

## Appendix 16. NEW INSTRUMENT APPROACH PROCEDURES

**1. BACKGROUND.** This appendix applies to the establishment of new authorized instrument approach procedures. For purposes of this appendix, an Instrument Approach Procedure (IAP) amendment or the establishment of a Global Positioning System (GPS) instrument procedure "overlying" an existing authorized instrument procedure, does not constitute a new procedure. However, a significant reduction in minima would constitute a new procedure.

**a.** This appendix identifies airport landing surface requirements to assist airport sponsors in their evaluation and preparation of the airport landing surface to support new instrument approach procedures. It also lists the airport data provided by the procedure sponsor that the FAA needs to conduct the airport airspace analysis specified in FAA Order 7400.2, *Procedures for Handling Airspace Matters*. The airport must be acceptable for IFR operations based on an Airport Airspace Analysis (AAA), under FAA Order 7400.2.

**b.** FAA Order 8260.19, *Flight Procedures and Airspace*, reflects the contents of this appendix as the minimum airport landing surface requirements that must be met prior to the establishment of instrument approach procedures at a public use airport. This order also references other FAA requirements, such as a safety analysis to determine the need for approach lighting and other visual enhancements to mitigate the effects of a difficult approach environment. This is a consideration regardless of whether or not a reduction in approach minima is desired. Airport sponsors are always encouraged to consider an approach lighting system to enhance the safety of an instrument procedure. In the absence of any identified benefits or safety enhancement from an approach light system, sponsors should at least consider installing lower cost visual guidance aids such as REIL or PAPI.

**c.** The tables provided in this appendix are for planning purposes only and should be used in conjunction with the rest of the document. All pertinent requirements within this AC and other FAA documents, as well as local siting conditions, ultimately will determine the lowest minima obtainable.

**2. INTRODUCTION.** To be authorized a new instrument approach procedure, the runway must have an instrument runway designation. Instrument runways are runway end specific. The runway end designation is based on the findings of an AAA study (Refer to Order 7400.2). In addition, the instrument runway designation for the desired minima must be depicted on the FAA-approved ALP. If not depicted, a change to the ALP is required. As part of the ALP approval process, the FAA will conduct an AAA study to determine the runway's acceptability for the desired minima.

**3. ACTION.** The airport landing surface must meet the standards specified in tables A16-1 A through C, for each specified runway, direction and have adequate airspace to support the instrument approach procedure. When requesting an instrument procedure, the sponsor must specify the runway direction, the desired approach minima, whether circling approach procedures are desired, and the survey needed to support the procedure. For all obligated National Plan of Integrated Airport Systems (NPIAS) airports, the sponsor must also provide a copy of the FAA-approved ALP showing the instrument procedure(s) requested. An ALP is also recommended for all other airports.

### 4. DEFINITIONS.

**a. Precision Approach.** An instrument approach procedure providing course and vertical path guidance conforming to ILS, or MLS, precision system performance standards contained in ICAO annex 10. Table A16-1A defines the requirements for ILS, LAAS, WAAS, MLS, and other precision systems.

**b. Approach Procedure with Vertical Guidance (APV).** An instrument approach procedure providing course and vertical path guidance that does not conform to ILS or MLS system performance standards contained in ICAO annex 10, or a precision approach system that does not meet TERPS alignment criteria. Table A16-2B defines the requirements for WAAS and authorized barometric VNAV.

**c. Nonprecision Approach.** An instrument approach procedure providing course guidance without vertical path guidance. Table A16-3C defines the requirements for VOR, NDB, LDA, GPS (TS0-129) or other authorized RNAV system.

