



NOTICE OF PROPOSED AMENDMENT 2019-04

Issue 01

Date of Issue: 26 August 2019

CAR Part IX: CAR-ADR Aerodromes

A review of CAR Part IX was recently conducted following the publication by ICAO of the Eighth Edition to ICAO Annex 14 Volume I Aerodrome Design and Operations, which became effective 8 November 2018.

NOTES ON THE PRESENTATION OF THE AMENDMENT TO CAR Part IX

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~

text to be deleted

New text to be inserted is highlighted with grey shading.

new text to be inserted

~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.

new text to replace existing text

RECOMMENDATION:

This notice is published to announce to the public amendment proposals to CAR Part IX Issue 6 and to entitle all concerned parties to:

- Review the attached proposed regulation;
- Agree on the date of applicability to the proposed change set to 1 January 2020; and
- Submit their comments on the changes and date of applicability online through the GCAA website by 1 November 2019.

Comments must be submitted through the GCAA Website – E-Publication – Notice of Proposed Amendment, using the Action of “Submit NPA Feedback Request”. Any comments submitted using another means will not be considered.

Comments and Responses may be viewed in the Comments Response Document CRD pertaining to this NPA on the GCAA website.



CHAPTER 1

GENERAL

1.3 DEFINITIONS

Outer Main Gear Wheel Span (OMGWS). The distance between the outside edges of the main gear wheels.

Orthometric Height. Height of a point related to the geoid, generally presented as an MSL elevation.



APPENDIX 7

AERODROME REFERENCE CODE

Introductory Note: The intent of the reference code is to provide a simple method for interrelating the numerous specifications concerning the characteristics of aerodromes so as to provide a series of aerodrome facilities that are suitable for the aircraft that are intended to operate at the aerodrome. The code is not intended to be used for determining runway length or pavement strength requirements. The code is composed of two elements which are related to the aircraft performance characteristics and dimensions. Element 1 is a number based on the Aeroplane Reference Field Length and element 2 is a letter based on the aircraft wing span ~~and outer main gear wheel span~~. ~~A particular specification is related to the more appropriate of the two elements of the code or to an appropriate combination of the two code elements~~. The Code Letter or number within an element selected for design purposes is related to the critical aircraft characteristics for which the facility is provided. When applying ICAO Annex 14, Volume I, first identify the aircraft which the aerodrome is intended to serve ~~are first identified~~ and then ~~determine~~ the two elements of the code

- 7.1 An Aerodrome Reference Code — Code Number and letter — which is selected for aerodrome planning purposes shall be determined in accordance with the characteristics of the aircraft for which an aerodrome facility is intended.
- 7.2 The Aerodrome Reference Code Numbers and letters shall have the meanings assigned to them in Table App 7-1.
- 7.3 The Code Number for element 1 shall be determined from Table App 7-1, ~~column 1~~, selecting the Code Number corresponding to the highest value of the Aeroplane Reference Field Lengths of the aircraft for which the runway is intended.
Note: The determination of the Aeroplane Reference Field Length is solely for the selection of a Code Number and is not intended to influence the actual runway length provided.
- 7.4 The Code Letter for element 2 shall be determined from Table App 7-1, ~~column 3~~, by selecting the Code Letter which corresponds to the greatest wingspan, ~~or the greatest outer main gear wheel span, whichever gives the more demanding Code Letter of the aircraft of the aeroplane for which the facility is intended.~~

Note: Guidance to Aerodrome Operator concerning determination of the Aerodrome Reference Code is given in the Aerodrome Design Manual (ICAO Doc 9157), Parts 1 and 2.



