFZ to a height of 150 feet (46 m) above the established airport elevation.

3.11.4.2 For operations on runways by large aircraft, separate IT-OFZ criteria applies for runways with IFPs lower than ¾ mile (1.2 km) but not lower than ½ mile (0.8 km), and for lower than ½ mile (0.8 km).

1. For runways with IFPs lower than ¾ mile (1.2 km) but not lower than ½ mile (0.8 km), the IT-OFZ begins at the edges of the ROFZ and inner-approach OFZ, then rises vertically for height "H," and then slopes 6 (horizontal) to 1 (vertical) out to a height of 150 feet (46 m) above the established airport elevation.

   a. In U.S. customary units,

   $H_{feet} = 61 – 0.094(S_{feet}) – 0.003(E_{feet})$.

   b. In the International System of Units (SI),

   $H_{meters} = 18.4 – 0.094(S_{meters}) – 0.003(E_{meters})$.

   c. S is equal to the most demanding wingspan of the RDC of the runway, and E is equal to the runway threshold elevation above sea level.

2. For runways with IFP lower than ½ mile (0.8 km) visibility, the IT-OFZ begins at the edges of the ROFZ and IA-OFZ, then rises vertically for height "H," then slopes 5 (horizontal) to 1 (vertical) out to a distance "Y" from runway centerline, and then slopes 6 (horizontal) to 1 (vertical) out to a height of 150 feet (46 m) above the established airport elevation.

   a. In U.S. customary units,

   $H_{feet} = 53 – 0.13(S_{feet}) – 0.0022(E_{feet})$ and

$Y_{feet} = 440 + 1.08(S_{feet}) – 0.024(E_{feet})$.

b. In SI units,

$H_{meters} = 16 – 0.13(S_{meters}) – 0.0022(E_{meters})$ and

$Y_{meters} = 132 + 1.08(S_{meters}) – 0.024(E_{meters})$.

c. S is equal to the most demanding wingspan of the RDC of the runway and E is equal to the runway threshold elevation above sea level.

d. Beyond the distance "Y" from the runway centerline, the CAT-II/III IT-OFZ surface is identical to that for the CAT-I OFZ.

3.11.5 Precision Obstacle Free Zone (POFZ).

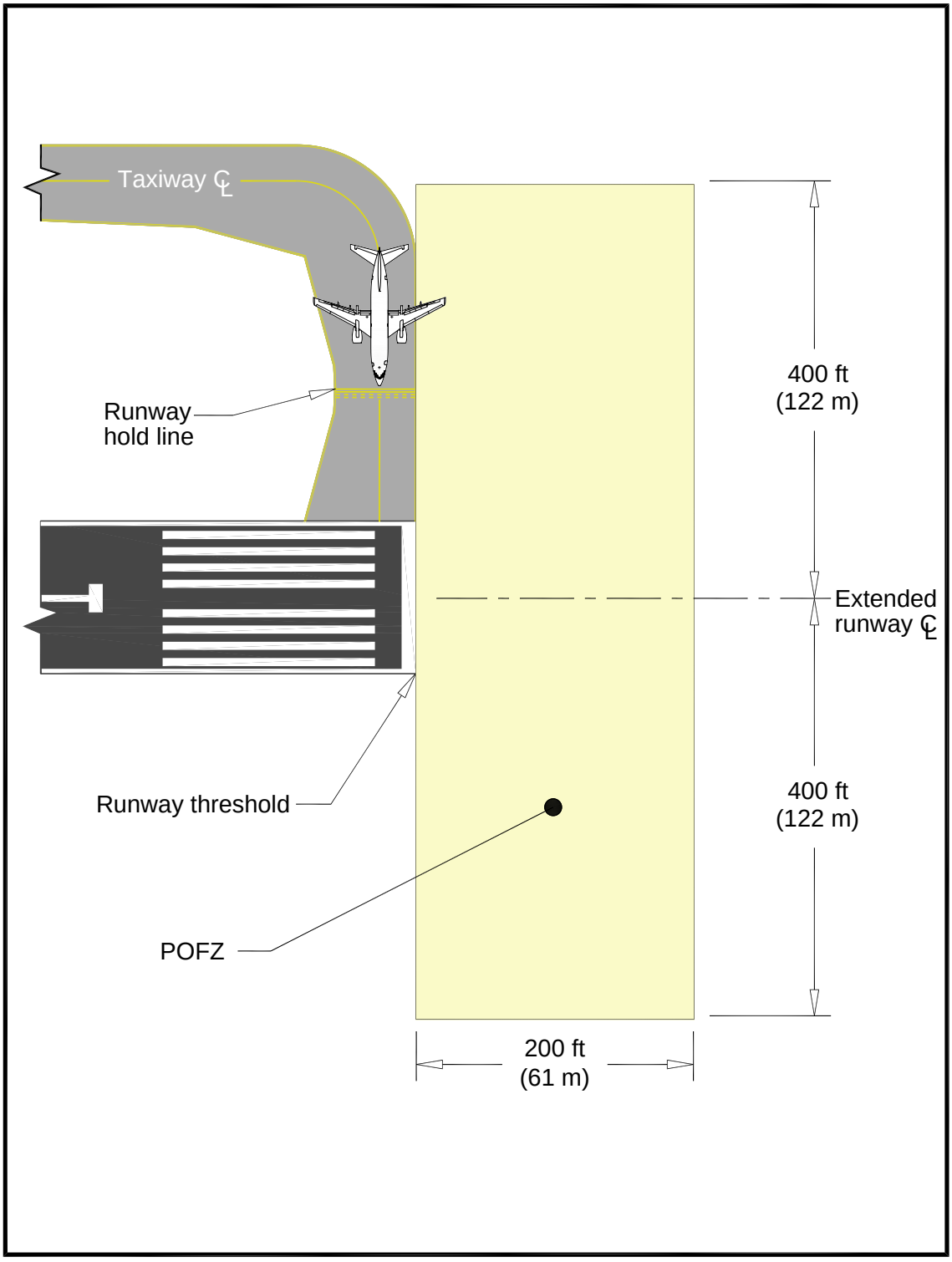
The POFZ is a volume of airspace above an area beginning at the threshold, at the threshold elevation. The POFZ extends along the extended runway centerline beyond the runway end for a distance of 200 feet (61 m) at a width of 800 feet (244 m). See Figure 3-24.