**Table A16-1A. Precision Instrument Approach Requirements.**

Visibility Minimums <sup>1</sup>	<3/4 statute mile	< 1-statute mile
Height Above Touchdown <sup>2</sup>	200	
TERPS Glidepath Qualification Surface (GQS) <sup>3</sup>	Clear	
TERPS precision "W" surfaces <sup>4</sup>	Clear	See Note 5
TERPS Paragraph 251	34:1 Clear	20:1 Clear
Precision Object Free Area (POFA) 200 x 800 <sup>5</sup>	Required	Not Required
Airport Layout Plan <sup>7</sup>	Required	
Minimum Runway Length	4,200 ft (1,280 m) (Paved)	
Runway Markings (See AC 150/5340-1)	Precision	Non Precision
Holding Position Signs & Markings (See AC 150/5340-1 and AC 150/5340-18)	Precision	Non Precision
Runway Edge Lights <sup>8</sup>	HIRL / MIRL	
Parallel Taxiway <sup>9</sup>	Required	
Approach Lights <sup>10</sup>	MALSR, SSALR, or ALSF	Recommended
Runway Design Standards; e.g., Obstacle Free Zone (OFZ) <sup>11</sup>	< 3/4-statute mile approach visibility minimums	≥ 3/4-statute mile approach visibility minimums
Threshold Siting Criteria To Be Met <sup>12</sup>	Appendix 2, Paragraph 5g Criteria	Appendix 2, Paragraph 5f Criteria
Survey Required (see Table 16-2)	Line 9	Line 8

1. Minimums are subject to application of FAA Order 8260.3 (TERPS) and associated orders.
2. The Height Above Touchdown (HAT) indicated is for planning purposes only. Actual obtainable HAT may vary.
3. The Glidepath Qualification Surface (GQS) is applicable to approach procedures providing vertical path guidance. It limits the magnitude of penetration of the obstruction clearance surfaces overlying the final approach course. The intent is to provide a descent path from DA to landing free of obstructions that could destabilize the established glidepath angle. The GQS is centered on a course from the DA point to the runway threshold. It's width is equal to the precision "W" surface at DA, and tapers uniformly to a width 100 feet from the runway edges. If the GQS is penetrated, vertical guidance instrument approach procedures (ILS/MLS/WAAS/LAAS/Baro-VNAV) are not authorized.
4. The "W" surface is applicable to precision approach procedures. It is a sloping obstruction clearance surface (OCS) overlying the final approach course centerline. The surface slope varies with glidepath angle. The "W" surface must be clear to achieve lowest precision minimums. Surface slope varies with glide path angle, 102/angle; e.g., for optimum 3° glide path 34:1 surface must be clear.
5. If the W surface is penetrated, HAT and visibility will be increased as required by TERPS.
6. This is a new airport surface (see paragraph 307). 250-foot minimum HAT is required without POFA.
7. An ALP is only required for airports in the NPIAS; it is recommended for all others.
8. Runway edge lighting is required for night minimums. High intensity lights are required for RVR-based minimums.
9. A parallel taxiway must lead to the threshold and, with airplanes on centerline, keep the airplanes outside the OFZ.
10. To achieve lower visibility minimums based on credit for lighting, a TERPS specified approach light system is required.
11. Indicates what chart should be followed in the related chapters of this document.
12. Circling procedures to a secondary runway from the primary approach will not be authorized when the secondary runway does not meet threshold siting (reference Appendix 2), OFZ (reference paragraph 306) criteria, and TERPS paragraph 251 criteria.