Table App 7-1

Aerodrome Reference Code

Code element 1			Code element 2	
Code number (1)	Aeroplane reference field length (2)	Code letter (3)	Wingspan (4)	Outer main-gear wheel span ^a (5)
1	Less than 800 m	A	Up to but not including 15 m	Up to but not including 4.5 m
2	800 m up to but not including 1 200 m	B	15 m up to but not including 24 m	4.5 m up to but not including 6 m
3	1 200 m up to but not including 1 800 m	C	24 m up to but not including 36 m	6 m up to but not including 9 m
4	1 800 m and over	D	36 m up to but not including 52 m	9 m up to but not including 14 m
		E	52 m up to but not including 65 m	9 m up to but not including 14 m
		F	65 m up to but not including 80 m	14 m up to but not including 16 m

^a-Distance between the outside edges of the main-gear wheels.



CODE ELEMENT ONE	
Code Number	Aeroplane reference field length
1	Less than 800 m
2	800 m up to but not including 1 200 m
3	1 200 m up to but not including 1 800 m
4	1 800 m and over

CODE ELEMENT TWO	
Code Letter	Wing Span
A	Up to but not including 15 m
B	15 m up to but not including 24 m
C	24 m up to but not including 36 m
D	36 m up to but not including 52 m
E	52 m up to but not including 65 m
F	65 m up to but not including 80 m

Note: Guidance on planning for aeroplanes with wingspans greater than 80 m is given in the ICAO Aerodrome Design Manual (Doc 9157), Parts 1 and 2.



APPENDIX 8 PHYSICAL CHARACTERISTICS

8.3 RUNWAYS

8.3.7 Width of Runways

8.3.7.1 When new or rehabilitated runways are planned, then each shall be designed based on the Aerodrome Reference Code for the largest aircraft type intended to operate.

8.3.7.2 The width of a runway shall be not less than the appropriate dimension specified in the following tabulation:

Code Number	Code Letter					
	A	B	C	D	E	F
1 ^a	18 m	18 m	23 m	—	—	—
2 ^a	23 m	23 m	30 m	—	—	—
3	30 m	30 m	30 m	45 m	—	—
4	—	—	45 m	45 m	45 m	60 m

a The width of a precision approach runway should be not less than 30 metres where the Code Number is 1 or 2.

Code Number	Outer Main Gear Wheel Span (OMGWS)			
	Up to but not including 4.5 m	4.5 m up to but not including 6 m	6 m up to but not including 9 m	9 m up to but not including 15
1 ^a	18 m	18 m	23 m	—
2 ^a	23 m	23 m	30 m	—
3	30 m	30 m	30 m	45 m
4	—	—	45 m	45 m

a. The width of a precision approach runway should be not less than 30 m where the code number is 1 or 2.

*Note 1: The combinations of code numbers and letters **OMGWS** for which widths are specified have been developed for typical aeroplane characteristics.*

Note 2: Factors affecting runway width are given in the ICAO Aerodrome Design Manual (Doc 9157), Part 1.



8.3.9.8 Runway Shoulders

a) General

Note: Guidance on characteristics and treatment of runway shoulders is given in ICAO Annex 14, Volume 1, Attachment A, Section 8, and in the ICAO Aerodrome Design Manual (Doc 9157), Part 1.

Runway shoulders shall be provided for a runway where the Code Letter is D, or E or F, and the runway width is less than 60 m.

~~ii) Runway shoulders shall be provided for a runway where the Code Letter is F.~~

b) Width of runway shoulders

~~i) The~~ For aeroplanes with OMGWS from 9 m up to but not including 15 m, the runway shoulders shall extend symmetrically on each side of the runway so that the overall width of the runway and its shoulders is not less than:

A) 60 m where the Code Letter is D or E; and

B) 60 m where the code letter is F with two or three engined aeroplanes; and

C) 75 m where the Code Letter is F with four (or more) engined aeroplanes.