3.11.5.1 The POFZ is applicable to any runway served by a vertically-guided approach with landing minimums less than 250 feet (76 m) or visibility less than ¾ statute mile (1.2 km) (or RVR is below 4,000 feet (1219 m)). The surface is in effect when an aircraft is on final approach within 2 miles (3.2 km) of the runway threshold.

3.11.5.2 When the POFZ is in effect, a wing or a fuselage-mounted horizontal stabilizer of an aircraft holding on a taxiway may penetrate the POFZ; however, neither the fuselage nor tail-mounted horizontal stabilizers may penetrate the POFZ.

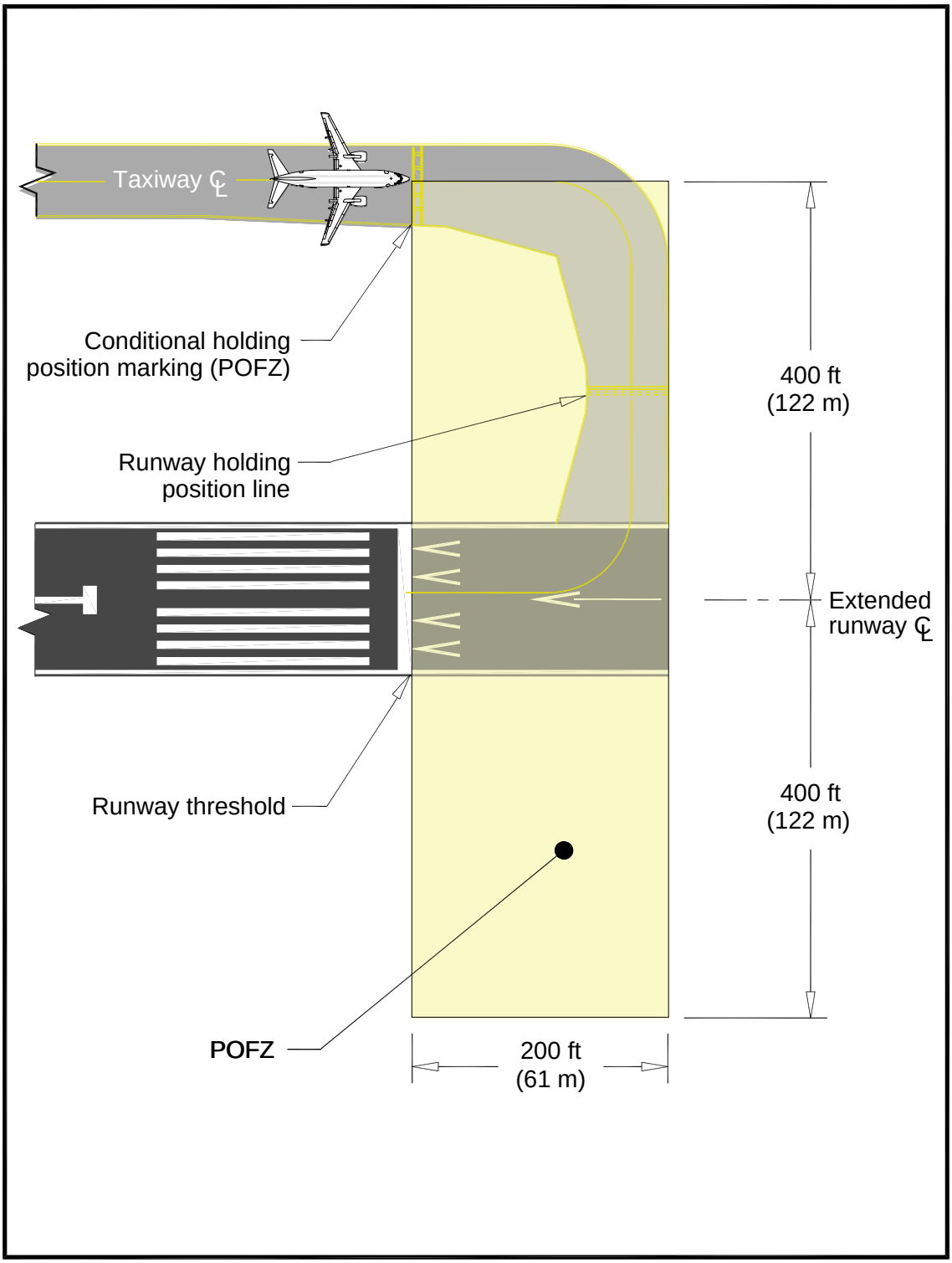
3.11.5.3 The POFZ still applies for runways with displaced thresholds while meeting the criteria in paragraph 3.11.5.1. Refer to Figure 3-25.

Figure 3-24. Precision Obstacle Free Zone (POFZ) – No Displaced Threshold



Note: See paragraph 3.11.5.

Figure 3-25. POFZ – Displaced Threshold



Note 1: Two holding position lines are necessary for this situation: 1) POFZ conditional hold for instrument meteorological conditions, and 2) mandatory hold for all conditions.

3.12 **Runway Object Free Area (ROFA).**

ROFA is a clear area limited to equipment necessary for air and ground navigation and provides wingtip protection in the event of an aircraft excursion from the runway.

3.12.1 Standards.

1. The ROFA is symmetrical about the runway centerline. See Figure 3-1.
2. See Appendix G or the online Runway Design Standards Matrix Tool for standard dimensions of the ROFA.
3. Provide area clear of above-ground objects protruding above the elevation of the nearest point of the RSA:
   a. Ensure terrain is no higher than the nearest point of the RSA within a distance from the edge of the RSA equal to half the most demanding wingspan of the RDC.
   b. Keep area clear of parked aircraft and vehicles, and any non-navigational objects not allowed in paragraph 3.12.1, item 4.
4. Exceptions:
   a. Taxiing and holding aircraft within the ROFA do not violate the standard.
   b. Precision approach path indicator (PAPI) power control units and supplemental wind cones may reside in the ROFA provided there is no wingtip conflict when locating the outer main gear of the RDC aircraft at the RSA boundary.
   c. Equipment that is necessary for air navigation or aircraft ground maneuvering and is fixed-by-function, per Table 6-1, may reside within the ROFA except as precluded by other clearing standards (e.g., NAVAID critical areas).
   d. For existing runways, it is permissible for the ROFA to have a positive grade lateral to the RSA, as shown in Figure 3-33, provided there is adequate drainage of the RSA.
   e. Above-grade drainage structures, such as a drainage headwall, not exceeding 3 inches (76 mm) above the elevation of the nearest point on the RSA may reside within the ROFA.

