Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

MEMORANDUM CIRCULAR NO.: 20-19

TO : ALL CONCERNED

FROM : DIRECTOR GENERAL

SUBJECT : AMENDMENT TO PHILIPPINE MANUAL OF STANDARDS FOR AERODROMES (MOS-AERODROMES) INCORPORATING AMENDMENT 8 TO ICAO ANNEX 14 VOLUME II

REFERENCE:

1. Philippine Manual of Standards for Aerodromes
2. ICAO Annex 14 Volume II, Heliports
3. ICAO State Letter AN 4/16.9-18/24
4. Regulations Amendment Procedure
5. Board Resolution No. 2012-054 dated 28 September 2012

Pursuant to the powers vested in me under the Republic Act No. 9497, otherwise known as the Civil Aviation Authority Act of 2008 and in accordance with the Board Resolution No.: 2012-054 dated 28 September 2012, I hereby approve the incorporation of ICAO Annex 14 Volume II Amendment No. 8 to the Philippine Manual of Standards for Aerodromes.

ORIGINAL REGULATIONS SUBJECT FOR REVIEW AND REVISION:

MANUAL OF STANDARDS FOR AERODROMES, 2ND EDITION

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Chapter 15 HELIPORT STANDARDS

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~~**Appendix 7.** Aeronautical Data Quality Requirements~~

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Section 15.3 Aeronautical data for heliports

15.3.1 Aeronautical Data

15.3.1.1 Determination and reporting of aerodrome-related aeronautical data shall be in accordance with the accuracy and integrity ~~requirements set forth in Tables A7-1 to A7-5 contained in Appendix 7 while taking into account the established quality system procedures. Accuracy requirements for aeronautical data are based upon a 95 per cent confidence level and in that respect, three types of positional data shall be identified: surveyed points (e.g. runway threshold), calculated points (mathematical calculations from the known surveyed points of points in space, fixes) and declared points (e.g. flight information region boundary points).~~ classification required to meet the needs of the end-user of aeronautical data.

Note.— Specifications concerning the accuracy and integrity classification of heliport-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

15.3.1.2 ~~Integrity of aeronautical data must be maintained throughout the data process from survey/origin to the next intended user. Based on the applicable 10 integrity classifications, the validation and verification procedures shall:~~ Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.

~~(a) For routine data: avoid corruption throughout the processing of the data;~~

~~(b) For essential data: assure corruption does not occur at any stage of the entire process and may include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and~~

~~(c) For critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance procedures to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.~~

Note:— ~~Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in RTCA Document DO-200B and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76B — Standards for Processing Aeronautical Data.~~ Detailed specifications concerning digital data error detection techniques are contained in PANS-AIM (Doc 10066).

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15.3.4 Heliport dimensions and related information

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15.3.4.7 The geographical coordinates of obstacles in Area 2 (the part within the heliport boundary) and in Area 3 shall be measured and reported to CAAP AIS in degrees, minutes, seconds and tenths of a second. In addition, the top elevation, type, marking and lighting (if any) of obstacles shall be reported to the CAAP AIS.

Note: - 1. See ~~CAR-ANS Part 15, Appendix 15 g,~~ PANS-AIM (Doc 10066) Appendix 8 for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Areas 2 and 3.

Note: - 2. ~~MOS Appendix 7~~ PANS-AIM (Doc 10066), provides requirements for obstacle data determination in Areas 2 and 3.

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15.3.6 Coordination between aeronautical information services and heliport authorities

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15.3.6.3 Of a particular importance are changes to aeronautical information that affect charts and/or computer-based navigation systems which qualify to be notified by the ~~a~~Aeronautical ~~i~~Information rRegulation and ~~c~~Control (AIRAC) system, as specified in CAR-ANS Part 15.6.2 ~~and Appendix 15C~~. The predetermined, internationally agreed AIRAC effective dates ~~in addition to 14 days postage time~~ shall be observed by the responsible heliport services when submitting the raw information/data to aeronautical information services.

Note.— Detailed specifications concerning the AIRAC system are contained in PANS-AIM (Doc 10066), Chapter 6.

15.3.6.4 The heliport services responsible for the provision of raw aeronautical information/data to the aeronautical information services shall do that while taking into account accuracy and integrity requirements which are vital to meet the needs of the end-user of aeronautical data ~~for aeronautical data as specified in MOS Appendix 7~~.

Note 1.— Specifications concerning the accuracy and integrity classification of heliport-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

Note: - ~~1~~2. Specifications for the issue of a NOTAM is contained in CAR-ANS Part 15.5 (15.6) and PANS-AIM (Doc 10066) Appendices 3 and 4, respectively.

Note: - ~~2~~3. The AIRAC information is distributed by the AIS at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.

Note: - ~~3~~4. The schedule of the predetermined internationally agreed AIRAC common effective dates at intervals of 28 days, including 19 November 2009, and guidance for the AIRAC use are contained in the Aeronautical Information Services Manual (Doc 8126, Chapter 2, 2.6).

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~~**Appendix 7: Aeronautical Data Quality Requirements**~~ (Editorial Note: Appendix 7 has been deleted in toto.)

