

**AIRPORT STANDARDS DIRECTIVE 511
[ASD 511]
AERODROME MARKINGS**



**AIRPORTS STANDARD DIVISION
DEPARTMENT OF CIVIL AVIATION MALAYSIA**

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INTRODUCTION

This Airport Standards Directive contains specifications that prescribe the marking that shall be provided at aerodrome

This Directive has been written in general terms. Specific advice could be obtained from the Authority at:

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OBJECTIVE

This Airport Standards Directive [Directive] is intended to serve guidance to aerodrome operators pertaining to ICAO mandatory requirement on the marking of aerodromes.

The implementation of this Directive will ensure facilities, equipments and operational procedures at certified aerodromes are in compliance with SARPS specified in Annex 14 to the Convention on International Civil Aviation, and to national standards and practices as defined under Airport Standards Directives published by Director General of Civil Aviation.

APPLICABILITY

The specification in this directive shall apply for aerodromes used for international operations, in any state of Malaysia.

AUTHORITY

The Authority is the Director General of Civil Aviation Malaysia under the provision of Section 24O Civil Aviation Act 1969 (Act 3).

1. GENERAL

Interruption of runway markings

1.1 At an intersection of two (or more) runways the markings of the more important runway, except for the runway side stripe marking, shall be displayed and the markings of the other runway(s) shall be interrupted. The runway side stripe marking of the more important runway may be either continued across the intersection or interrupted.

1.2 The order of importance of runways for the display of runway markings should be as follows:

1st — precision approach runway;

2nd — non-precision approach runway; and

3rd — non-instrument runway.

1.3 At an intersection of a runway and taxiway the markings of the runway shall be displayed and the markings of the taxiway interrupted, except that runway side stripe markings may be interrupted.

See 8.17 regarding the manner of connecting runway and taxiway centre line markings.

Colour and conspicuity

1.4 Runway markings shall be white.

It has been found that, on runway surfaces of light colour, the conspicuity of white markings can be improved by outlining them in black.

It is preferable that the risk of uneven friction characteristics on markings be reduced in so far as practicable by the use of a suitable kind of paint.

Markings may consist of solid areas or a series of longitudinal stripes providing an effect equivalent to the solid areas.

1.5 Taxiway markings, runway turn pad markings and aircraft stand markings shall be yellow.

1.6 Apron safety lines shall be of a conspicuous colour which shall contrast with that used for aircraft stand markings.

1.7 At aerodromes where operations take place at night, pavement markings should be made with reflective materials designed to enhance the visibility of the markings.

Guidance on reflective materials is given in the Aerodrome Design Manual (Doc 91517), Part 4.

Unpaved taxiways

1.8 An unpaved taxiway should be provided, so far as practicable, with the markings prescribed for paved taxiways.

2. RUNWAY DESIGNATION MARKING

Application

2.1 A runway designation marking shall be provided at the thresholds of a paved runway.

2.2 A runway designation marking should be provided, so far as practicable, at the thresholds of an unpaved runway.

Location

2.3 A runway designation marking shall be located at a threshold as shown in Figure 1 as appropriate.

If the runway threshold is displaced from the extremity of the runway, a sign showing the designation of the runway may be provided for aeroplanes taking off.

Characteristics

2.4 A runway designation marking shall consist of a two-digit number and on parallel runways shall be supplemented with a letter. On a single runway, dual parallel runways and triple parallel runways the two-digit number shall be the whole number nearest the one-tenth of the magnetic North when viewed from the direction of approach. On four or more parallel runways, one set of adjacent runways shall be numbered to the nearest one-tenth magnetic azimuth and the other set of adjacent runways numbered to the next nearest one-tenth of the magnetic azimuth. When the above rule would give a single digit number, it shall be preceded by a zero.

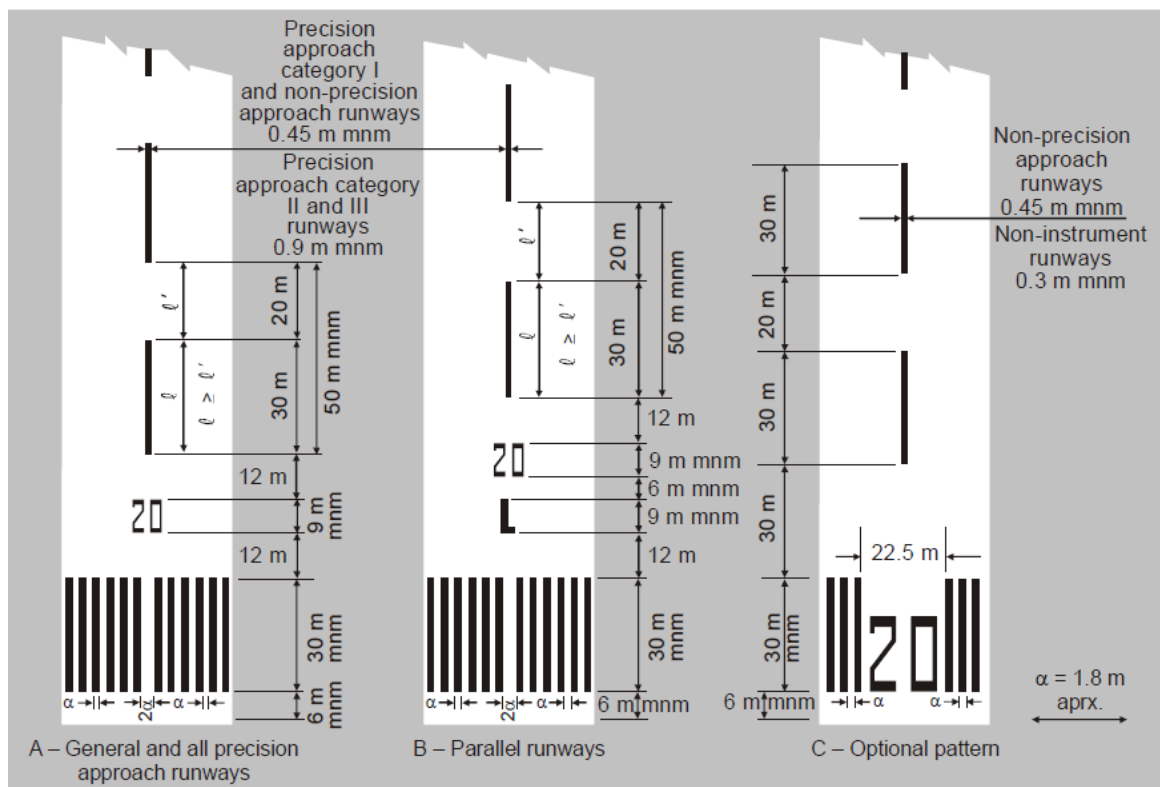


Figure 1 Runway designation, centre line and threshold markings

2.5 In the case of parallel runways, each runway designation number shall be supplemented by a letter as follows, in the order shown from left to right when viewed from the direction of approach:

- for two parallel runways: “L” “R”;
- for three parallel runways: “L” “C” “R”;
- for four parallel runways: “L” “R” “L” “R”;
- for five parallel runways: “L” “C” “R” “L” “R” or “L” “R” “L” “C” “R”; and
- for six parallel runways: “L” “C” “R” “L” “C” “R”.

2.6 The numbers and letters shall be in the form and proportion shown in Figure 5-3. The dimensions shall be not less than those shown in Figure 2, but where the numbers are incorporated in the threshold marking, larger dimensions shall be used in order to fill adequately the gap between the stripes of the threshold marking

3. RUNWAY CENTRE LINE MARKING

Application

3.1 A runway centre line marking shall be provided on a paved runway.

Location

3.2 A runway centre line marking shall be located along the centre line of the runway between the runway designation markings as shown in Figure 1, except when interrupted in compliance with 1.1.

Characteristics

3.3 A runway centre line marking shall consist of a line of uniformly spaced stripes and gaps. The length of a stripe plus a gap shall be not less than 50 m or more than 175 m. The length of each stripe shall be at least equal to the length of the gap or 30 m, whichever is greater.