3.12.2 Recommended Practices.

1. To the extent practical, make objects in the ROFA that exceed the elevation of the nearest point on the RSA comply with the same frangibility criteria as the RSA.
2. Preclude locating objects in a ROFA that can function equally outside of the ROFA.

3.12.3 Design Consideration.

When locating ditches in a ROFA, consider the impact future vegetation growth in the ditch may have on the adjacent RSA.

3.13 Runway Protection Zone (RPZ).

The RPZ is a protection zone that serves to enhance the protection of people and property on the ground. Airport owner control and implementation of compatible land use principles for each runway RPZ is the optimum method of ensuring the public's safety in these areas. Acquisition of appropriate property interest (e.g., fee title, easement, etc.) offers a high degree of control. Zoning ordinances offer a lesser degree of control. The primary goals are to clear the RPZ areas of incompatible objects and activities, and to ensure this area remains clear of such objects and activities.

1. The approach RPZ dimensions for a runway end are a function of the aircraft approach category and approach visibility minimum associated with the approach runway end.
2. The departure RPZ is a function of the aircraft approach category and departure procedures associated with the runway.
3. For a particular runway end, the more stringent RPZ (usually the approach) will govern the property interests and clearing for the airport owner.

3.13.1 Standards.

The RPZ is trapezoidal in shape and centered about the extended runway centerline. Two different components comprise the RPZ; the approach and departure RPZ, which normally overlap. Discontinuity may occur when the approach or departure RPZ begins at a location other than 200 feet (61 m) beyond the end of the runway (refer to Figure 3-26 and Figure 3-28).

3.13.1.1 Approach RPZ.

The approach RPZ extends from a point 200 feet (61 m) from the runway threshold, as shown in Figure 3-26, for a distance as prescribed in Appendix G or the online Runway Design Standards Matrix Tool.

3.13.1.2 Departure RPZ.

The departure RPZ begins 200 feet (61 m) beyond the runway end. If the end of the TORA and the runway end are not the same, it is 200 feet (61 m) beyond the far end of the TORA. Refer to Appendix G or the online Runway Design Standards Matrix Tool for dimensional standards.

3.13.2 Design Considerations.

For land use discussion, see Appendix I.

APPENDIX G. RUNWAY DESIGN STANDARDS TABLES

Table G-1. Runway Design Standards Matrix, A/B-I Small Aircraft

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		A/B – I Small Aircraft			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	60 ft	60 ft	60 ft	75 ft
Shoulder Width		10 ft	10 ft	10 ft	10 ft
Blast Pad Width		80 ft	80 ft	80 ft	95 ft
Blast Pad Length		60 ft	60 ft	60 ft	60 ft
Crosswind Component		10.5 knots	10.5 knots	10.5 knots	10.5 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	240 ft	240 ft	240 ft	600 ft
Length prior to threshold	P	240 ft	240 ft	240 ft	600 ft
Width	C	120 ft	120 ft	120 ft	300 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	240 ft	240 ft	240 ft	600 ft
Length prior to threshold	P	240 ft	240 ft	240 ft	600 ft
Width	Q	250 ft	250 ft	250 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	N/A
Width		N/A	N/A	N/A	N/A
Approach Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,700 ft	2,500 ft
Inner Width	U	250 ft	250 ft	1,000 ft	1,000 ft
Outer Width	V	450 ft	450 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Inner Width	U	250 ft	250 ft	250 ft	250 ft
Outer Width	V	450 ft	450 ft	450 ft	450 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position		125 ft	125 ft	125 ft	175 ft
Parallel taxiway/taxilane centerline [2, 4]	D	150 ft	150 ft	150 ft	200 ft
Aircraft parking area	G	*Refer to paragraph* 3			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-2. Runway Design Standards Matrix, A/B-I

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		A/B – I			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	60 ft	60 ft	60 ft	100 ft
Shoulder Width		10 ft	10 ft	10 ft	10 ft
Blast Pad Width		80 ft	80 ft	80 ft	120 ft
Blast Pad Length		100 ft	100 ft	100 ft	100 ft
Crosswind Component		10.5 knots	10.5 knots	10.5 knots	10.5 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	240 ft	240 ft	240 ft	600 ft
Length prior to threshold	P	240 ft	240 ft	240 ft	600 ft
Width	C	120 ft	120 ft	120 ft	300 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	240 ft	240 ft	240 ft	600 ft
Length prior to threshold	P	240 ft	240 ft	240 ft	600 ft
Width	Q	400 ft	400 ft	400 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	700 ft	700 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	700 ft	700 ft	700 ft	700 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position		200 ft	200 ft	200 ft	250 ft
Parallel taxiway/taxilane centerline [2, 4]	D	225 ft	225 ft	225 ft	250 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-3. Runway Design Standards Matrix, A/B–II Small Aircraft

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		A/B – II Small Aircraft			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	75 ft	75 ft	75 ft	100 ft
Shoulder Width		10 ft	10 ft	10 ft	10 ft
Blast Pad Width		95 ft	95 ft	95 ft	120 ft
Blast Pad Length		150 ft	150 ft	150 ft	150 ft
Crosswind Component		13 knots	13 knots	13 knots	13 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	300 ft	300 ft	300 ft	600 ft
Length prior to threshold	P	300 ft	300 ft	300 ft	600 ft
Width	C	150 ft	150 ft	150 ft	300 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	300 ft	300 ft	300 ft	600 ft
Length prior to threshold	P	300 ft	300 ft	300 ft	600 ft
Width	Q	500 ft	500 ft	500 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,700 ft	2,500 ft
Inner Width	U	250 ft	250 ft	1,000 ft	1,000 ft
Outer Width	V	450 ft	450 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Inner Width	U	250 ft	250 ft	500 ft	500 ft
Outer Width	V	450 ft	450 ft	700 ft	700 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position		125 ft	125 ft	125 ft	175 ft
Parallel taxiway/taxilane centerline [2, 4]	D	240 ft	240 ft	240 ft	300 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-4. Runway Design Standards Matrix, A/B–II