Appendix ~~8~~7. For instrument heliports with non-precision and/or precision approaches and instrument departures

~~8~~7.1 GENERAL

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~~8~~7.2 HELIPORT DATA

~~8~~7.2.1 Heliport elevation

. . .

~~8~~7.2.2 Heliport dimensions and related information

. . .

~~8~~7.3 PHYSICAL CHARACTERISTICS

~~8~~7.3.1 Surface-level and elevated heliports

~~8~~7.3.1.1 Safety areas

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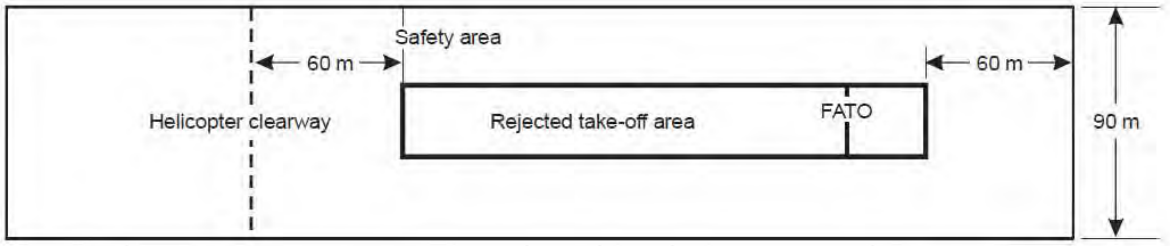


Figure A87-1 Safety area for Instrument FATO

87.4 OBSTACLE ENVIRONMENT

87.4.1 Obstacle limitation surfaces and sectors

87.4.1.1 Approach surface

. . .

87.4.2 Obstacle limitation requirements

87.4.2.1 The following obstacle limitation surfaces shall be established for an instrument FATO with a non-precision and/or precision approach:

. . .

Note: - See MOS Figures A87-2 to A87-5.

87.4.2.2 The slopes of the obstacle limitation surfaces shall not be greater than, and their other dimensions not less than, those specified in MOS Tables A87-1 to A87-3.