3.4 The width of the stripes shall be not less than:

- 0.90 m on precision approach category II and III runways;
- 0.45 m on non-precision approach runways where the code number is 3 or 4, and precision approach category runways; and
- 0.30 m on non-precision approach runways where the code number is 1 or 2, and on non-instrument runways.

4. THRESHOLD MARKING

Application

4.1 A threshold marking shall be provided at the threshold of a paved instrument runway, and of a paved non- instrument runway where the code number is 3 or 4 and the runway is intended for use by international commercial air transport.

4.2 A threshold marking should be provided at the threshold of a paved non-instrument runway where the code number is 3 or 4 and the runway is intended for use by other than international commercial air transport.

4.3 A threshold marking should be provided, so far as practicable, at the thresholds of an unpaved runway.

The Aerodrome Design Manual (Doc 91517), Part 4, shows a form of marking which has been found satisfactory for the marking of downward slopes immediately before the threshold.

Location

4.4 The stripes of the threshold marking shall commence 6 m from the threshold.

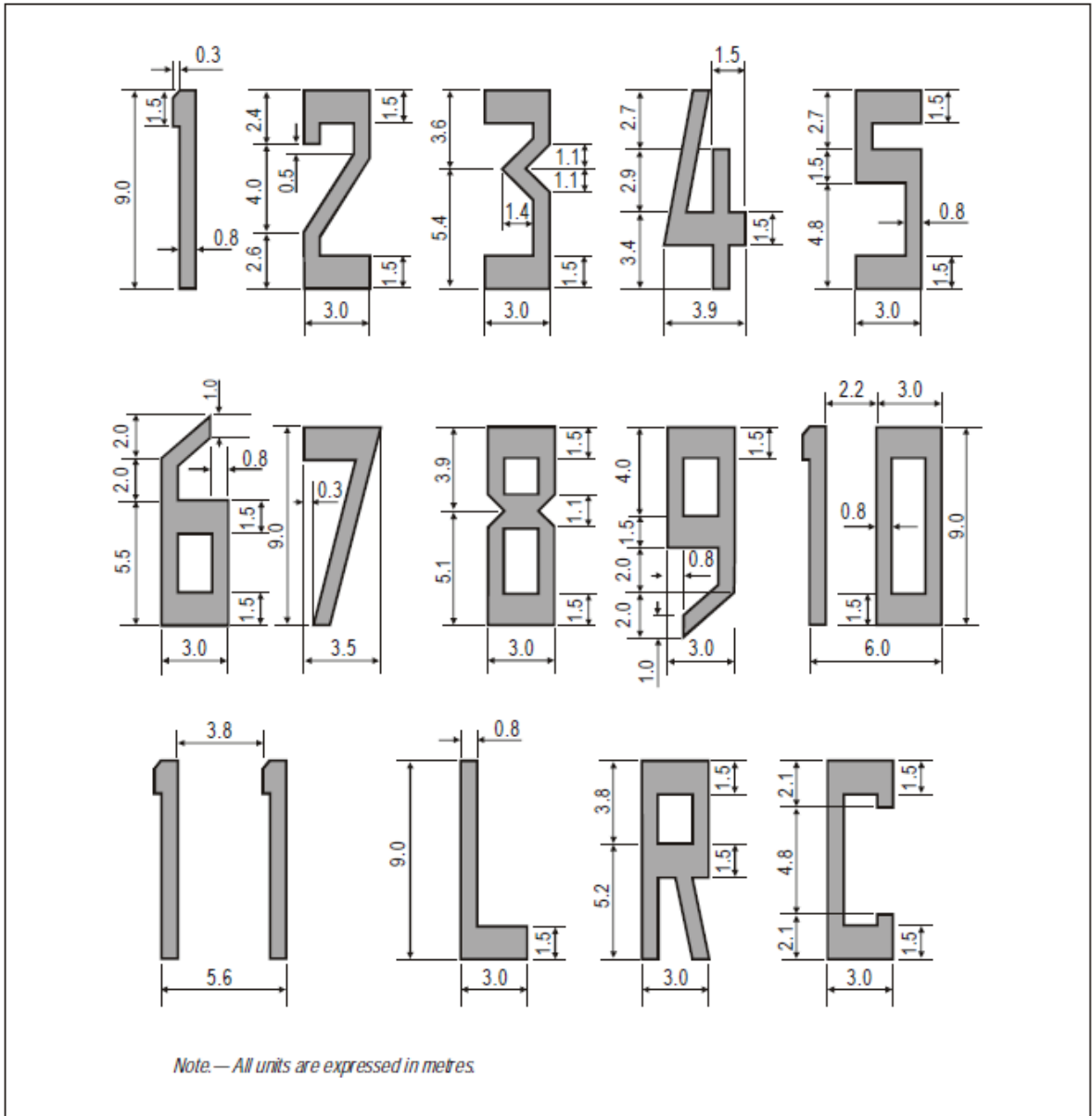


Figure 2 Form and proportions of numbers and letters for runway designation marking

Characteristics

4.5 A runway threshold marking shall consist of a pattern of longitudinal stripes of uniform dimensions disposed symmetrically about the centre line of a runway as shown in Figure 1. (A) and (B) for a runway width of 45 m. The number of stripes shall be in accordance with the runway width as follows:

<i>Runway width</i>	<i>Number of stripes</i>
18 m	4
23 m	6
30 m	8
45 m	12
60 m	16

except that on non-precision approach and non-instrument runways 45 m or greater in width, they may be as shown in Figure 1. (C).

4.6 The stripes shall extend laterally to within 3 m of the edge of a runway or to a distance of 217 m on either side of a runway centre line, whichever results in the smaller lateral distance. Where a runway designation marking is placed within a threshold marking there shall be a minimum of three stripes on each side of the centre line of the runway. Where a runway designation marking is placed above a threshold marking, the stripes shall be continued across the runway. The stripes shall be at least 30 m long and approximately 80 m wide with spacings of approximately 80 m between them except that, where the stripes are continued across a runway, a double spacing shall be used to separate the two stripes nearest the centre line of the runway, and in the case where the designation marking is included within the threshold marking this spacing shall be 22.5 m.

Transverse stripe

4.17 Where a threshold is displaced from the extremity of a runway or where the extremity of a runway is not square with the runway centre line, a transverse stripe as shown in Figure 3 (B) should be added to the threshold marking.

4.8 A transverse stripe shall be not less than 80 m wide.

Arrows

4.9 Where a runway threshold is permanently displaced, arrows conforming to Figure 3 (B) shall be provided on the portion of the runway before the displaced threshold.

4.10 When a runway threshold is temporarily displaced from the normal position, it shall be marked as shown in Figure 3 (A) or 3 (B) and all markings prior to the displaced threshold shall be obscured except the runway centre line marking, which shall be converted to arrows.

In the case where a threshold is temporarily displaced for only a short period of time, it has been found satisfactory to use markers in the form and colour of a displaced threshold marking rather than attempting to paint this marking on the runway.

When the runway before a displaced threshold is unfit for the surface movement of aircraft, closed markings, as described in 17.14, are to be provided.

5. AIMING POINT MARKING

Application

5.1 An aiming point marking shall be provided at each approach end of a paved instrument runway where the code number is 2, 3 or 4.

5.2 An aiming point marking should be provided at each approach end of:

- a) a paved non-instrument runway where the code number is 3 or 4;
- b) a paved instrument runway where the code number is 1; when additional conspicuity of the aiming point is desirable.