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		A/B – II			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	75 ft	75 ft	75 ft	100 ft
Shoulder Width		10 ft	10 ft	10 ft	10 ft
Blast Pad Width		95 ft	95 ft	95 ft	120 ft
Blast Pad Length		150 ft	150 ft	150 ft	150 ft
Crosswind Component		13 knots	13 knots	13 knots	13 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	300 ft	300 ft	300 ft	600 ft
Length prior to threshold	P	300 ft	300 ft	300 ft	600 ft
Width	C	150 ft	150 ft	150 ft	300 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	300 ft	300 ft	300 ft	600 ft
Length prior to threshold	P	300 ft	300 ft	300 ft	600 ft
Width	Q	500 ft	500 ft	500 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	700 ft	700 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	700 ft	700 ft	700 ft	700 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position		200 ft	200 ft	200 ft	250 ft
Parallel taxiway/taxilane centerline [2, 4]	D	240 ft	240 ft	240 ft	300 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-5. Runway Design Standards Matrix, A/B-III

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		A/B – III			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	100 ft	100 ft	100 ft	100 ft
Shoulder Width		20 ft	20 ft	20 ft	20 ft
Blast Pad Width		140 ft	140 ft	140 ft	140 ft
Blast Pad Length		200 ft	200 ft	200 ft	200 ft
Crosswind Component		16 knots	16 knots	16 knots	16 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	600 ft	600 ft	600 ft	800 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	C	300 ft	300 ft	300 ft	400 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	600 ft	600 ft	600 ft	800 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	Q	800 ft	800 ft	800 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	700 ft	700 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	700 ft	700 ft	700 ft	700 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position [7]		200 ft	200 ft	200 ft	250 ft
Parallel taxiway/taxilane centerline [2, 4]	D	300 ft	300 ft	300 ft	350 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-6. Runway Design Standards Matrix, A/B-IV

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		A/B – IV			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	150 ft	150 ft	150 ft	150 ft
Shoulder Width		25 ft	25 ft	25 ft	25 ft
Blast Pad Width		200 ft	200 ft	200 ft	200 ft
Blast Pad Length		200 ft	200 ft	200 ft	200 ft
Crosswind Component		20 knots	20 knots	20 knots	20 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	C	500 ft	500 ft	500 ft	500 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	Q	800 ft	800 ft	800 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	700 ft	700 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	700 ft	700 ft	700 ft	700 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position [8]		250 ft	250 ft	250 ft	250 ft
Parallel taxiway/taxilane centerline [2]	D	400 ft	400 ft	400 ft	400 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-7. Runway Design Standards Matrix, C/D/E-I

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		C/D/E – I			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	100 ft	100 ft	100 ft	100 ft
Shoulder Width		10 ft	10 ft	10 ft	10 ft
Blast Pad Width		120 ft	120 ft	120 ft	120 ft
Blast Pad Length		100 ft	100 ft	100 ft	100 ft
Crosswind Component		16 knots	16 knots	16 knots	16 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width [13]	C	500 ft	500 ft	500 ft	500 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	Q	800 ft	800 ft	800 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	1,010 ft	1,010 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	1,700 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	1,010 ft	1,010 ft	1,010 ft	1,010 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position		250 ft	250 ft	250 ft	250 ft
Parallel taxiway/taxilane centerline [2]	D	300 ft	300 ft	300 ft	400 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-8. Runway Design Standards Matrix, C/D/E-II

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		C/D/E – II			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	100 ft	100 ft	100 ft	100 ft
Shoulder Width		10 ft	10 ft	10 ft	10 ft
Blast Pad Width		120 ft	120 ft	120 ft	120 ft
Blast Pad Length		150 ft	150 ft	150 ft	150 ft
Crosswind Component		16 knots	16 knots	16 knots	16 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width [13]	C	500 ft	500 ft	500 ft	500 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	Q	800 ft	800 ft	800 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	1,010 ft	1,010 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	1,700 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	1,010 ft	1,010 ft	1,010 ft	1,010 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position		250 ft	250 ft	250 ft	250 ft
Parallel taxiway/taxilane centerline [2]	D	300 ft	300 ft	300 ft	400 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-9. Runway Design Standards Matrix, C/D/E-III

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		C/D/E – III			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width [12]	B	100 ft	100 ft	100 ft	100 ft
Shoulder Width [12]		20 ft	20 ft	20 ft	20 ft
Blast Pad Width [12]		140 ft	140 ft	140 ft	140 ft
Blast Pad Length		200 ft	200 ft	200 ft	200 ft
Crosswind Component		16 knots	16 knots	16 knots	16 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	C	500 ft	500 ft	500 ft	500 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	Q	800 ft	800 ft	800 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	1,010 ft	1,010 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	1,700 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	1,010 ft	1,010 ft	1,010 ft	1,010 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position [8]		250 ft	250 ft	250 ft	250 ft
Parallel taxiway/taxilane centerline [2]	D	400 ft	400 ft	400 ft	400 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-10. Runway Design Standards Matrix, C/D/E-IV

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		C/D/E – IV			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	150 ft	150 ft	150 ft	150 ft
Shoulder Width		25 ft	25 ft	25 ft	25 ft
Blast Pad Width		200 ft	200 ft	200 ft	200 ft
Blast Pad Length		200 ft	200 ft	200 ft	200 ft
Crosswind Component		20 knots	20 knots	20 knots	20 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	C	500 ft	500 ft	500 ft	500 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	Q	800 ft	800 ft	800 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	1,010 ft	1,010 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	1,700 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	1,010 ft	1,010 ft	1,010 ft	1,010 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position [8]		250 ft	250 ft	250 ft	250 ft
Parallel taxiway/taxilane centerline [2]	D	400 ft	400 ft	400 ft	400 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-11. Runway Design Standards Matrix, C/D/E-V

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		C/D/E – V			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	150 ft	150 ft	150 ft	150 ft
Shoulder Width		35 ft	35 ft	35 ft	35 ft
Blast Pad Width		220 ft	220 ft	220 ft	220 ft
Blast Pad Length		400 ft	400 ft	400 ft	400 ft
Crosswind Component		20 knots	20 knots	20 knots	20 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	C	500 ft	500 ft	500 ft	500 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	Q	800 ft	800 ft	800 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	1,010 ft	1,010 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	1,700 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	1,010 ft	1,010 ft	1,010 ft	1,010 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position [8]		250 ft	250 ft	250 ft	280 ft
Parallel taxiway/taxilane centerline [3, 5]	D	400-500 ft	400-500 ft	400-500 ft	400-500 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Table G-12. Runway Design Standards Matrix, C/D/E-VI