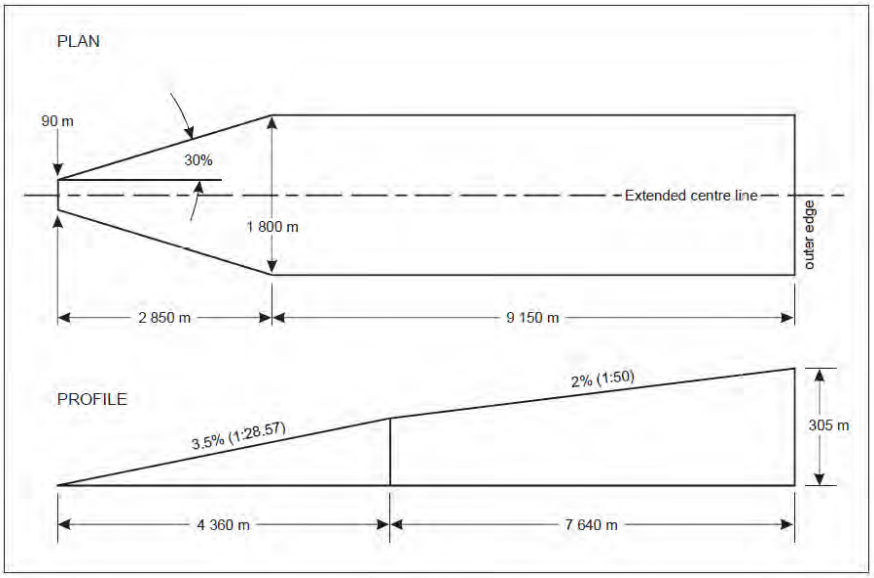


Figure A87-2. Take-off climb surface for instrument FATO

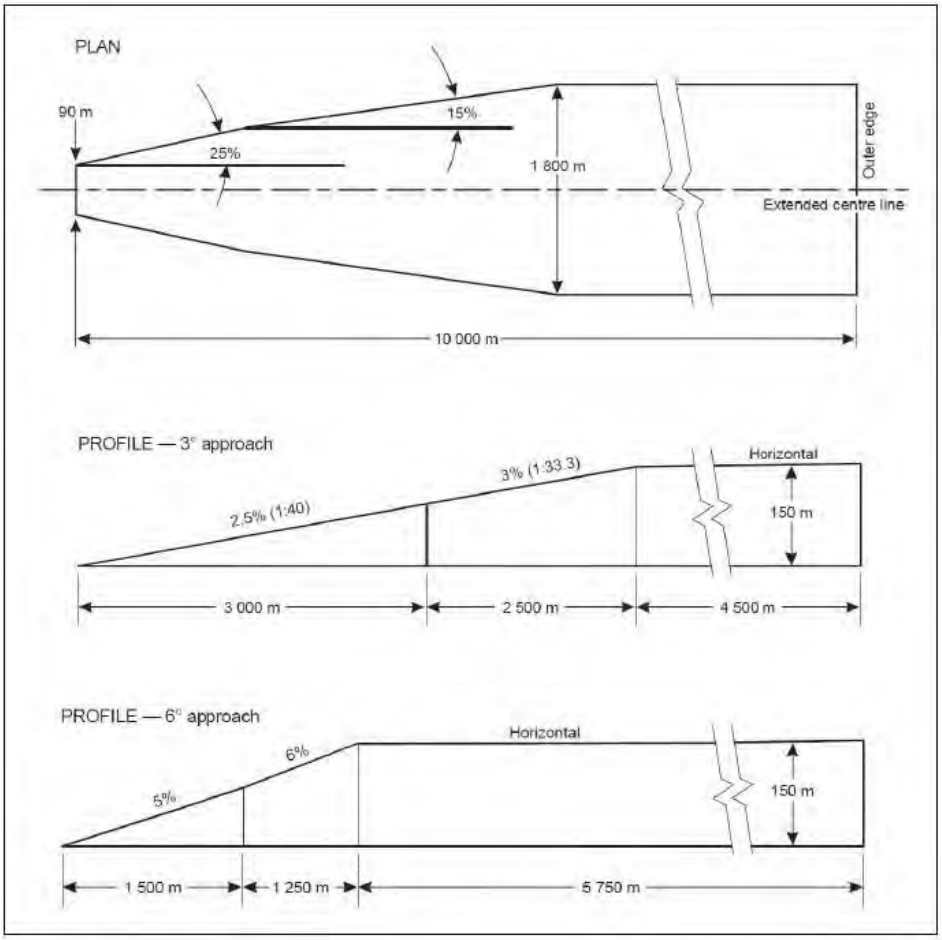


Figure A87-3. Approach surface for precision approach FATO

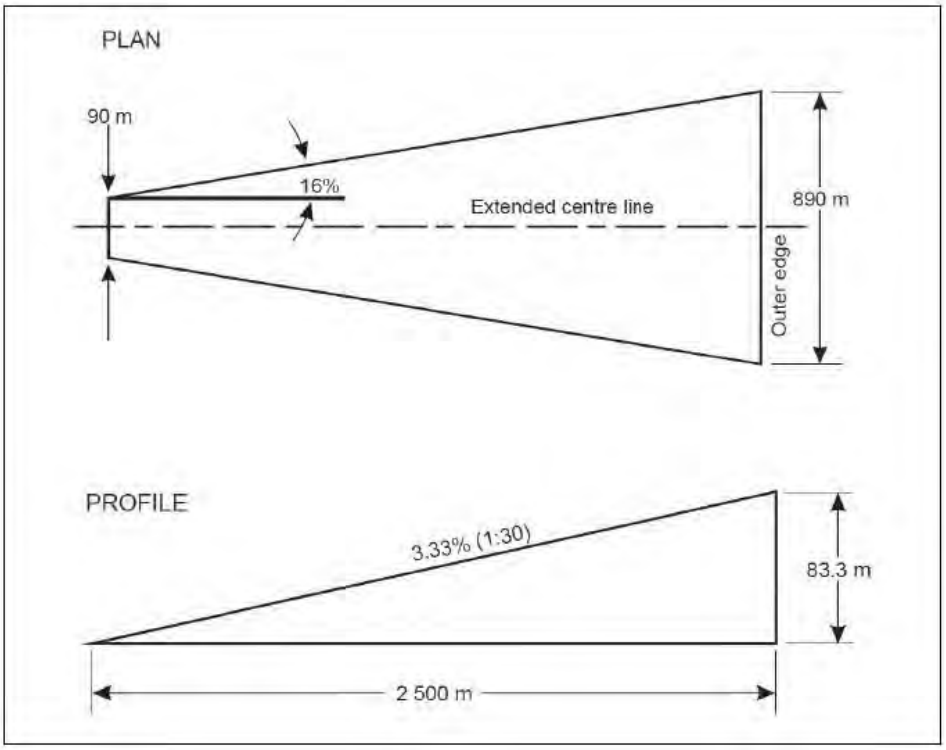
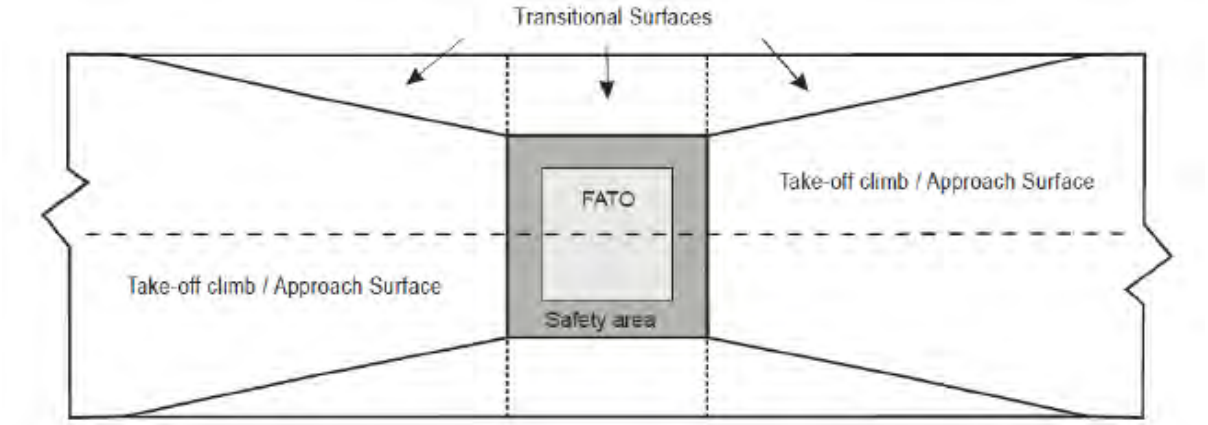