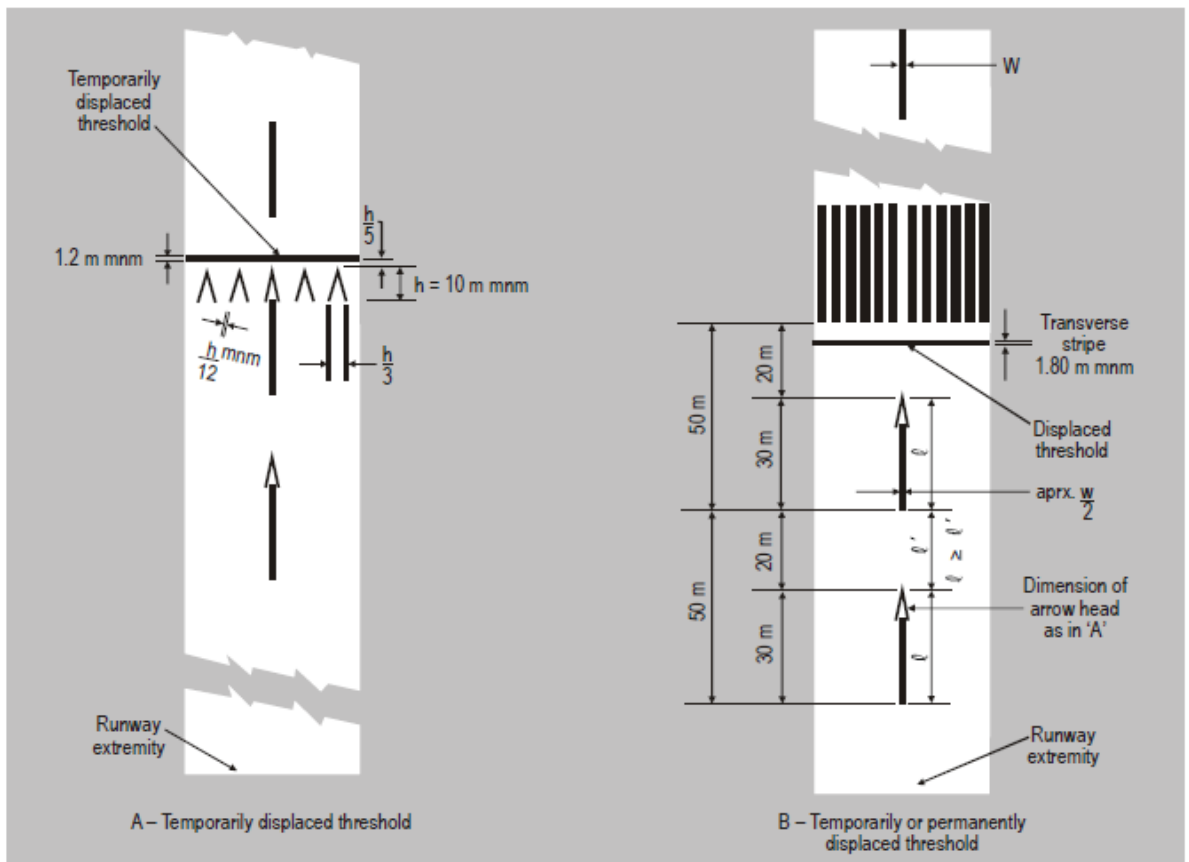


Figure 3 Displace threshold markings

Location

5.3 The aiming point marking shall commence no closer to the threshold than the distance indicated in the appropriate column of Table 5-1, except that, on a runway equipped with a visual approach slope indicator system, the beginning of the marking shall be coincident with the visual approach slope origin.

5.4 An aiming point marking shall consist of two conspicuous stripes. The dimensions of the stripes and the lateral spacing between their inner sides shall be in accordance with the provisions of the appropriate column of Table 5-1. Where a touchdown zone marking is provided, the lateral spacing between the markings shall be the same as that of the touchdown zone marking.

6. TOUCHDOWN ZONE MARKING

Application

6.1 A touchdown zone marking shall be provided in the touchdown zone of a paved precision approach runway where the code number is 2, 3 or 4.

6.2 A touchdown zone marking should be provided in the touchdown zone of a paved non-precision approach or non-instrument runway where the code number is 3 or 4 and additional conspicuity of the touchdown zone is desirable.

Table 1 Location and dimensions of aiming point marking

Location and dimensions (1)	Landing distance available			
	Less than 800 m (2)	800 m up to but not including 1 200 m (3)	1 200 m up to but not including 2 400 m (4)	2 400 m and above (5)
Distance from threshold to beginning of marking	150 m	250 m	300 m	400 m
Length of stripe ^a	30–45 m	30–45 m	45–60 m	45–60 m
Width of stripe	4 m	6 m	6–10 m ^b	6–10 m ^b
Lateral spacing between inner sides of stripes	6 m ^c	9 m ^c	18–22.5 m	18–22.5 m

a. The greater dimensions of the specified ranges are intended to be used where increased conspicuity is required.

b. The lateral spacing may be varied within these limits to minimize the contamination of the marking by rubber deposits.

c. These figures were deduced by reference to the outer main gear wheel span which is element 2 of the aerodrome reference code at Chapter 1, Table 1-1.

Location and characteristics

6.3 A touchdown zone marking shall consist of pairs of rectangular markings symmetrically disposed about the runway centre line with the number of such pairs related to the landing distance available and, where the marking is to be displayed at both the approach directions of a runway, the distance between the thresholds, as follows:

<i>Landing distance available or the distance between thresholds</i>	<i>Pair(s) of marking.</i>
less than 900 m	1
900 m up to but not including 1 200 m	2
1 200 m up to but not including 1 500 m	3
1 500 m up to but not including 2 400 m	4
2 400 m or more	6

6.4 A touchdown zone marking shall conform to either of the two patterns shown in Figure 5-5. For the pattern shown in Figure 4 (A), the markings shall be not less than 22.5 m long and 3 m wide. For the pattern shown in Figure 4 (B), each stripe of each marking shall be not less than 22.5 m long and 8 m wide with a spacing of 15 m between adjacent stripes. The lateral spacing between the inner sides of the rectangles shall be equal to that of the aiming point marking where provided. Where an aiming point marking is not provided, the lateral spacing between the inner sides of the rectangles shall correspond to the lateral spacing specified for the aiming point marking in Table 1-1 (columns 2, 3, 4 or 5, as appropriate). The pairs of markings shall be provided at longitudinal spacings of 150 m beginning from the threshold, except that pairs of touchdown zone markings coincident with or located within 50 m of an aiming point marking shall be deleted from the pattern.

6.5 On a non-precision approach runway where the code number is 2, an additional pair of touchdown zone marking stripes should be provided 150 m beyond the beginning of the aiming point marking.