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):		C/D/E – VI			
ITEM	DIM [1]	VISIBILITY MINIMUMS			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
RUNWAY DESIGN					
Runway Length	A	*Refer to paragraphs* 3.3 *and* 3.7.1			
Runway Width	B	150 ft	150 ft	150 ft	150 ft
Shoulder Width [14]		35 ft	35 ft	35 ft	35 ft
Blast Pad Width [14]		220 ft	220 ft	220 ft	220 ft
Blast Pad Length		400 ft	400 ft	400 ft	400 ft
Crosswind Component		20 knots	20 knots	20 knots	20 knots
RUNWAY PROTECTION					
Runway Safety Area (RSA)					
Length beyond departure end [9, 10]	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	C	500 ft	500 ft	500 ft	500 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	1,000 ft	1,000 ft	1,000 ft	1,000 ft
Length prior to threshold [11]	P	600 ft	600 ft	600 ft	600 ft
Width	Q	800 ft	800 ft	800 ft	800 ft
Obstacle Free Zone (OFZ)					
Runway, Inner-approach, Inner-Transitional		*Refer to paragraph* 3.11			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	2,500 ft
Inner Width	U	500 ft	500 ft	1,000 ft	1,000 ft
Outer Width	V	1,010 ft	1,010 ft	1,510 ft	1,750 ft
Departure Runway Protection Zone (RPZ)					
Length	L	1,700 ft	1,700 ft	1,700 ft	1,700 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	1,010 ft	1,010 ft	1,010 ft	1,010 ft
RUNWAY SEPARATION					
Runway centerline to:					
Parallel runway centerline	H	*Refer to paragraph* 3.9			
Holding Position [8]		280 ft	280 ft	280 ft	280 ft
Parallel taxiway/taxilane centerline [2, 6]	D	500 ft	500 ft	500 ft	500 ft
Aircraft parking area	G	*Refer to paragraph* 3			
Helicopter touchdown pad		*Refer to* AC 150/5390-2			

Note 1: Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.
Note 2: See the Footnotes on the page after Table G-12.

Footnotes:

1. Letters correspond to the dimensions in Figure 3-1.

2. The runway to taxiway/taxilane centerline separation standards are for airports at sea level. For airports at higher elevations, increase these separation distances to keep taxiing and holding aircraft clear of the inner-transitional OFZ (refer to paragraph 3.11.4). This standard cannot be used to justify a decrease in runway to taxiway/taxilane separation. See paragraph 4.6.2 for recommendations to increase this separation distance.

3. The standard runway centerline to parallel taxiway centerline separation distance is 400 feet (122 m) for airports at or below an elevation of 1,345 feet (410 m); 450 feet (137 m) for airports between elevations of 1,345 feet (410 m) and 6,560 feet (2,000 m); and 500 feet (152 m) for airports above an elevation of 6,560 feet (2,000 m).

4. For approaches with visibility less than 1/2-statute mile (0.8 km), runway centerline to taxiway/taxilane centerline separation increases to 400 feet (122 m).

5. For approaches with visibility less than 1/2-statute mile (0.8 km), the separation distance increases to 500 feet (152 m).

6. If the runway elevation is greater than or equal to 100 feet (30.5 m) above sea level, with approaches with visibility less than 3/4 statute mile (1.2 km), the separation distance increases by an elevation adjustment. For approaches with visibility less than 1/2-statute mile (0.8 km), the separation distance increases to 550 feet (168 m).

7. Increase this distance 1 foot (0.3 m) for each 100 feet (30.5 m) above 5,100 feet (1,555 m) above sea level.

8. Increase this distance 1 foot (0.3 m) for each 100 feet (30.5 m) above sea level. For C-III aircraft, see footnote 7.

9. The RSA length beyond the runway end begins at the runway end when a stopway is not present. When a stopway is present, the length begins at the stopway end.

10. The RSA length beyond the runway end may be reduced to that required to install an EMAS (the designed set-back of the EMAS included). See the latest edition of AC 150/5220-22 for additional guidance.

11. This value only applies if that runway end is equipped with electronic or visual vertical guidance. ILS, GLS, LPV, VNAV, and RNP lines of minima provide electronic vertical guidance. A PAPI or VASI provides visual vertical guidance. If there is no such guidance for that runway, use the value for "length beyond departure end."

12. For airplanes with maximum certificated takeoff weight greater than 150,000 lbs (68,027 kg), the standard runway width is 150 feet (46 m), the shoulder width is 25 feet (7.6 m), and the runway blast pad width is 200 feet (61 m). A 150 feet (46 m) runway width may be acceptable to the FAA for MTOW as low as 134,000 lbs (60,781 kg), subject to the operator of the critical aircraft providing documentation from the aircraft manufacturer demonstrating an operational need for a 150 feet (46 m) wide runway.

13. When an RSA width of 500 feet (152 m) is not practical, an RSA width of 400 feet (122 m) is permissible.

14. Standard paved runway shoulders for aircraft with four or more engines in ADG VI and TDG 6 are 50 feet (15.2 m) and the paved blast pad width of 250 feet (76 m).

Aurora State Airport
Master Plan Update

October 2000

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CHAPTER 1

Executive Summary

INTRODUCTION

In August 1997, the Aeronautics Section of the Oregon Department of Transportation retained W&H Pacific, Inc., to prepare a Master Plan Update for the Aurora State Airport. The Master Plan Update is intended to forecast airport aviation facility requirements, prepare a 20-year development program, and identify methods to implement airport-related programs for the planning period 1998-2017. As with any planning effort, the ultimate objective is to recommend adoption and implementation of the plan.

Findings and Conclusions

FAA Compliance

Land lease rates, fuel flowage fees and ingress/egress permits were evaluated to address FAA compliance requirements. Analysis of these issues and recommendations for future policies are included in a separate report, but a brief summary of that report's scope is described below.

Aurora State Airport is one of only a few in the state that allows access onto airport property from adjacent private property. The Oregon Aeronautics Division allows access from private property upon approval of an Ingress/Egress Agreement. The Aeronautics Division has experienced problems in the past implementing an agreement with some of the off-airport businesses, as well as with the different rate structures used within the program. The FAA became concerned that the airport was non-compliant with Grant Assurances that require the imposition of fair and equitable fees to all operators accessing the airport. An analysis of the existing Ingress/Egress agreements and a review of options for the existing agreements was completed in order to address the non-compliance issue.