Figure A87-4. Approach surface for non-precision approach FATO



Note 1. – For single take-off climb / Approach Surface. Transition surface extends perpendicular to far side of Safety Area.

Note 2. – Doc.8168, Vol II, Part IV, Helicopters, details further obstacle limitation surface requirements associated with a VSS.

Figure A87-5. Transitional surfaces for an instrument FATO with a non-precision and/or precision approach

SURFACE and DIMENSIONS		
APPROACH SURFACE		
Width of inner edge		Width of safety area boundary
Location of inner edge		
First Section		
Divergence	– day	16%
	– night	
Length	– day	2 500 m
	– night	
Outer width	– day	890 m
	– night	
Slope (maximum)		3.33%
Second Section		
Divergence	– day	–
	– night	
Length	– day	–
	– night	
Outer width	– day	–
	– night	
Slope (maximum)		–
Third Section		
Divergence		–
Length	– day	–
	– night	
Outer width	– day	–
	– night	
Slope (maximum)		–
TRANSITIONAL		
Slope		20%
Height		45 m

Table A87-1. Dimensions and slopes of obstacle limitation surfaces Instrument (Non-precision) FATO

Surface and dimensions	3° approach Height above FATO				6° approach Height above FATO			
	90 m (300 ft)	*60 m (200 ft)*	*45 m (150 ft)*	*30 m (100 ft)*	*90 m (300 ft)*	*60 m (200 ft)*	*45 m (150 ft)*	*30 m (100 ft)*
APPROACH SURFACE								
Length of inner edge	90 m	90 m	90 m	90 m	90 m	90 m	90 m	90 m
Distance from end of FATO	60 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m
Divergence each side to height above FATO	25%	25%	25%	25%	25%	25%	25%	25%
Distance to height above FATO	1 745 m	1 163 m	872 m	581 m	870 m	580 m	435 m	290 m
Width at height above FATO	962 m	671 m	526 m	380 m	521 m	380 m	307.5 m	235 m
Divergence to parallel section	15%	15%	15%	15%	15%	15%	15%	15%
Distance to parallel section	2 793 m	3 763 m	4 246 m	4 733 m	4 250 m	4 733 m	4 975 m	5 217 m
Width of parallel section	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m
Distance to outer edge	5 462 m	5 074 m	4 882 m	4 686 m	3 380 m	3 187 m	3 090 m	2 993 m
Width at outer edge	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m
Slope of first section	2.5% (1:40)	2.5% (1:40)	2.5% (1:40)	2.5% (1:40)	5% (1:20)	5% (1:20)	5% (1:20)	5% (1:20)
Length of first section	3 000 m	3 000 m	3 000 m	3 000 m	1 500 m	1 500 m	1 500 m	1 500 m
Slope of second section	3% (1:33..3)	3% (1:33..3)	3% (1:33..3)	3% (1:33..3)	6% (1:16.66)	6% (1:16.66)	6% (1:16.66)	6% (1:16.66)
Length of second section	2 500 m	2 500 m	2 500 m	2 500 m	1 250 m	1 250 m	1 250 m	1 250 m
Total length of surface	10 000 m	10 000 m	10 000 m	10 000 m	8 500 m	8 500 m	8 500 m	8 500 m
TRANSITIONAL								
Slope	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%
Height	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m

Table A~~8~~7-2. Dimensions and slopes of obstacle limitation surfaces
Instrument (Precision) FATO

SURFACE and DIMENSIONS		*Instrument*
TAKE-OFF CLIMB		
Width of inner edge		90 m
Location of inner edge		Boundary of end of clearway
First Section		
Divergence	– day	30%
	– night	
Length	– day	2 850 m
	– night	
Outer width	– day	1 800 m
	– night	
Slope (maximum)		3.5%
Second Section		
Divergence	– day	parallel
	– night	
Length	– day	1 510 m
	– night	
Outer width	– day	1 800 m
	– night	
Slope (maximum)		3.5%*
Third Section		
Divergence		parallel
Length	– day	7 640 m
	– night	
Outer width	– day	1 800 m
	– night	
Slope (maximum)		2%

* This slope exceeds the maximum mass one-engine-inoperative climb gradient of many helicopters which are currently operating.

STRAIGHT TAKE-OFF

Table A~~8~~7-3. Dimensions and slopes of obstacle limitation surfaces

~~8~~7.5 VISUAL AIDS

~~8~~7.5.1 Lights

~~8~~7.5.1.1 Approach Lighting Systems

. . .