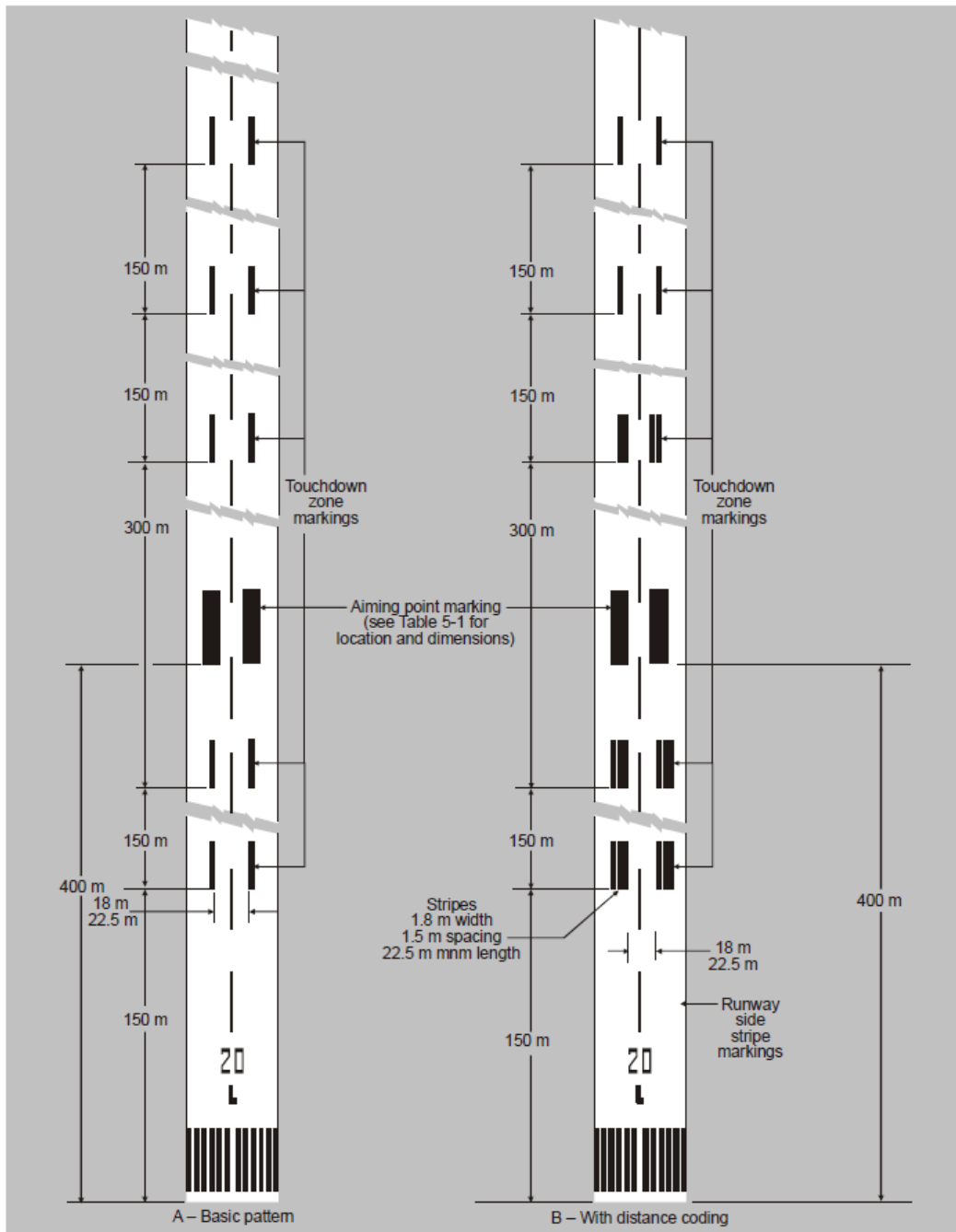


Figure 4 Aiming point and touchdown zone markings (illustrated for a runway with a length of 2 400 m or more)

7. RUNWAY SIDE STRIPE MARKING

Application

7.1 A runway side stripe marking shall be provided between the thresholds of a paved runway where there is a lack of contrast between the runway edges and the shoulders or the surrounding terrain.

7.2 A runway side stripe marking should be provided on a precision approach runway irrespective of the contrast between the runway edges and the shoulders or the surrounding terrain.

Location

7.3 A runway side stripe marking should consist of two stripes, one placed along each edge of the runway with the outer edge of each stripe approximately on the edge of the runway, except that, where the runway is greater than 60 m in width, the stripes should be located 30 m from the runway centre line.

7.4 Where a runway turn pad is provided, the runway side stripe marking should be continued between the runway and the runway turn pad.

Characteristics

7.5 A runway side stripe should have an overall width of at least 0.9 m on runways 30 m or more in width and at least 0.45 m on narrower runways.

8. TAXIWAY CENTRE LINE MARKING

Application

8.1 Taxiway centre line marking shall be provided on a paved taxiway, de-icing/anti-icing facility and apron where the code number is 3 or 4 in such a way as to provide continuous guidance between the runway centre line and aircraft stands.

8.2 Taxiway centre line marking should be provided on a paved taxiway, de-icing/anti-icing facility and apron where the code number is 1 or 2 in such a way as to provide continuous guidance between the runway centre line and aircraft stands.

8.3 Taxiway centre line marking shall be provided on a paved runway when the runway is part of a standard taxi- route and:

- a) there is no runway centre line marking; or
- b) where the taxiway centre line is not coincident with the runway centre line.

8.4 Where it is necessary to denote the proximity of a runway-holding position, enhanced taxiway centre line marking should be provided.

The provision of enhanced taxiway centre line marking may form part of runway incursion prevention measures.

8.5 Where provided, enhanced taxiway centre line marking shall be installed at each taxiway/runway intersection.

Location

8.6 On a straight section of a taxiway the taxiway centre line marking should be located along the taxiway centre line. On a taxiway curve the marking should continue from the straight portion of the taxiway at a constant distance from the outside edge of the curve.

8.17 At an intersection of a taxiway with a runway where the taxiway serves as an exit from the runway, the taxiway centre line marking should be curved into the runway centre line marking as shown in Figures 5. The taxiway centre line marking should be extended parallel to the runway centre line marking for a distance of at least 60 m beyond the point of tangency where the code number is 3 or 4, and for a distance of at least 30 m where the code number is 1 or 2.

8.8 Where taxiway centre line marking is provided on a runway in accordance with 8.3, the marking should be located on the centre line of the designated taxiway.

8.9 Where provided:

a) An enhanced taxiway centre line marking shall extend from the runway-holding position Pattern A (as defined in Figure 5, Taxiway markings) to a distance of up to 417 m in the direction of travel away from the runway. See Figure 6 (a).

b) If the enhanced taxiway centre line marking intersects another runway-holding position marking, such as for a precision approach category II or III runway, that is located within 417 m of the first runway-holding position marking, the enhanced taxiway centre line marking shall be interrupted 0.9 m prior to and after the intersected runway-holding position marking. The enhanced taxiway centre line marking shall continue beyond the intersected runway-holding position marking for at least three dashed line segments or 417 m from start to finish, whichever is greater. See Figure 6 (b).

c) If the enhanced taxiway centre line marking continues through a taxiway/taxiway intersection that is located within 417 m of the runway-holding position marking, the enhanced taxiway centre line marking shall be interrupted 15 m prior to and after the point where the intersected taxiway centre line crosses the enhanced taxiway centre line. The enhanced taxiway centre line marking shall continue beyond the taxiway/taxiway intersection for at least three dashed line segments or 417 m from start to finish, whichever is greater. See Figure 6 (c).

d) Where two taxiway centre lines converge at or before the runway-holding position marking, the inner dashed line shall not be less than 3 m in length. See Figure 6 (d).

e) Where there are two opposing runway-holding position markings and the distance between the markings is less than 94 m, the enhanced taxiway centre line markings shall extend over this entire distance. The enhanced taxiway centre line markings shall not extend beyond either runway-holding position marking. See Figure 6 (e).

Characteristics

8.10 A taxiway centre line marking shall be at least 15 cm in width and continuous in length except where it intersects with a runway-holding position marking or an intermediate holding position marking as shown in Figure 5.

8.11 Enhanced taxiway centre line marking shall be as shown in Figure 6.

9. RUNWAY TURN PAD MARKING

Application

9.1 Where a runway turn pad is provided, a runway turn pad marking shall be provided for continuous guidance to enable an aeroplane to complete a 180-degree turn and align with the runway centre line.

Location

9.2 The runway turn pad marking should be curved from the runway centre line into the turn pad. The radius of the curve should be compatible with the manoeuvring capability and normal taxiing speeds of the aeroplanes for which the runway turn pad is intended. The intersection angle of the runway turn pad marking with the runway centre line should not be greater than 30 degrees.

9.3 The runway turn pad marking should be extended parallel to the runway centre line marking for a distance of at least 60 m beyond the point of tangency where the code number is 3 or 4, and for a distance of at least 30 m where the code number is 1 or 2.

9.4 A runway turn pad marking should guide the aeroplane in such a way as to allow a straight portion of taxiing before the point where a 180-degree turn is to be made. The straight portion of the runway turn pad marking should be parallel to the outer edge of the runway turn pad.

9.5 The design of the curve allowing the aeroplane to negotiate a 180-degree turn should be based on a nose wheel steering angle not exceeding 45 degrees.

9.6 The design of the turn pad marking should be such that, when the cockpit of the aeroplane remains over the runway turn pad marking, the clearance distance between any wheel of the aeroplane landing gear and the edge of the runway turn pad should be not less than those specified in 3.3.6.

For ease of manoeuvring, consideration may be given to providing a larger wheel-to-edge clearance for codes E and F aeroplanes.

Characteristics

9.17 A runway turn pad marking shall be at least 15 cm in width and continuous in length.

10. RUNWAY-HOLDING POSITION MARKING

Application and location

10.1 A runway-holding position marking shall be displayed along a runway-holding position.

Characteristics

10.2 At an intersection of a taxiway and a non-instrument, non-precision approach or take-off runway, the runway-holding position marking shall be as shown in Figure 5, pattern A.