The State of Oregon owns approximately 22 acres of developable land on the Aurora State Airport. The balance of the land owned by the State is used for runways and taxiways and is not available for development. This developable land is leased by the State to private parties wanting to establish aviation-related businesses at the airport. Land lease rates are set by Oregon Administrative Rules (OAR) Chapter 738, Division 10 – Aeronautics Division. However, these rates were last adjusted on April 20, 1981. Recommendations were developed for updated land lease rates, as well as fuel flowage fees, that will insure fair and equitable rates and charges.

Inventory

Aurora State Airport is located approximately mid-way between the Portland metropolitan area and the state capitol at Salem, on the border between Marion County and Clackamas County. The airport is an important general aviation airport serving the Portland metropolitan area and the northern Willamette Valley. It is the busiest State-owned airport and the overall fifth busiest airport in Oregon. The facility serves a wide-range of charter, corporate and recreational users. There are a number of businesses at the airport providing services such as fuel sales, maintenance, storage, charter, aircraft sales, and flight training.

The airport is made up of a combination of public and private parcels. Oregon Aeronautics owns the runway and taxiway area and some of the adjacent land in the mid-field area. The State owns approximately 144 acres of airport land. Additionally, the State has avigation easements over another 350 acres along the sides and off the ends of the runways. An avigation easement is a legal agreement between the State and a landowner that allows the State to protect airport airspace from natural and man-made obstructions in areas that the State does not own by fee title. Access to the airport is permitted from approximately 120 acres of privately-owned land through access agreements with the State known as "ingress/egress agreements".

Aurora State Airport has a single asphalt concrete runway with a full-length parallel taxiway. The runway is 5,000 feet long by 100 feet wide, and is equipped with Medium Intensity Runway Lights (MIRLs) with Visual Approach Slope Indicators (VASIs) at both ends. Runway pavement strength is rated at 30,000 pounds for aircraft with single wheel landing gear and 45,000 for aircraft with two (dual) wheels per landing gear.

Aurora State Airport is one of seven airports in the Portland area with published instrument approach procedures. Radar service is provided by the Portland International Airport Terminal Radar Approach Control (TRACON). Voice communication for aircraft using the airport is provided on the airport radio UNICOM on a radio frequency of 122.7. There is also an Automatic Weather Observation Station (AWOS) which reports altimeter setting, wind data and temperature, dew point and density altitude on frequency 118.52.

There are approximately 180 tie-down aircraft parking spaces. In addition, there are approximately 157 hangar spaces, of which 107 are T-Hangar type and the remainder open or corporate style. About 30 percent of both the tie-downs and the hangar spaces are on State-owned land. There is also a commercial helicopter operation (Columbia Helicopters) at the northeast end of the airport. Fuel service (Jet A, 100LL and 80) is provided primarily by 3 Fixed Based Operators.

Forecasts

Forecasts provide the basis for evaluating the type of facilities needed to meet future needs and are presented for the next 20 years, from 1998 through the year 2017, in five-year increments. However, a forecast is an estimate of future activity and can therefore serve only as a guideline.

As the forecast horizon gets further away, the assumptions which form the basis for the forecast become more subject to change and influence from outside events. Unforeseen changes will occur within the community and service area, and will result in deviations between the forecast and actual events.

Development of forecasts for the Aurora State Airport involved multiple processes. These included: defining the airport's service area; analyzing the relationship between the population within this service area and the number of based aircraft; and evaluating the relationship between the number of based aircraft and the level of operations at the airport. Other factors included in the forecast process were: estimated population and other demographic changes; business trends within the area; and changes in general aviation and aviation technology.

Demand forecasts for the Aurora State Airport have been developed in three categories: based aircraft; operations; and critical aircraft. "Based aircraft" refers to the number of aircraft that are located (either hangared or tied down) at the airport. "Operations" refer to the number of take offs and landings; i.e., one operation is either a take off or a landing. The "critical aircraft" is the type of aircraft or family of aircraft that is the most demanding of the facilities from a size, weight or speed standpoint. In addition, the designated critical aircraft must commonly and frequently use the airport. A small, but gradually increasing percentage of the growth in annual operations will come from business class aircraft. These aircraft will, however, remain a small percentage of the airport's overall operations compared to the number of single engine aircraft operations. Forecasts are summarized in **Table 1-1.**

Table 1-1
SUMMARY OF CONSTRAINED FORECAST

	1998	**2002**	**2007**	**2012**	**2017**
Based Aircraft	259	272	288	304	318
Annual Operations	87,914	92,270	97,714	103,159	108,204
Critical Aircraft	ARC B-II	Same	Same	Same	Same
	Beech King Air - Cessna Citation II or Similar Aircraft				

Source: W&H Pacific

Figure 3-2
Unconstrained Forecast of Aircraft Operations

Chart goes here – Cut and Paste

Source: W&H Pacific

PREFERRED AIRCRAFT OPERATIONS FORECAST. ALL FIVE OF THE FORECASTS OF OPERATIONS ARE DERIVED FROM SOME TYPE OF EMPIRICAL EVIDENCE, AND ARGUMENTS CAN BE MADE FOR AND AGAINST EACH OF THEM. THE PREFERRED OPERATIONS FORECAST, HOWEVER, IS THE AURORA ACOUSTIC COUNT BASED RATIO. WHILE THE BASE ACOUSTIC COUNT FOR 1997 MUST BE ADJUSTED TO BEGIN THE FORECASTING PROCESS, IN THE JUDGEMENT OF BOTH THE AIRPORT MANAGER AND THE PROJECT TEAM, THIS MORE CLOSELY REFLECTS THE ACTUAL LEVEL OF OPERATIONS AT THE AIRPORT. AS SEEN IN THE TABLE AND FIGURE ABOVE, FORECASTS DERIVED FROM RATIOS AT OTHER AIRPORTS FALL BOTH ABOVE AND BELOW PREFERRED FORECAST.

In subsequent years, when additional acoustic data is available for Aurora, this forecast can be verified or adjusted, as needed. In the opinion of the airport manager and planning team, it is unlikely that any over- or understatement made by the preferred operations forecast would result in significant changes in the airport's operating character.