SURFACE AND DIMENSIONS	NON-PRECISION FATO	
Length of inner edge	Width of safety area	
Distance from end of FATO	60 m	
Divergence	15%	
Total length	2 500m	
Slope	PAPI	A[a] – 0.57°
	HAPI	A[b] – 0.65°
	APAPI	A[a] – 0.9°

a. As indicated in MOS Figures 9.8-3.
b. The length of the upper boundary of the “below slope” signal.

Table A~~8~~7-4. Dimensions and slopes of the obstacle protection surface

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AMENDED REGULATION AFTER REVISION:

MANUAL OF STANDARDS FOR AERODROMES, 2ND EDITION

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Chapter 15 HELIPORT STANDARDS

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Appendix 7. For instrument heliports with non-precision and/or precision approaches and instrument departures

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Section 15.3 Aeronautical data for heliports

15.3.1 Aeronautical Data

15.3.1.1 Determination and reporting of aerodrome-related aeronautical data shall be in accordance with the accuracy and integrity classification required to meet the needs of the end-user of aeronautical data.

Note.— Specifications concerning the accuracy and integrity classification of heliport-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

15.3.1.2 Digital data error detection techniques shall be used during the transmission and/or storage of aeronautical data and digital data sets.

Note:— Detailed specifications concerning digital data error detection techniques are contained in PANS-AIM (Doc 10066).

. . .

15.3.4 Heliport dimensions and related information

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15.3.4.7 The geographical coordinates of obstacles in Area 2 (the part within the heliport boundary) and in Area 3 shall be measured and reported to CAAP AIS in degrees, minutes, seconds and tenths of a second. In addition, the top elevation, type, marking and lighting (if any) of obstacles shall be reported to the CAAP AIS.

Note: - 1. See PANS-AIM (Doc 10066) Appendix 8 for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in Areas 2 and 3.

Note: - 2. PANS-AIM (Doc 10066), provides requirements for obstacle data determination in Areas 2 and 3.

. . .

15.3.6 Coordination between aeronautical information services and heliport authorities

. . .

15.3.6.3 Of a particular importance are changes to aeronautical information that affect charts and/or computer-based navigation systems which qualify to be notified by the Aeronautical Information Regulation and Control (AIRAC) system, as specified in CAR-ANS Part 15.6.2. The predetermined, internationally agreed AIRAC effective dates shall be observed by the responsible heliport services when submitting the raw information/data to aeronautical information services.

Note.— Detailed specifications concerning the AIRAC system are contained in PANS-AIM (Doc 10066), Chapter 6.

15.3.6.4 The heliport services responsible for the provision of raw aeronautical information/data to the aeronautical information services shall do that while taking into account accuracy and integrity requirements which are vital to meet the needs of the end-user of aeronautical data.

Note 1.— Specifications concerning the accuracy and integrity classification of heliport-related aeronautical data are contained in PANS-AIM (Doc 10066), Appendix 1.

Note 2.— Specifications for the issue of a NOTAM is contained in CAR-ANS Part 15.5 (15.6) and PANS-AIM (Doc 10066) Appendices 3 and 4, respectively.

Note 3.— The AIRAC information is distributed by the AIS at least 42 days in advance of the AIRAC effective dates with the objective of reaching recipients at least 28 days in advance of the effective date.

Note 4.— The schedule of the predetermined internationally agreed AIRAC common effective dates at intervals of 28 days, including 19 November 2009, and guidance for the AIRAC use are contained in the Aeronautical Information Services Manual (Doc 8126, Chapter 2, 2.6).

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Appendix 7. For instrument heliports with non-precision and/or precision approaches and instrument departures

7.1 GENERAL

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7.2 HELIPORT DATA

7.2.1 Heliport elevation

. . .

7.2.2 Heliport dimensions and related information

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7.3 PHYSICAL CHARACTERISTICS

7.3.1 Surface-level and elevated heliports

7.3.1.1 Safety areas

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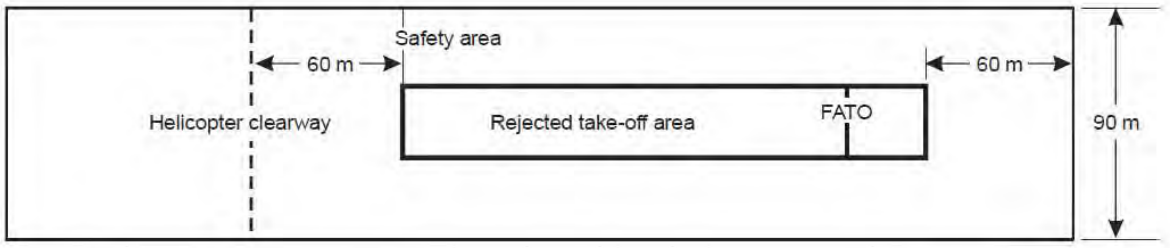


Figure A7-1 Safety area for Instrument FATO

7.4 OBSTACLE ENVIRONMENT

7.4.1 Obstacle limitation surfaces and sectors

7.4.1.1 Approach surface

. . .