**Table A16-1B. Approach Procedure With Vertical Guidance (APV)  
Approach Requirements (LNAV/VNAV)**

Visibility Minimums <sup>1</sup>	< 3/4-statute mile	< 1-statute mile	1-statute mile	>1-statute mile
Height Above Touchdown <sup>2</sup>	250	300	350	400
TERPS Glidepath Qualification Surface (GQS) <sup>3</sup>	Clear			
TERPS Paragraph 251	34:1 clear	20:1 clear	20:1 clear, or penetrations lighted for night minimums (See AC 70/7460-1)	
Precision Object Free Area (POFA) 200 x 800 <sup>4</sup>	Required	Not Required		
Airport Layout Plan <sup>5</sup>	Required			
Minimum Runway Length	4,200 ft (1,280 m) (Paved)	3,200 ft (975 m) <sup>6</sup> (Paved)	3,200 ft(975 m) <sup>6,7</sup>	
Runway Markings (See AC 150/5340-1)	Precision	Nonprecision <sup>7</sup>		Visual (Basic) <sup>7</sup>
Holding Position Signs & Markings(See AC 150/5340-1 and AC 150/5340-18)	Precision	Nonprecision		
Runway Edge Lights <sup>8</sup>	HIRL / MIRL		MIRL/LIRL	
Parallel Taxiway <sup>9</sup>	Required		Recommended	
Approach Lights <sup>10</sup>	MALS, SSALR, or ALSF	Recommended		
Runway Design Standards; e.g. Obstacle Free Zone (OFZ) <sup>11</sup>	<3/4-statute mile approach visibility minimums	≥ 3/4-statute mile approach visibility minimums		
Threshold Siting Criteria To Be Met <sup>12</sup>	Appendix 2, Paragraph 5g Criteria	Appendix 2, Paragraph 5f Criteria	Appendix 2, Paragraph 5 a,b,c,d,e Criteria	
Survey Required (see Table 16-2)	Line 7	Line 6	Line 6	Line 6

1. Minimums are subject to the application of FAA Order 8260.3 (TERPS) and associated orders.
2. The Height Above Touchdown (HAT) indicated is for planning purposes only. Actual obtainable HAT may vary.
3. The Glidepath Qualification Surface (GQS) is applicable to approach procedures providing vertical path guidance. It limits the magnitude of penetration of the obstruction clearance surfaces overlying the final approach course. The intent is to provide a descent path from DA to landing free of obstructions that could destabilize the established glidepath angle. The GQS is centered on a course from the DA point to the runway threshold. It's width is equal to the precision "W" surface at DA, and tapers uniformly to a width 100 feet from the runway edges. If the GQS is penetrated, vertical guidance instrument approach procedures (ILS/MLS/WAAS/LAAS/Baro-VNAV) are not authorized
4. This is a new airport surface (see paragraph 307).
5. An ALP is only required for obligated airports in the NPIAS; it is recommended for all others.
6. Runways less than 3,200' are protected by 14 CFR Part 77 to a lesser extent (77.23(a)(2) is not applicable for runways less than 3200 feet). However runways as short as 2400 feet could support an instrument approach provided the lowest HAT is based on clearing any 200-foot obstacle within the final approach segment.
7. Unpaved runways require case-by-case evaluation by regional Flight Standards personnel.
8. Runway edge lighting is required for night minimums. High intensity lights are required for RVR-based minimums.
9. A parallel taxiway must lead to the threshold and, with airplanes on centerline, keep the airplanes outside the OFZ.
10. To achieve lower visibility minimums based on credit for lighting, a TERPS specified approach light system is required.
11. Indicates what chart should be followed in the related chapters in this document.
12. Circling procedures to a secondary runway from the primary approach will not be authorized when the secondary runway does not meet threshold siting (reference Appendix 2), OFZ (reference paragraph 306) and TERPS paragraph 251 criteria.

**Table A16-1C. Nonprecision Approach Requirements**

Visibility Minimums <sup>1</sup>	< 3/4-statute mile	< 1-statute mile	1-statute mile	>1-statute mile
Height Above Touchdown <sup>2</sup>	300	350	400	450
TERPS Paragraph 251	34:1 clear	20:1 clear	20:1 clear or penetrations lighted for night minimums (See AC 70/7460-1)	
Precision Object Free Area (POFA) 200 x 800 <sup>3</sup>	Required	Not Required		
Airport Layout Plan <sup>4</sup>	Required			
Minimum Runway Length	4,200 ft (1,280 m) (Paved)	3,200 ft (975 m) <sup>5</sup> (Paved)	3,200 ft (975 m) <sup>5,6</sup>	
Runway Markings (See AC 150/5340-1)	Precision	Nonprecision <sup>6</sup>		Visual (Basic) <sup>6</sup>
Holding Position Signs & Markings (See AC 150/5340-1 and AC 150/5340-18)	Precision	Nonprecision		
Runway Edge Lights <sup>7</sup>	HIRL / MIRL		MIRL / LIRL	
Parallel Taxiway <sup>8</sup>	Required		Recommended	
Approach Lights <sup>9</sup>	MALSR, SSALR, or ALSF Required	Required <sup>10</sup>	Recommended	
Runway Design Standards, e.g. Obstacle Free Zone (OFZ) <sup>11</sup>	<3/4-statute mile approach visibility minimums	≥ 3/4-statute mile approach visibility minimums		
Threshold Siting Criteria To Be Met <sup>12</sup>	Appendix 2, Paragraph 5g Criteria	Appendix 2, Paragraph 5f Criteria	Appendix 2, Paragraph 5 a,b,c,d,e Criteria	
Survey Required (see Table 16-2)	Line 5	Line 4	Line 3	Line 3 Line 2