10.3 Where a single runway-holding position is provided at an intersection of a taxiway and a precision approach category I, II or III runway, the runway-holding position marking shall be as shown in Figure 5, pattern A. Where two or three runway-holding positions are provided at such an intersection, the runway-holding position marking closer (closest) to the runway shall be as shown in Figure 5, pattern A and the markings farther from the runway shall be as shown in Figure 5, pattern B.

10.4 The runway-holding position marking displayed at a runway-holding position established in accordance with 3.12.3 shall be as shown in Figure 5, pattern A.

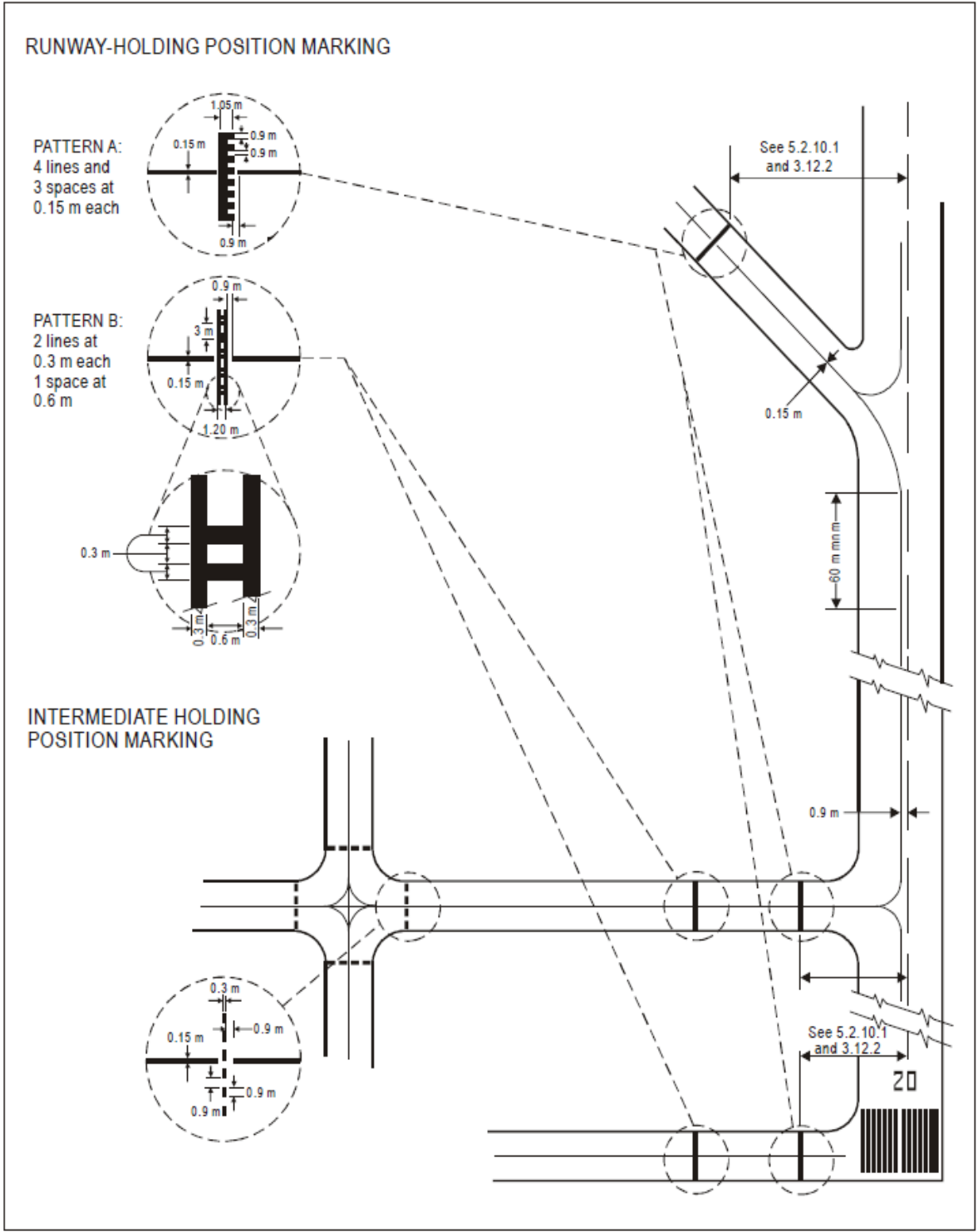


Figure 5 Taxiway markings (shown with basic runway markings)

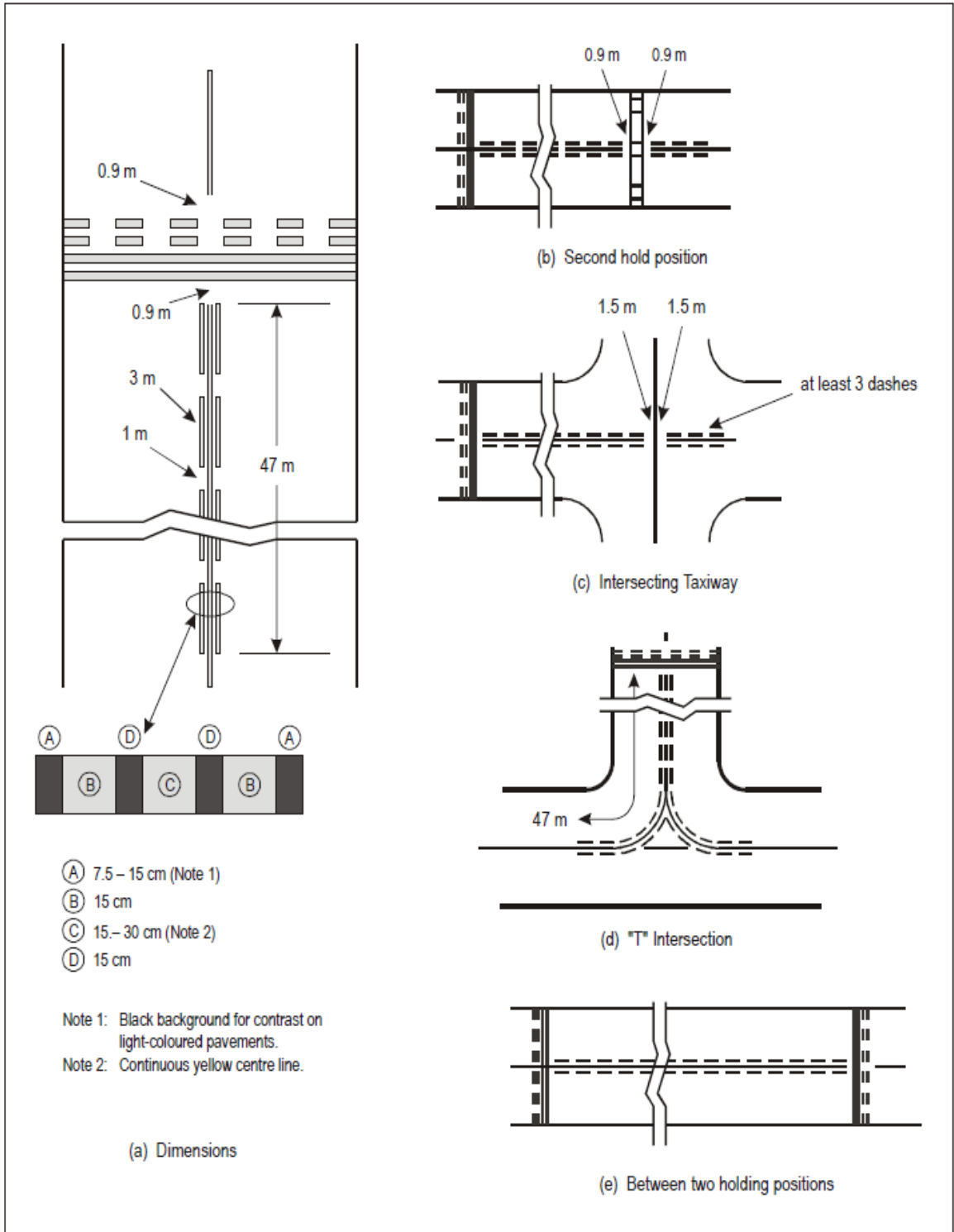


Figure 6 Enhanced taxiway centre line marking

10.5 Where increased conspicuity of the runway-holding position is required, the runway- holding position marking should be as shown in Figure 1-17, pattern A or pattern B, as appropriate.