7.4.2 Obstacle limitation requirements

7.4.2.1 The following obstacle limitation surfaces shall be established for an instrument FATO with a non-precision and/or precision approach:

. . .

Note: - See MOS Figures A7-2 to A7-5.

7.4.2.2 The slopes of the obstacle limitation surfaces shall not be greater than, and their other dimensions not less than, those specified in MOS Tables A7-1 to A7-3.

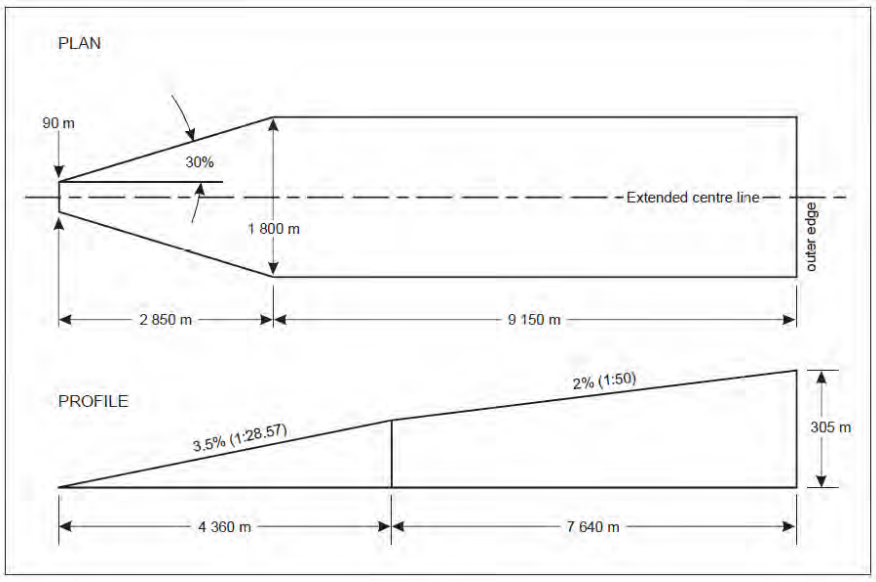


Figure A7-2. Take-off climb surface for instrument FATO