1. Minimums are subject to the application of FAA Order 8260.3 (TERPS) and associated orders.
2. The Height Above Touchdown (HAT) indicated is for planning purposes only. Actual obtainable HAT may vary.
3. This is a new airport surface (see paragraph 307).
4. An ALP is only required for obligated airports in the NPIAS; it is recommended for all others.
5. Runways less than 3,200' are protected by 14 CFR Part 77 to a lesser extent. However runways as short as 2400 feet could support an instrument approach provided the lowest HAT is based on clearing any 200-foot obstacle within the final approach segment.
6. Unpaved runways require case-by-case evaluation by regional Flight Standards personnel.
7. Runway edge lighting is required for night minimums. High intensity lights are required for RVR-based minimums.
8. A parallel taxiway must lead to the threshold and, with airplanes on centerline, keep the airplanes outside the OFZ.
9. To achieve lower visibility minimums based on credit for lighting, a TERPS specified approach lighting system is required.
10. ODALS, MALS, SSALS, SALS are acceptable.
11. Indicates what chart should be followed in the related chapters in this document
12. Circling procedures to a secondary runway from the primary approach will not be authorized when the secondary runway does not meet threshold siting (reference Appendix 2), OFZ (reference paragraph 306), and TERPS paragraph 251 criteria.

**Table A16-2. Survey Requirements for Instrument Approach Procedures:**

The Table indicates the acceptable runway obstruction survey needed to support an instrument approach procedure.

	Approach	Runway Survey Type								
		None	AV	BV	ANP	C	SUPLC	D	ANAPC	PIR
1	Night Circling			X	X	X	X	X	X	X
2	Non-Precision Approach ≥ 1SM, Day Only	X	X	X	X	X	X	X	X	X
3	Non-Precision Approach ≥ 1SM				X	X	X	X	X	X
4	Non-Precision Approach < 1SM					X	X	X	X	X
5	Non-Precision Approach < ¾ SM								X	X
6	NPV Approach ≥ ¾ SM							X	X	X
7	NPV Approach < ¾ SM								X	X
8	Precision CAT I Approach < 1SM							X	X	X
9	Precision CAT I Approach < ¾ SM								X	X
10	Precision CAT II Approach									X
11	Precision CAT III Approach									X

**Note:**

An “X” in each column for a given Approach (1 through 11) denotes a survey that is acceptable to support that approach. As shown, multiple surveys may support the approach, however the “X” farthest to the left indicates the minimum survey needed.

Runway survey types from FAA No. 405, Standards for Aeronautical Surveys and Related Products:

- AV - FAR77 Visual Approach - Utility runway, includes approach and primary surfaces only.
- BV - FAR77 Visual Approach, includes approach and primary surfaces only.
- ANP - FAR77 Nonprecision Approach - Utility runway, includes approach and primary surfaces only.
- C - FAR77 Nonprecision Approach - Visibility minimums greater than 3/4 mile includes approach and primary surfaces only.
- SUPLC - C Approach underlying a BV approach, includes approach and primary surfaces only.
- D - FAR77 Nonprecision Approach - Visibility minimums as low as 3/4 mile includes approach and primary surfaces only.
- ANAPC - Area Navigation Approach - Precision, conventional landing, includes approach, primary, transition, and missed approach surfaces.
- PIR - FAR77 Precision Instrument Approach, includes approach and primary surfaces only.