10.6 Where a pattern B runway-holding position marking is located on an area where it would exceed 60 m in length, the term “CAT II” or “CAT III” as appropriate should be marked on the surface at the ends of the runway-holding position marking and at equal intervals of 45 m maximum between successive marks. The letters should be not less than 8 m high and should be placed not more than 0.9 m beyond the holding position marking.

10.7 The runway-holding position marking displayed at a runway/runway intersection shall be perpendicular to the centre line of the runway forming part of the standard taxi-route. The pattern of the marking shall be as shown in Figure 7, pattern A.

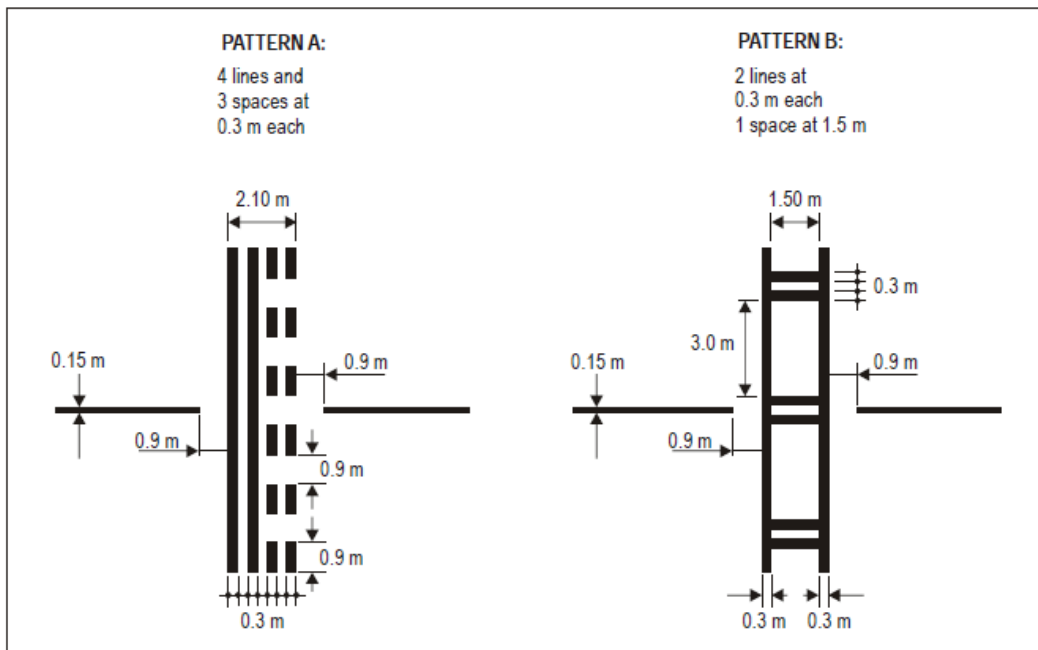


Figure 7 Runway-holding position markings

11. INTERMEDIATE HOLDING POSITION MARKING

Application and location

11.1 An intermediate holding position marking should be displayed along an intermediate holding position.

11.2 An intermediate holding position marking should be displayed at the exit boundary of a remote de-icing/anti-icing facility adjoining a taxiway.

11.3 Where an intermediate holding position marking is displayed at an intersection of two paved taxiways, it shall be located across the taxiway at sufficient distance from the near edge of the intersecting taxiway to ensure safe clearance between taxiing aircraft. It shall be coincident with a stop bar or intermediate holding position lights, where provided.

11.4 The distance between an intermediate holding position marking at the exit boundary of a remote de-icing/ anti-icing facility and the centre line of the adjoining taxiway shall not be less than the dimension specified in **ASD301**

Characteristics

11.5 An intermediate holding position marking shall consist of a single broken line as shown in Figure 5.

12. VOR AERODROME CHECKPOINT MARKING

Application

12.1 When a VOR aerodrome checkpoint is established, it shall be indicated by a VOR aerodrome checkpoint marking and sign.

12.2 Site selection

Location

12.3 A VOR aerodrome checkpoint marking shall be centred on the spot at which an aircraft is to be parked to receive the correct VOR signal.

Characteristics

12.4 A VOR aerodrome checkpoint marking shall consist of a circle 6 m in diameter and have a line width of 15 cm (see Figure 8 (A)).

12.5 When it is preferable for an aircraft to be aligned in a specific direction, a line should be provided that passes through the centre of the circle on the desired azimuth. The line should extend 6 m outside the circle in the desired direction of heading and terminate in an arrowhead. The width of the line should be 15 cm (see Figure 1-8 (B)).

12.6 A VOR aerodrome checkpoint marking should preferably be white in colour but should differ from the colour used for the taxiway markings.

To provide contrast, markings may be bordered with black.

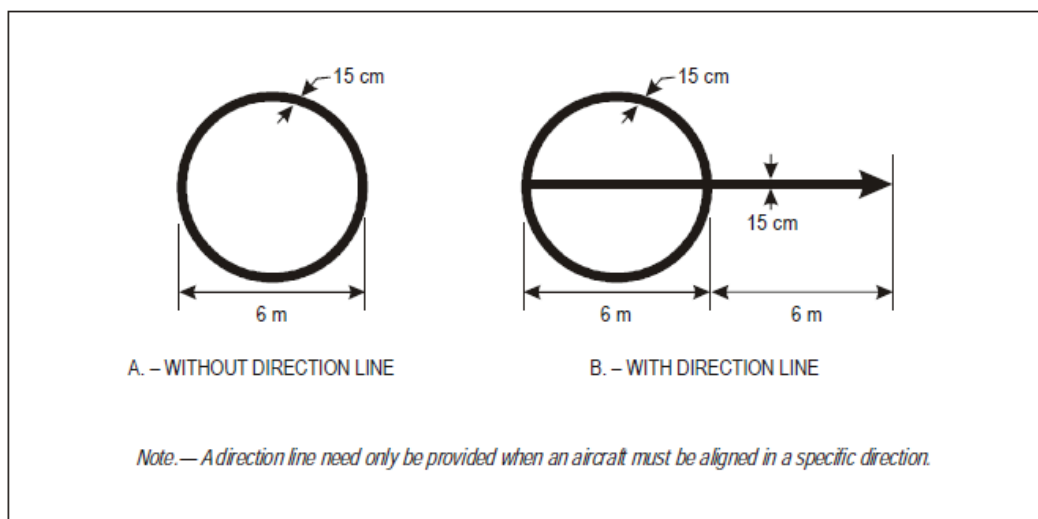


Figure 8 VOR aerodrome checkpoint marking

13. AIRCRAFT STAND MARKING

Guidance on the layout of aircraft stand markings is contained in the Aerodrome Design Manual (Doc 91517), Part 4.

Application

13.1 Aircraft stand markings should be provided for designated parking positions on a paved apron and on a de-icing/anti-icing facility.

Location

13.2 Aircraft stand markings on a paved apron and on a de-icing/anti-icing facility should be located so as to provide the clearances specified in [ASD301](#), respectively, when the nose wheel follows the stand marking.

Characteristics

13.3 Aircraft stand markings should include such elements as stand identification, lead-in line, turn bar, turning line, alignment bar, stop line and lead-out line, as are required by the parking configuration and to complement other parking aids.

13.4 An aircraft stand identification (letter and/or number) should be included in the lead-in line a short distance after the beginning of the lead-in line. The height of the identification should be adequate to be readable from the cockpit of aircraft using the stand.

13.5 Where two sets of aircraft stand markings are superimposed on each other in order to permit more flexible use of the apron and it is difficult to identify which stand marking should be followed, or safety would be impaired if the wrong marking was followed, then identification of the aircraft for which each set of markings is intended should be added to the stand identification.

Example: 2A-B17417, 2B-F28.

13.6 Lead-in, turning and lead-out lines should normally be continuous in length and have a width of not less than 15 cm. Where one or more sets of stand markings are superimposed on a stand marking, the lines should be continuous for the most demanding aircraft and broken for other aircraft.