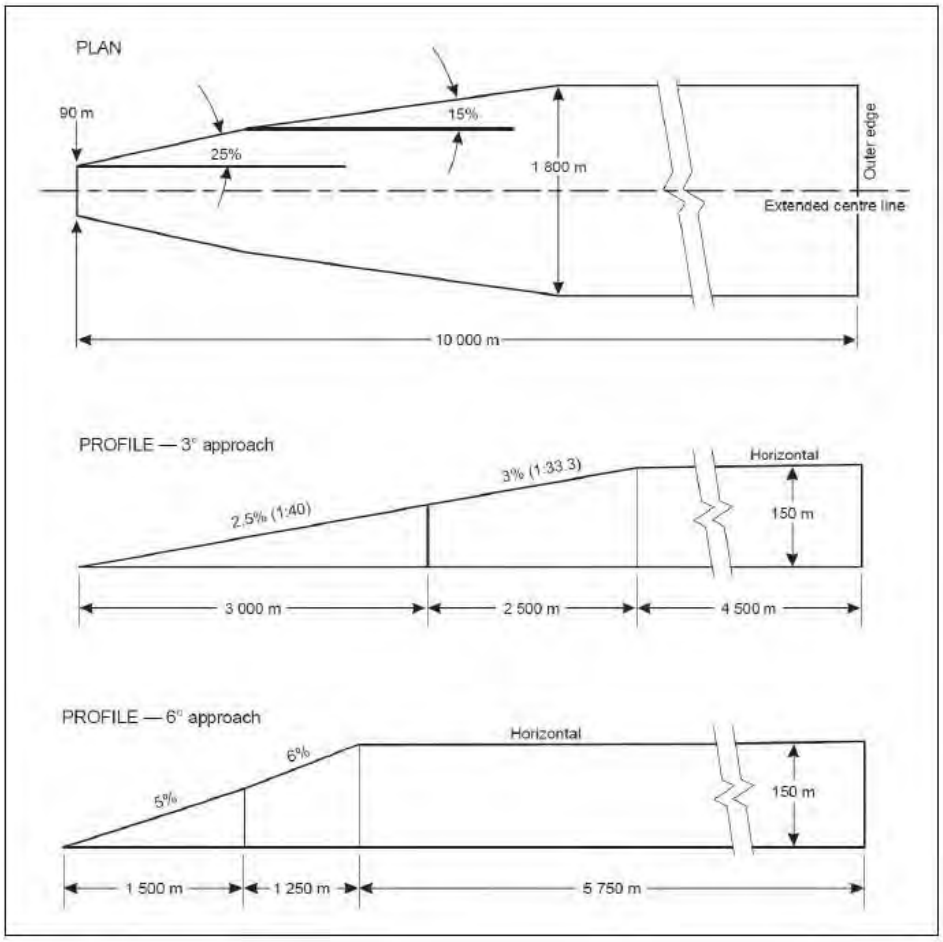


Figure A7-3. Approach surface for precision approach FATO

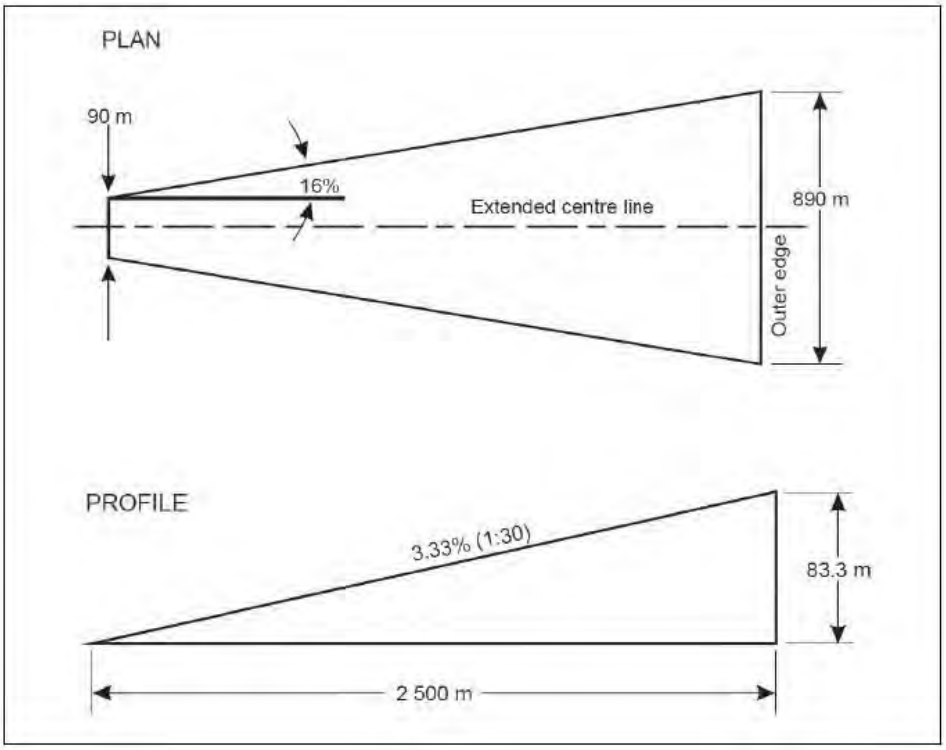
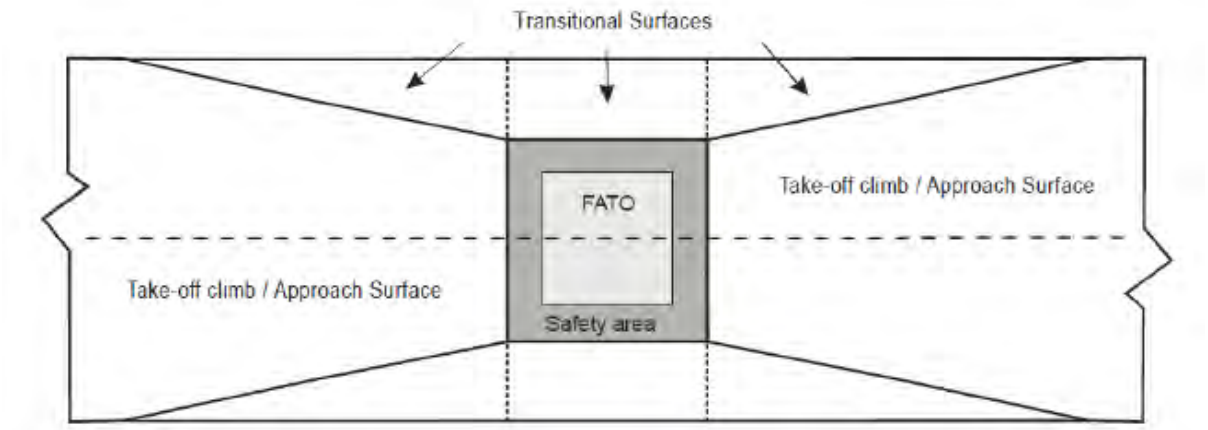


Figure A7-4. Approach surface for non-precision approach FATO



Note 1. – For single take-off climb / Approach Surface. Transition surface extends perpendicular to far side of Safety Area.

Note 2. – Doc.8168, Vol II, Part IV, Helicopters, details further obstacle limitation surface requirements associated with a VSS.