The Salem Operations Ratio is very similar to the Acoustic Count Based Ratio. Applying the Salem Ratio would result in only a small difference from the preferred forecast. The fact that it closely matches the Acoustic Count Based Ratio provides some validation of the adjustment of the annual operations number.

The Scappoose Operations Ratio and the ratio derived from the 1989 Systems Plan appear to overstate the level of operations, while the Bend Operations Ratio appears to understate the level of operations based upon the experience of the planning team and the Airport Manager.

CRITICAL AIRCRAFT. IN ORDER TO PLAN THE FACILITIES AT AN AIRPORT, THE CRITICAL AIRCRAFT MUST BE IDENTIFIED. THE CRITICAL AIRCRAFT IS DEFINED AS THE FAMILY OF AIRCRAFT THAT CONTROLS ONE OR MORE OF THE DESIGN ITEMS BASED ON WINGSPAN, APPROACH SPEED AND/OR CERTIFICATED TAKE-OFF WEIGHT. THE CRITICAL AIRCRAFT SHOULD USE THE AIRPORT ON A REGULAR BASIS, DEFINED BY THE FAA AS AT LEAST 500 ANNUAL ITINERANT OPERATIONS.

Designating the critical aircraft for the Aurora State Airport based upon *existing* air traffic would result in a designation of Airport Reference Code [1](ARC) B-II. The airport is currently used by a variety of business class aircraft falling into the ARC B-II category, which easily meets the standard for 500 annual itinerant operations by aircraft in that class.

There have been operations conducted by larger business class aircraft such as the Gulfstream II, an aircraft falling into the ARC D-II category. There have also been inquires regarding the opportunity to base Gulfstream aircraft at the airport. Historically, the number of operations of the larger ARC D-II aircraft has been far below the amount needed to designate that class as the critical aircraft. It is possible, however, that if improvements were made to the airport, such as extending the runway, the level of operations by aircraft in the ARC D-II category would grow to exceed the number needed to designate the critical aircraft for Aurora as falling into the ARC D-II category.

The designation of a critical aircraft became a policy decision for the State of Oregon Aeronautics Section – subject to approval by the FAA. In considering which class of aircraft to designate, the Section considered the following factors:

- **Limited Market Segment**. Business class aircraft falling into the ARC D-II category primarily include the Gulfstream family of business jets. These large aircraft make up less than 10 percent of all business jets and 4 percent of all business aircraft when turboprops and large piston twins are included. The costs to design and construct an airport to accommodate this small group are quite high because of the design impacts caused by their large size and high approach speed.

- **Alternative Airports in the Region**. Within the mid and northern Willamette Valley, there are four airports designed to serve the large ARC D-II aircraft, including Portland International Airport, the Hillsboro Airport, the McMinnville Airport, and McNary Field in Salem. These four provide strategically located service for the referenced large aircraft.

[1] Airport Reference Codes are a method to classify the size and speed of aircraft using an airport. The alphabetic character denotes approach speed, "A" being the slowest and "F" being the fastest. The Roman numeral designates the wing span with "I" being the smallest and "IV" being the largest.

- **Airport Design**. Moving from ARC B-II to ARC D-II has a major impact on airport design. One example is runway/taxiway setbacks. ARC B-II requires a 300-foot runway/taxiway separation for an airport planned to have a precision instrument approach. ARC D-II requires a 400-foot separation. Accommodating a 400-foot separation would require extensive property acquisition and would likely include removal of some existing buildings. This would further increase the cost.

- **Pavement Strength Requirements**. Aircraft in the D-II category, such as the Gulfstream II, can weigh in excess of 62,000 pounds up to as much as 90,900 pounds. This would require strengthening the runway. The present runway is built for aircraft weighing in the range of 30,000 to 45,000 pounds.

- **Environmental Impacts**. Larger aircraft, despite the newer technology engines typically found on the newer models, create more noise on landing and takeoff than do the smaller aircraft.

- **Runway Length**. It is very possible that if the airport were designed for larger aircraft, there would be demand for a runway extension beyond the present 5,000 feet. This would also add to the cost to serve this small segment of the general aviation market.

- **Community Input**. In meetings with citizens of the City of Aurora, there were strong objections to taking any action that would increase aircraft noise at the airport. The concept of designing the airport for larger aircraft was particularly troublesome for most of the community members who spoke or provided input in public meetings and the Aurora Airport Master Plan Advisory Committee (AAMPAC) meeting where the topic was discussed.

Based upon community input and in consideration of the high cost to build to ARC D-II standards, the Aeronautics Section made the decision to designate the airport for ARC B-II rather than attempt to upgrade the airport to accommodate ARC D-II.

Designation of the critical aircraft as the ARC B-II category will impose a very small constraint on the airport. As noted above, aircraft in the ARC D-II group make up only a very small portion of the business aircraft fleet. Within the 20-year time horizon covered by this master plan, this constraint might represent 1-2 additional aircraft based at Aurora generating 150 - 200 annual operations per aircraft. As a result, the 20-year forecast of aircraft has been reduced by 2 based aircraft and 400 annual operations.

WEIGHT LIMITATION. AS OF MARCH 1998, THE AIRPORT WEIGHT LIMIT IS 30,000 POUNDS FOR AIRCRAFT WITH A SINGLE WHEEL ON EACH LANDING GEAR AND 45,000 POUNDS FOR AIRCRAFT WITH DUAL WHEELS ON EACH LANDING GEAR. SERVING AIRCRAFT IN THE ARC B-II CATEGORY WOULD REQUIRE NO CHANGE IN THE RUNWAY AND TAXIWAY STRENGTH, AS THE AIRCRAFT FALLING INTO THAT GROUP GENERALLY WEIGH 45,000 POUNDS OR LESS. AT MOST AIRPORTS, THERE ARE OCCASIONAL OPERATIONS BY AIRCRAFT WEIGHING MORE THAN THE PUBLISHED WEIGHT LIMIT. THIS

Chapter 4

Facility Requirements

INTRODUCTION

The objective of the facility requirements chapter is to analyze the ability of the airside and landside facilities to accommodate future activity levels. Existing facilities are compared with demand projections to determine what type and when additional facilities will be required.

RUNWAY DEMAND/CAPACITY

Hourly airport capacity is used to describe the throughput capacity of the runway and taxiway system. This is a measure of the maximum number of aircraft operations that can be accommodated at the airport in an hour. The annual service volume (ASV) is a reasonable estimate of an airport's annual capacity. The ASV accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time.