~~ii) Code E runways used for code F aircraft operations shall be provided with shoulders that extend symmetrically on each side of the runway and consist of:~~

~~A) Paved inner shoulders 7.5 metres in width of a load bearing strength on either side that are able to support unintended aircraft run-off; and~~

~~B) Outer shoulders 7.5 metres in width on either side, paved or stabilised that are resistant to engine blast erosion, prevent engine ingestion and are able to support emergency and service vehicles.~~

c) Surface of Runway Shoulders

i) The surface of a runway shoulder should be prepared or constructed so as to resist erosion and prevent the ingestion of the surface material by aeroplane engines.

ii) Runway shoulders for code letter F aeroplanes should be paved to a minimum overall width of runway and shoulder of 60 m.

d) Slopes on Runway Shoulders

The surface of the shoulder that abuts the runway shall be flush with the surface of the runway and its transverse slope should not exceed 2.5 per cent.



e) Strength of Runway Shoulders

A-The portion of a runway shoulder between the runway edge and a distance of 30 m from the runway centre line shall be prepared or constructed so as to be capable, in the event of an aircraft running off the runway, of supporting the aircraft without inducing structural damage to the aeroplane and of supporting ground vehicles which may operate on the shoulder.

Note: Guidance on strength of runway shoulders is given in the ICAO Aerodrome Design Manual (Doc 9157), Part 1.

8.3.9.9 Runway Turn Pads

a) General

- vi) The design of a runway turn pad shall be such that, when the cockpit of the aeroplane for which the turn pad is intended remains over the turn pad marking, the clearance distance between any wheel of the aeroplane landing gear and the edge of the turn pad shall be not less than that given by the following tabulation:

Code-Letter	Clearance
A	1.5 m
B	2.25 m
C	3 m if the turn pad is intended to be used by aeroplanes with a wheel base less than 18 m; or 4.5 m if the turn pad is intended to be used by aeroplanes with a wheel base equal to or greater than 18 m.
D	4.5 m
E	4.5 m
F	4.5 m



Outer main gear wheel span			
Up to but not including 4.5 m	4.5 m up to but not including 6 m	6 m up to but not including 9 m	9 m up to but not including 15 m
1.5 m	2.25 m	3 m ^a or 4 m ^b	4 m
a if the turn pad is intended to be used by aeroplanes with a wheel base less than 18 m.			
b if the turn pad is intended to be used by aeroplanes with a wheel base equal to or greater than 18 m.			

Note: Wheel base means the distance from the nose gear to the geometric centre of the main gear.

vii) ~~Where severe weather conditions and resultant lowering of surface friction characteristics prevail, a larger wheel-to-edge clearance of 6 m shall be provided where the Code Letter is E or F.~~

8.3.9.10 **Runway Strips**

c) Width of Runway Strips

i) A strip including a precision approach runway shall, extend laterally to a distance of at least:

A) ~~150 m~~ 140 m where the Code Number is 3 or 4; and

B) ~~75 m~~ 70 m where the Code Number is 1 or 2;

on each side of the centre line of the runway and its extended centre line throughout the length of the strip.

ii) A strip including a non-precision approach runway should extend laterally to a distance of at least:

A) ~~150 m~~ 140 m where the Code Number is 3 or 4; and

B) ~~75 m~~ 70 m where the Code Number is 1 or 2;

on each side of the centre line of the runway and its extended centre line throughout the length of the strip.

iii) A strip including a non-Instrument Runway shall extend on each side of the centre line of the runway and its extended centre line throughout the length of the strip, to a distance of at least:

A) 75 m where the Code Number is 3 or 4;



- B) 40 m where the Code Number is 2; and
- C) 30 m where the Code Number is 1.

8.4 TAXIWAYS

8.4.1 General

- 8.4.1.1 Taxiways shall be provided to permit the safe and expeditious surface movement of aircraft.
- 8.4.1.2 Sufficient entrance and exit taxiways for a runway shall be provided to expedite the movement of aircraft to and from the runway and provision of rapid exit taxiways considered when traffic volumes are high.
- 8.4.1.3 The design of a taxiway shall be such that, when the cockpit of the aircraft for which the taxiway is intended remains over the taxiway centre line markings, the clearance distance between the outer main wheel of the aircraft and the edge of the taxiway shall be not less than that given by the following tabulation:

Code Letter	Clearance
A	1.5 m
B	2.25 m
C	3 m if the taxiway is intended to be used by aircraft with a wheel base less than 18 m; or 4.5 m if the taxiway is intended to be used by aircraft with a wheel base equal to or greater than 18 m.
D	4.5 m
E	4.5 m
F	4.5 m



Outer main gear wheel span			
Up to but not including 4.5 m	4.5 m up to but not including 6 m	6 m up to but not including 9 m	9 m up to but not including 15 m
1.5 m	2.25 m	3.0 m ^{a,b} 4 m ^c	4.0 m
a. On straight portions. b. On curved portions if the taxiway is intended to be used by aeroplanes with a wheel base less than 18 m. c. On curved portions if the taxiway is intended to be used by aeroplanes with a wheel base equal to or greater than 18 m.			

Note 1: Wheel base means the distance from the nose gear to the geometric centre of the main gear.

Note 2: Where the code letter is F and the traffic density is high, a wheel-to-edge clearance greater than 4.5 m may be provided to permit higher taxiing speeds.

8.4.2 Width of Taxiways

A straight portion of a taxiway should have a width of not less than that given by the following tabulation:



Code Letter	Taxiway Width
A	7.5 m
B	10.5 m
C	15 m if the taxiway is intended to be used by aircraft with a wheel base less than 18 m; or 18 m if the taxiway is intended to be used by aircraft with a wheel base equal to or greater than 18 m.
D	18 m if the taxiway is intended to be used by aircraft with an outer main gear wheel span of less than 9 m; or 23 m if the taxiway is intended to be used by aircraft with an outer main gear wheel span equal to or greater than 9 m.
E	23 m
F	25 m

Outer main gear wheel span			
Up to but not including 4.5 m	4.5 m up to but not including 6 m	6 m up to but not including 9 m	9 m up to but not including 15 m
7.5 m	10.5 m	15 m	23 m

8.4.5 Taxiway Minimum Separation Distances

The separation distance between the centre line of a taxiway and the centre line of a runway, the centre line of a parallel taxiway or an object should not be less than the appropriate dimension specified in Table App 8-1.



Table App 8-1

Taxiway Minimum Separation Distances

Code Letter	Distance between taxiway centre line and runway centre line								Taxiway centre line to taxiway centre line (m)	Taxiway, other than aircraft stand taxilane, centre line to object (m)	Aircraft stand taxilane centre line to aircraft stand taxilane centre line (m)	Aircraft stand taxilane centre line to object (m)
	Instrument Runways Code Number				Non-Instrument Runways Code Number							
(1)	1	2	3	4	1	2	3	4	(10)	(11)	(12)	(13)
A	82.5 77.5	82.5 77.5	-	-	37.5	47.5	-	-	23	15.5	19.5	12
B	87 82	87 82	152	-	42	52	87	-	32	20	28.5	16.5
C	88	88	468 158	158	48	58	93	93	44	26	40.5	22.5
D	-	-	476 166	476 166	-	-	101	101	63	37	59.5	33.5
E	-	-	172.5	182.5 172.6	-	-	107.5	107.5	76	43.5	72.5	40
F	-	-	180	490 180	-	-	115	115	91	51	87.5	47.5

Note 1 — The separation distances shown in columns (2) to (9) represent ordinary combinations of runways and taxiways.

Note 2 — The distances in columns (2) to (9) do not guarantee sufficient clearance behind a holding aeroplane to permit the passing of another aeroplane on a parallel taxiway.

Note 3 — The separation distances, as prescribed in Table App 8-1, may have to be increased on taxiway curves to accommodate the wing sweep of the critical aeroplane or on dual parallel taxiways when, as for example, used as bypass taxiways.