13.7 The curved portions of lead-in, turning and lead-out lines should have radii appropriate to the most demanding aircraft type for which the markings are intended.

13.8 Where it is intended that an aircraft proceed in one direction only, arrows pointing in the direction to be followed should be added as part of the lead-in and lead-out lines.

13.9 A turn bar should be located at right angles to the lead-in line, abeam the left pilot position at the point of initiation of any intended turn. It should have a length and width of not less than 6 m and 15 cm, respectively, and include an arrowhead to indicate the direction of turn.

The distances to be maintained between the turn bar and the lead-in line may vary according to different aircraft types, taking into account the pilot's field of view.

13.10 If more than one turn bar and/or stop line is required, they should be coded.

13.11 An alignment bar should be placed so as to be coincident with the extended centre line of the aircraft in the specified parking position and visible to the pilot during the final part of the parking manoeuvre. It should have a width of not less than 15 cm.

13.12 A stop line should be located at right angles to the alignment bar, abeam the left pilot position at the intended point of stop. It should have a length and width of not less than 6 m and 15 cm, respectively.

The distances to be maintained between the stop line and the lead-in line may vary according to different aircraft types, taking into account the pilot's field of view.

14. APRON SAFETY LINE

Guidance on apron safety lines is contained in the Aerodrome Design Manual (Doc 91517), Part 4.

Application

14.1 Apron safety lines should be provided on a paved apron as required by the parking configurations and ground facilities.

Location

14.2 Apron safety lines shall be located so as to define the areas intended for use by ground vehicles and other aircraft servicing equipment, etc., to provide safe separation from aircraft.

Characteristics

14.3 Apron safety lines should include such elements as wing tip clearance lines and service road boundary lines as required by the parking configurations and ground facilities.

14.4 An apron safety line should be continuous in length and at least 10 cm in width.

15. ROAD-HOLDING POSITION MARKING

Application

15.1 A road-holding position marking shall be provided at all road entrances to a runway.

Location

15.2 The road-holding position marking shall be located across the road at the holding position.

Characteristics

15.3 The road-holding position marking shall be in accordance with the local road traffic regulations.

16. MANDATORY INSTRUCTION MARKING

Guidance on mandatory instruction marking is given in the Aerodrome Design Manual (Doc 91517), Part 4.

Application

16.1 Where it is impracticable to install a mandatory instruction sign in accordance with ASD502, a mandatory instruction marking shall be provided on the surface of the pavement.

16.2 Where operationally required, such as on taxiways exceeding 60 m in width, or to assist in the prevention of a runway incursion, a mandatory instruction sign should be supplemented by a mandatory instruction marking.

Location

16.3 The mandatory instruction marking on taxiways where the code letter is A, B, C or D shall be located across the taxiway equally placed about the taxiway centre line and on the holding side of the runway-holding position marking as shown in Figure 9 (A). The distance between the nearest edge of the marking and the runway-holding position marking or the taxiway centre line marking shall be not less than 1 m.

16.4 The mandatory instruction marking on taxiways where the code letter is E or F shall be located on both sides of the taxiway centre line marking and on the holding side of the runway-holding position marking as shown in Figure 9 (B). The distance between the nearest edge of the marking and the runway-holding position marking or the taxiway centre line marking shall be not less than 1 m.

16.5 Except where operationally required, a mandatory instruction marking should not be located on a runway.

Characteristics

16.6 A mandatory instruction marking shall consist of an inscription in white on a red background. Except for a NO ENTRY marking, the inscription shall provide information identical to that of the associated mandatory instruction sign.

16.7 A NO ENTRY marking shall consist of an inscription in white reading NO ENTRY on a red background.

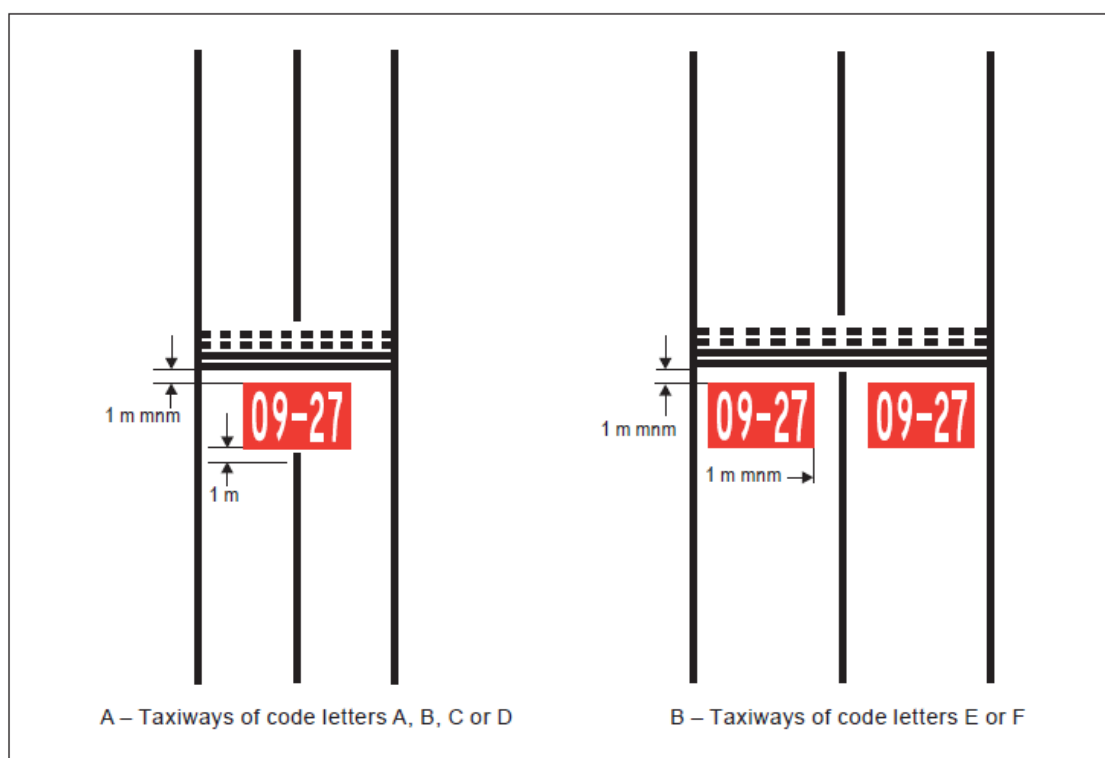


Figure 9 Mandatory instruction marking

16.8 Where there is insufficient contrast between the marking and the pavement surface, the mandatory instruction marking shall include an appropriate border, preferably white or black.

16.9 The character height should be 4 m for inscriptions where the code letter is C, D, E or F, and 2 m where the code letter is A or B. The inscriptions should be in the form and proportions shown in APPENDIX 1.

16.10 The background should be rectangular and extend a minimum of 0.5 m laterally and vertically beyond the extremities of the inscription.

17. INFORMATION MARKING

Guidance on information marking is contained in the Aerodrome Design Manual (Doc 91517), Part 4.

Application

17.1 Where an information sign would normally be installed and is impractical to install, as determined by the appropriate authority, an information marking shall be displayed on the surface of the pavement.

17.2 Where operationally required an information sign should be supplemented by an information marking.

17.3 An information (location/direction) marking should be displayed prior to and following complex taxiway intersections and where operational experience has indicated the addition of a taxiway location marking could assist flight crew ground navigation.

17.4 An information (location) marking should be displayed on the pavement surface at regular intervals along taxiways of great length.

Location

17.5 The information marking should be displayed across the surface of the taxiway or apron where necessary and positioned so as to be legible from the cockpit of an approaching aircraft.

Characteristics

17.6 An information marking shall consist of:

- a) an inscription in yellow upon a black background, when it replaces or supplements a location sign; and

b) an inscription in black upon a yellow background, when it replaces or supplements a direction or destination sign.

17.7 Where there is insufficient contrast between the marking background and the pavement surface, the marking shall include:

- a) a black border where the inscriptions are in black; and
- b) a yellow border where the inscriptions are in yellow.