The capacity of the Aurora State Airport is 98 VFR operations per hour and 59 IFR operations per hour based upon the method defined in FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay* and the associated *Airport Design* computer model, Version 4.2b. This equates to an annual service volume of 230,000 operations. Standard FAA planning practices indicate that improvements should be considered when 60 percent of the ASV is reached. For Aurora State Airport, this threshold is 138,000 annual operations. The number of operations for the year 2017 is forecast to be 108,204 (see **Table 4-1**). This is significantly less than the ASV or the 60 percent threshold for considering capacity related improvements. As a result, this plan recommends that no action be taken with regard to runway capacity enhancement.

Table 4-1

DEMAND/CAPACITY AIRCRAFT MIX

Classification	Year 2017 Operations	Year 2017 Aircraft Mix
A – Single Engine, 12,500 lbs. or less	73,367	68%
B – Multi Engine, 12,500 lbs. or less	30,469	28%
C – Multi Engine, 12,500 lbs. to 30,000 lbs.	4,368	4%
D – Multi Engine, over 30,000 lbs.	0	0%
Totals	**108,204**	**100%**

AIRPORT DESIGN STANDARDS

The design of facilities at the Aurora State Airport is based upon three factors:

- The Airport Reference Code (ARC) for the critical aircraft types using the airport.
- The weight class of the critical aircraft – large or small. A critical aircraft weighing more than 12,500 pounds is defined as a "large" aircraft.
- Instrument Approach Minimums. Instrument approaches are classified by the landing minimums. One factor used in defining landing minimums is visibility - how far a pilot can see ahead out the front windshield of the aircraft. The lower the visibility minimum, the lower the landing minimum.

A discussion of each of these factors is provided below.

AIRPORT REFERENCE CODE

Within the Forecast Chapter 2, there was a discussion of the critical aircraft. The conclusion of that Chapter was that the critical aircraft be designated in the ARC B-II category. Aircraft in this class have approach (landing) speeds of more than 91 knots but less than 121 knots and wingspans of more than 49 feet but less than 79 feet.

Airport design features such as runway width and length, and separation between the runway and taxiway are some examples of airport design criteria impacted by the ARC designation of the critical aircraft. In general terms, larger and faster landing aircraft require more space. To use an automotive analogy – the design of a local street for small cars is different than the design of an interstate freeway with large semi-tractor trucks. The same concept holds true for airports. An airport serving only small single engine airplanes is very different from one designed to accommodate Boeing 747s flying international routes.

WEIGHT CLASS

The FAA defines any aircraft weighing over 12,500 pounds as a "large" aircraft. The type of aircraft that will be typical of the critical aircraft using the Aurora State Airport will weigh more than 12,500 pounds. As a result, the airport runway will be designated to accommodate "large" aircraft. This does not, however, mean that the runway will have no weight restrictions. As was noted in the Forecast Chapter, the weight limitation of 45,000 pounds will be retained.

INSTRUMENT APPROACH VISIBILITY MINIMUMS

The last of the three factors impacting airport design is the instrument approach visibility minimum. Visibility minimums for an approach are the measure of how far a pilot must be able to see out the front windshield to land. The current instrument approaches into the Aurora State Airport have visibility minimums of one mile. In general terms, lower minimums are desirable because they allow pilots to operate safely in a wider variety of weather conditions. For a precision instrument approach[4], visibility minimums are typically one-half mile. For a non-precision instrument approach, the visibility minimums are higher – typically from three-quarter to a mile or more.

Airport design standards change as visibility minimums are lowered. **Table 4-2** illustrates the differences between visibility minimums.

Table 4-2

Airport Design Standards for Various Visibility Standards

	Existing Condition	**1 Mile**	**Not Lower Than ¾ Mile**	**½ Mile**
Runway Width	100'	75'	75'	100'
Runway/Taxiway Separation	200'–300'	240'	240'	300'
Rwy Centerline to Edge of Arcft Parking	350'	250'	250'	400'
Runway Safety Area Width	500'	150'	150'	300'
Runway Safety Area Off Runway End	*1000' – 2000'*300'*	*300'*	*600'*	
Runway Object Free Area	500'	500'	500'	800'
Obstacle Clearance Approach Slope	20:1	20:1	20:1	34:1
Federal Aviation Regulations (FAR)				
Part 77 Approach Slope	34:1	34:1	34:1	50:1
Part 77 Primary Surface Width	500'	500'	1000'	1000'

** The Runway Safety Area extends 1000' off the south end and 2000' off the north end of the runway.*

Source: Airport Design Computer Model 4.2b. & Federal Aviation Regulations (FAR) Part 77

With the exception of the FAR Part 77 primary surface, the airport currently meets the standards for one mile and three-quarter mile. In order to reduce the minimums to three-quarter mile from the present one-mile, it would be necessary to analyze obstructions for the FAR Part 77 Primary Surface. With removal of certain obstructions and lighting and marking others, three-quarter mile

[4] A precision instrument approach provides both vertical and horizontal guidance to the pilot. A non-precision approach provides only horizontal guidance.

RUNWAY DESIGN CRITERIA

The runway design criteria for the Aurora State Airport are:

- ARC B-II
- Large Aircraft
- One Mile Visibility Minimums for Non-Precision Instrument Approaches

Based upon these design criteria listed above, Table 4-3 summarizes the FAA design standards to be used for planning the airport.

Table 4-3
DESIGN STANDARDS - ARC B-II

Large Aircraft - One Mile Visibility Minimums

	Existing	**ARC B-II**
Runway Width	100'	75'
Runway/Taxiway Separation	200-300'	240'
Runway Centerline to Edge of Aircraft Parking	350'	250'
Runway Safety Area (RSA) Width	500'	150'
Runway Safety Area (RSA) Beyond R/W End	1,000 – 2,000'*	300'
Runway Object Free Area (ROFA) Width	500'	500'
Runway Object Free Area (ROFA) Length Beyond R/W End	1,000' – 2,000'	300'
Taxiway Width	40'	35'
Runway Protection Zone (Both Ends)	500'x 700'x 1,000'	500'x700'x 1,000'

Source: FAA Airport Design Computer Model – Version 4.2b. Copies of the FAA Airport Design Computer Model printout for this airport are provided in the Appendix.