8.4.11 TAXIWAY SHOULDERS

8.4.11.1 Straight portions of a taxiway where the Code Letter is C, D, E or F shall be provided with shoulders which extend symmetrically on each side of the taxiway so that the overall width of the taxiway and its shoulders on straight portions is not less than:



- a) ~~60 m~~ 44 m where the Code Letter is F
- b) ~~44 m~~ 38 m where the Code Letter is E
- c) ~~38 m~~ 34 m where the Code Letter is D
- d) 25 m where the Code Letter is C

8.4.15 GRADING OF TAXIWAY STRIPS

The centre portion of a taxiway strip shall provide a graded area to a distance from the centre line of the taxiway of *not less than*:

- ~~a) 30 m where the Code Letter is F~~
- ~~b) 22 m where the Code Letter is E;~~
- ~~c) 19 m where the Code Letter is D~~
- ~~d) 12.5 m where the Code Letter is B or C~~
- ~~e) 11 m where the Code Letter is A~~
- a) 22 m where the OMGWS is 9 m up to but not including 15 m where the code letter is F;
- b) 19 m where the OMGWS is 9 m up to but not including 15 m where the code letter is E;
- c) 18.5 m where the OMGWS is 9 m up to but not including 15 m where the code letter is D;
- d) 12.5 m where the OMGWS is 6 m up to but not including 9 m
- e) 11 m where the OMGWS is 4.5 m up to but not including 6 m;
- f) 10.25 m where the OMGWS is up to but not including 4.5 m.



APPENDIX 13
OBSTACLE CONTROL & MARKING



Table App 13-1

**Dimensions and Slopes of Obstacle Limitation Surfaces
Approach Runways**

APPROACH RUNWAYS											
Surface and dimensions ^a (1)	RUNWAY CLASSIFICATION										
	Non-instrument Code number				Non-precision approach Code number			Precision approach category I Code number			II or III Code number
	1 (2)	2 (3)	3 (4)	4 (5)	1,2 (6)	3 (7)	4 (8)	1,2 (9)	3,4 (10)	3,4 (11)	
CONICAL											
Slope	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	
Height	35 m	55 m	75 m	100 m	60 m	75 m	100 m	60 m	100 m	100 m	
INNER HORIZONTAL											
Height	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m	
Radius	2 000 m	2 500 m	4 000 m	4 000 m	3 500 m	4 000 m	4 000 m	3 500 m	4 000 m	4 000 m	
INNER APPROACH											
Width	—	—	—	—	—	—	—	90 m	120 m ^e	120 m ^e	
Distance from threshold	—	—	—	—	—	—	—	60 m	60 m	60 m	
Length	—	—	—	—	—	—	—	900 m	900 m	900 m	
Slope	—	—	—	—	—	—	—	2.5%	2%	2%	
APPROACH											
Length of inner edge	60 m	80 m	150 m	150 m	150 m	300 m	300 m	150 m	300 m	300 m	
Distance from threshold	30 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m	
Divergence (each side)	10%	10%	10%	10%	15%	15%	15%	15%	15%	15%	
First section											
Length	1 600 m	2 500 m	3 000 m	2 000 m	2 500 m	3 000 m	3 000 m	3 000 m	3 000 m	3 000 m	
Slope	5%	4%	3.33%	2.5%	3.33%	2%	2%	2.5%	2%	2%	
Second section											
Length	—	—	—	—	—	3 600 m ^b	3 600 m ^b	12 000 m	3 600 m ^b	3 600 m ^b	
Slope	—	—	—	—	—	2.5%	2.5%	3%	2.5%	2.5%	
Horizontal section											
Length	—	—	—	—	—	8 400 m ^b	8 400 m ^b	—	8 400 m ^b	8 400 m ^b	
Total length	—	—	—	—	—	15 000 m	15 000 m	15 000 m	15 000 m	15 000 m	
TRANSITIONAL											
Slope	20%	20%	14.3%	14.3%	20%	14.3%	14.3%	14.3%	14.3%	14.3%	
INNER TRANSITIONAL											
Slope	—	—	—	—	—	—	—	40%	33.3%	33.3%	
BALKED LANDING SURFACE											
Length of inner edge	—	—	—	—	—	—	—	90 m	120 m ^e	120 m ^e	
Distance from threshold	—	—	—	—	—	—	—	^c	1 800 m ^d	1 800 m ^d	
Divergence (each side)	—	—	—	—	—	—	—	10%	10%	10%	
Slope	—	—	—	—	—	—	—	4%	3.33%	3.33%	