Figure A7-5. Transitional surfaces for an instrument FATO with a non-precision and/or precision approach

SURFACE and DIMENSIONS		
APPROACH SURFACE		
Width of inner edge		Width of safety area boundary
Location of inner edge		
First Section		
Divergence	– day	16%
	– night	
Length	– day	2 500 m
	– night	
Outer width	– day	890 m
	– night	
Slope (maximum)		3.33%
Second Section		
Divergence	– day	–
	– night	
Length	– day	–
	– night	
Outer width	– day	–
	– night	
Slope (maximum)		–
Third Section		
Divergence		–
Length	– day	–
	– night	
Outer width	– day	–
	– night	
Slope (maximum)		–
TRANSITIONAL		
Slope		20%
Height		45 m

Table A7-1. Dimensions and slopes of obstacle limitation surfaces Instrument (Non-precision) FATO

	3° approach				6° approach			
	Height above FATO				Height above FATO			
Surface and dimensions	*90 m (300 ft)*	*60 m (200 ft)*	*45 m (150 ft)*	*30 m (100 ft)*	*90 m (300 ft)*	*60 m (200 ft)*	*45 m (150 ft)*	*30 m (100 ft)*
APPROACH SURFACE								
Length of inner edge	90 m	90 m	90 m	90 m	90 m	90 m	90 m	90 m
Distance from end of FATO	60 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m
Divergence each side to height above FATO	25%	25%	25%	25%	25%	25%	25%	25%
Distance to height above FATO	1 745 m	1 163 m	872 m	581 m	870 m	580 m	435 m	290 m
Width at height above FATO	962 m	671 m	526 m	380 m	521 m	380 m	307.5 m	235 m
Divergence to parallel section	15%	15%	15%	15%	15%	15%	15%	15%
Distance to parallel section	2 793 m	3 763 m	4 246 m	4 733 m	4 250 m	4 733 m	4 975 m	5 217 m
Width of parallel section	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m
Distance to outer edge	5 462 m	5 074 m	4 882 m	4 686 m	3 380 m	3 187 m	3 090 m	2 993 m
Width at outer edge	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m	1 800 m
Slope of first section	2.5% (1:40)	2.5% (1:40)	2.5% (1:40)	2.5% (1:40)	5% (1:20)	5% (1:20)	5% (1:20)	5% (1:20)
Length of first section	3 000 m	3 000 m	3 000 m	3 000 m	1 500 m	1 500 m	1 500 m	1 500 m
Slope of second section	3% (1:33..3)	3% (1:33..3)	3% (1:33..3)	3% (1:33..3)	6% (1:16.66)	6% (1:16.66)	6% (1:16.66)	6% (1:16.66)
Length of second section	2 500 m	2 500 m	2 500 m	2 500 m	1 250 m	1 250 m	1 250 m	1 250 m
Total length of surface	10 000 m	10 000 m	10 000 m	10 000 m	8 500 m	8 500 m	8 500 m	8 500 m
TRANSITIONAL								
Slope	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%
Height	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m

Table A7-2. Dimensions and slopes of obstacle limitation surfaces Instrument (Precision) FATO

SURFACE and DIMENSIONS		*Instrument*
TAKE-OFF CLIMB		
Width of inner edge		90 m
Location of inner edge		Boundary of end of clearway
First Section		
Divergence	– day	30%
	– night	
Length	– day	2 850 m
	– night	
Outer width	– day	1 800 m
	– night	
Slope (maximum)		3.5%
Second Section		
Divergence	– day	parallel
	– night	
Length	– day	1 510 m
	– night	
Outer width	– day	1 800 m
	– night	
Slope (maximum)		3.5%*
Third Section		
Divergence		parallel
Length	– day	7 640 m
	– night	
Outer width	– day	1 800 m
	– night	
Slope (maximum)		2%

* This slope exceeds the maximum mass one-engine-inoperative climb gradient of many helicopters which are currently operating.

STRAIGHT TAKE-OFF

Table A7-3. Dimensions and slopes of obstacle limitation surfaces

7.5 VISUAL AIDS

7.5.1 Lights

7.5.1.1 Approach Lighting Systems

. . .

SURFACE AND DIMENSIONS	NON-PRECISION FATO	
Length of inner edge	Width of safety area	
Distance from end of FATO	60 m	
Divergence	15%	
Total length	2 500m	
Slope	PAPI	A[a] – 0.57°
	HAPI	A[b] – 0.65°
	APAPI	A[a] – 0.9°

a. As indicated in MOS Figures 9.8-3.
b. The length of the upper boundary of the “below slope” signal.

Table A7-4. Dimensions and slopes of the obstacle protection surface

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i. ***Separability Clause.*** **-** If, for any reason, any provision of this Memorandum Circular is declared invalid or unconstitutional, the other part or parts thereof which are not affected thereby shall continue to be in full force and effect.

ii. ***Repealing Clause.*** **-** All orders, rules, regulations and issuances, or parts thereof which are inconsistent with this Memorandum Circular are hereby repealed, superseded or modified accordingly.

iii. ***Determination of changes***. – To highlight the amendments and/or revisions in the Memorandum Circular, the deleted text shall be shown with strikethrough and the new inserted text shall be highlighted with grey shading, as illustrated below:

1. Text deleted: ~~Text to be deleted is shown with a line through it.~~
2. New text inserted: New text is highlighted with grey shading.
3. New text replacing existing text: ~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.

iv. ***Effectivity Clause***. - This Memorandum Circular shall take effect fifteen (15) days after publication in a requisite single newspaper of general circulation or the Official Gazette and a copy filed with the U.P. Law Center - Office of the National Administrative Register.

So Ordered. Signed this **19th** day of **June** 2019, at the Civil Aviation Authority of the Philippines, MIA Road, Pasay City, Metro Manila, 1301.

CAPTAIN JIM C. SYDIONGCO