APPROACH RUNWAYS											
RUNWAY CLASSIFICATION											
	Non-instrument Code number				Non-precision approach Code number			Precision approach category I II or III Code number Code number			
	1	2	3	4	1, 2	3	4	1, 2	3, 4	3, 4	
Surface and dimensions ^a	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
CONICAL											
Slope	5 %	5 %	5 %	5 %	5 %	5 %	5 %	5 %	5 %	5 %	5 %
Height	35 m	55 m	75 m	100 m	60 m	75 m	100 m	60 m	100 m	100 m	100 m
INNER HORIZONTAL											
Height	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m	45 m
Radius	2 000 m	2 500 m	4 000 m	4 000 m	3 500 m	4 000 m	4 000 m	3 500 m	4 000 m	4 000 m	4 000 m
INNER APPROACH											
Width	-	-	-	-	-	-	-	-	90 m	120 m ^e	120 m ^e
Distance from threshold	-	-	-	-	-	-	-	-	60 m	60 m	60 m
Length	-	-	-	-	-	-	-	-	900 m	900 m	900 m
Slope	-	-	-	-	-	-	-	-	2.5 %	2 %	2 %
APPROACH											
Length of inner edge	60 m	80 m	150 m	150 m	140 m	280 m	280 m	140 m	280 m	280 m	280 m
Distance from threshold	30 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m	60 m
Divergence (each side)	10 %	10 %	10 %	10 %	15 %	15 %	15 %	15 %	15 %	15 %	15 %
First section											
Length	1 600 m	2 500 m	3 000 m	3 000 m	2 500 m	3 000 m	3 000 m	3 000 m	3 000 m	3 000 m	3 000 m
Slope	5 %	4 %	3.33 %	2.5 %	3.33 %	2 %	2 %	2.5 %	2 %	2 %	2 %
Second section											



Length	-	-	-	-	-	3 600 m ^b	3 600 m ^b	12 000 m	3 600 m ^b	3 600 m ^b
Slope	-	-	-	-	-	2.5 %	2.5 %	3 %	2.5 %	2.5 %
Horizontal section										
Length	-	-	-	-	-	8 400 m ^b	8 400 m ^b	-	8 400 m ^b	8 400 m ^b
Total length	-	-	-	-	-	15 000 m	15 000 m	15 000 m	15 000 m	15 000 m
TRANSITIONAL										
Slope	20 %	20 %	14.3 %	14.3 %	20 %	14.3 %	14.3 %	14.3 %	14.3 %	14.3 %
INNER TRANSITIONAL										
Slope	-	-	-	-	-	-	-	40 %	33.3 %	33.3 %
BALKED LANDING SURFACE										
Length of inner edge	-	-	-	-	-	-	-	90 m	120 m ^e	120 m ^e
Distance from threshold	-	-	-	-	-	-	-	^c	1 800 m ^d	1 800 m ^d
Divergence (each side)	-	-	-	-	-	-	-	10 %	10 %	10 %
Slope	-	-	-	-	-	-	-	4 %	3.33 %	3.33 %

- a) All dimensions are measured horizontally unless specified otherwise.
 b) Variable length (see Clause 13.2.2.3 or 13.2.3.5 in this Appendix)
 c) Distance to the end of strip
 d) Or end of runway whichever is less
 e) Where the Code Letter is F, the width is increased to 155 140 m. — For information on except for those aerodromes that accommodate a code letter F aeroplanes equipped with digital avionics that provide steering commands to maintain an established track during the go-around manoeuvre,

Note: -- See see-ICAO Circular 301 — New Larger Aeroplanes — Infringement of the Obstacle Free Zone: Operational Measures and Aeronautical Study.