17.8 The character height should be 4 m. The inscriptions should be in the form and proportions shown in APPENDIX 1.

18. DEVIATIONS

18.1 The Department of Civil Aviation shall notify and publish deviation from any Standards and Recommended Practices contained in ICAO Annex 14 in the Aeronautical Information Services publications in compliance to the Article 38 of the Convention on International Civil Aviation.

18.2 The Appendices to this Directive shall be taken, construed, read and be part of this Directive.

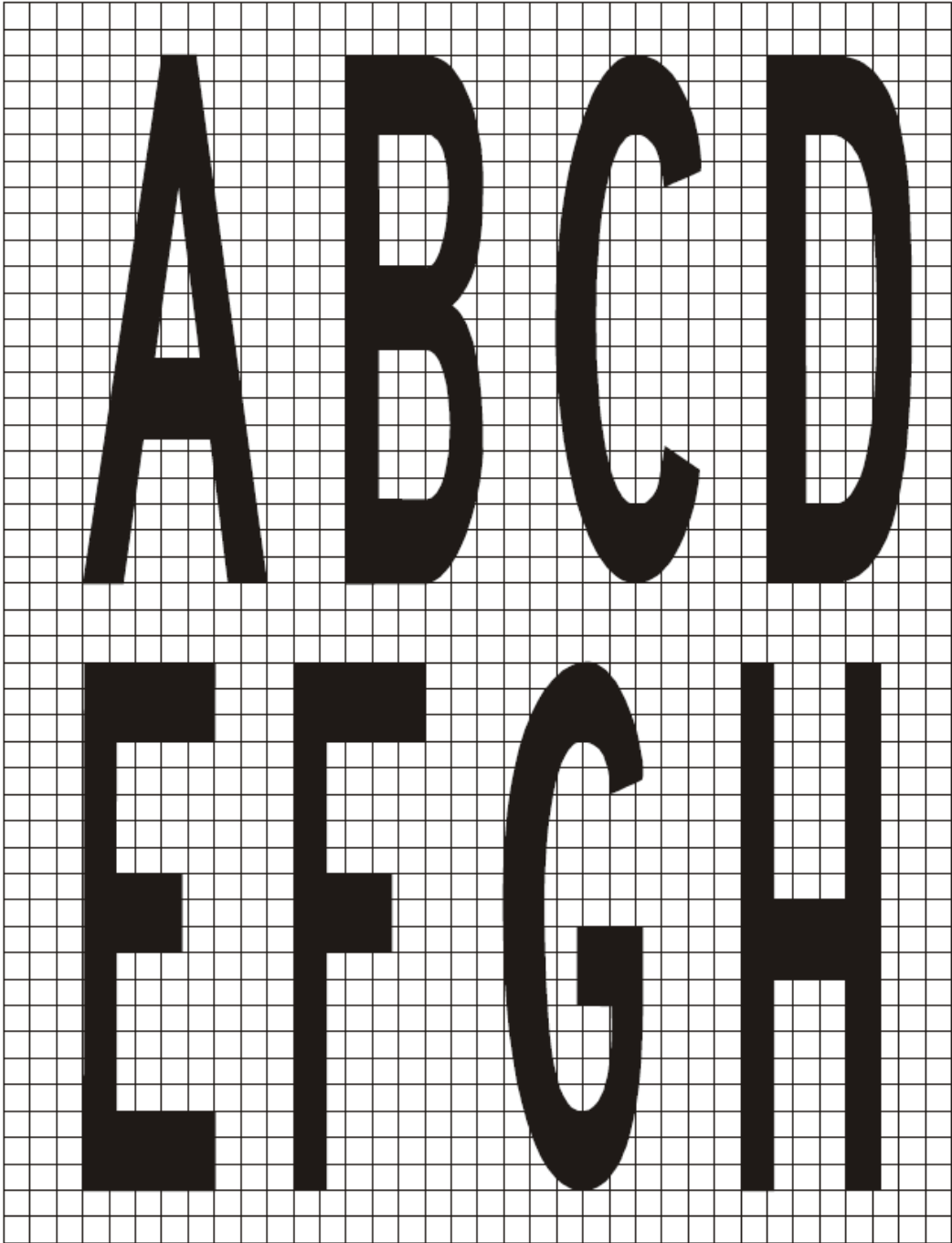
DATO' SRI AZHARUDDIN BIN ABDUL RAHMAN
Director General
Department of Civil Aviation
Malaysia

Dated : 26 April 2016

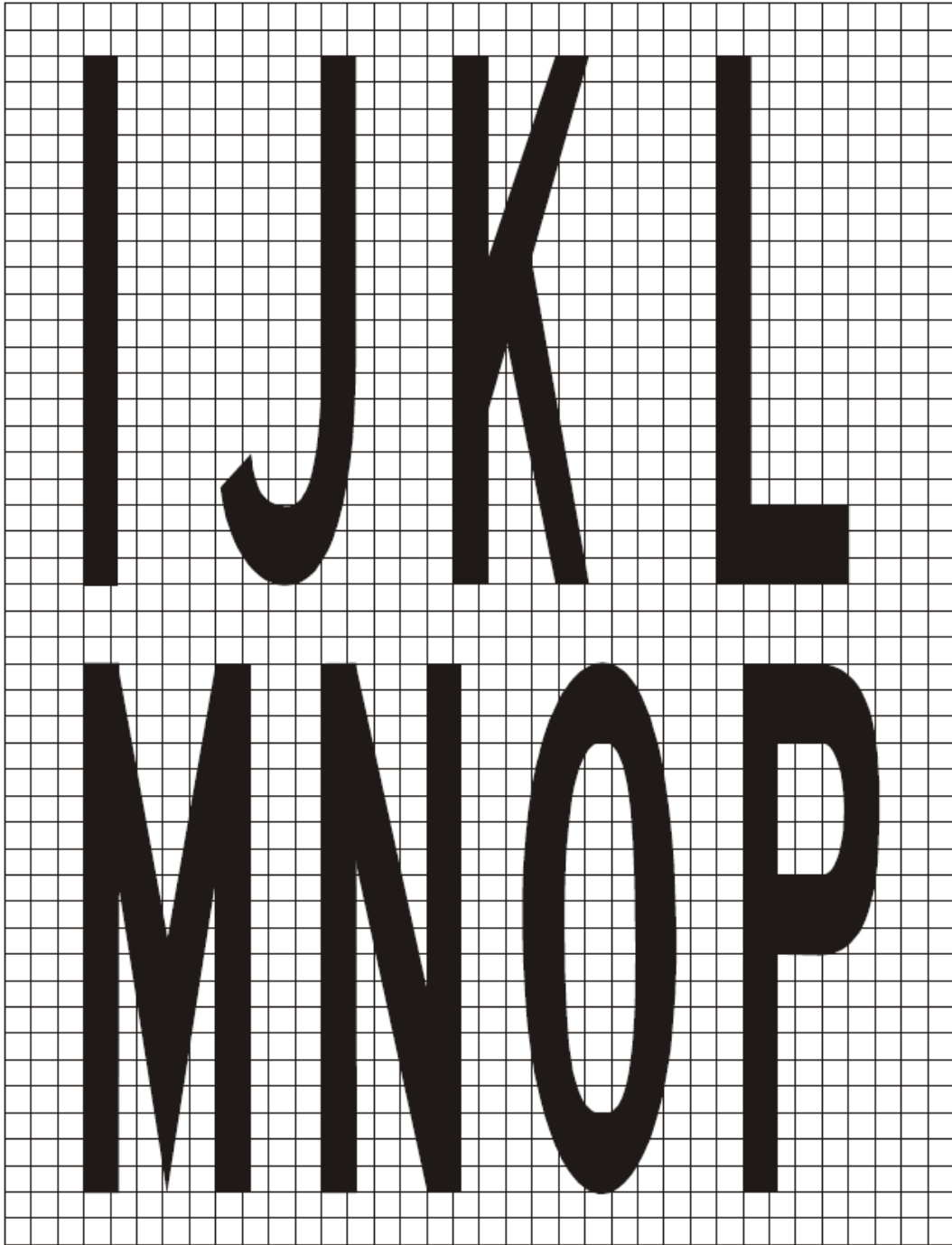
APPENDIX 1 : MANDATORY INSTRUCTION MARKINGS AND INFORMATION MARKINGS

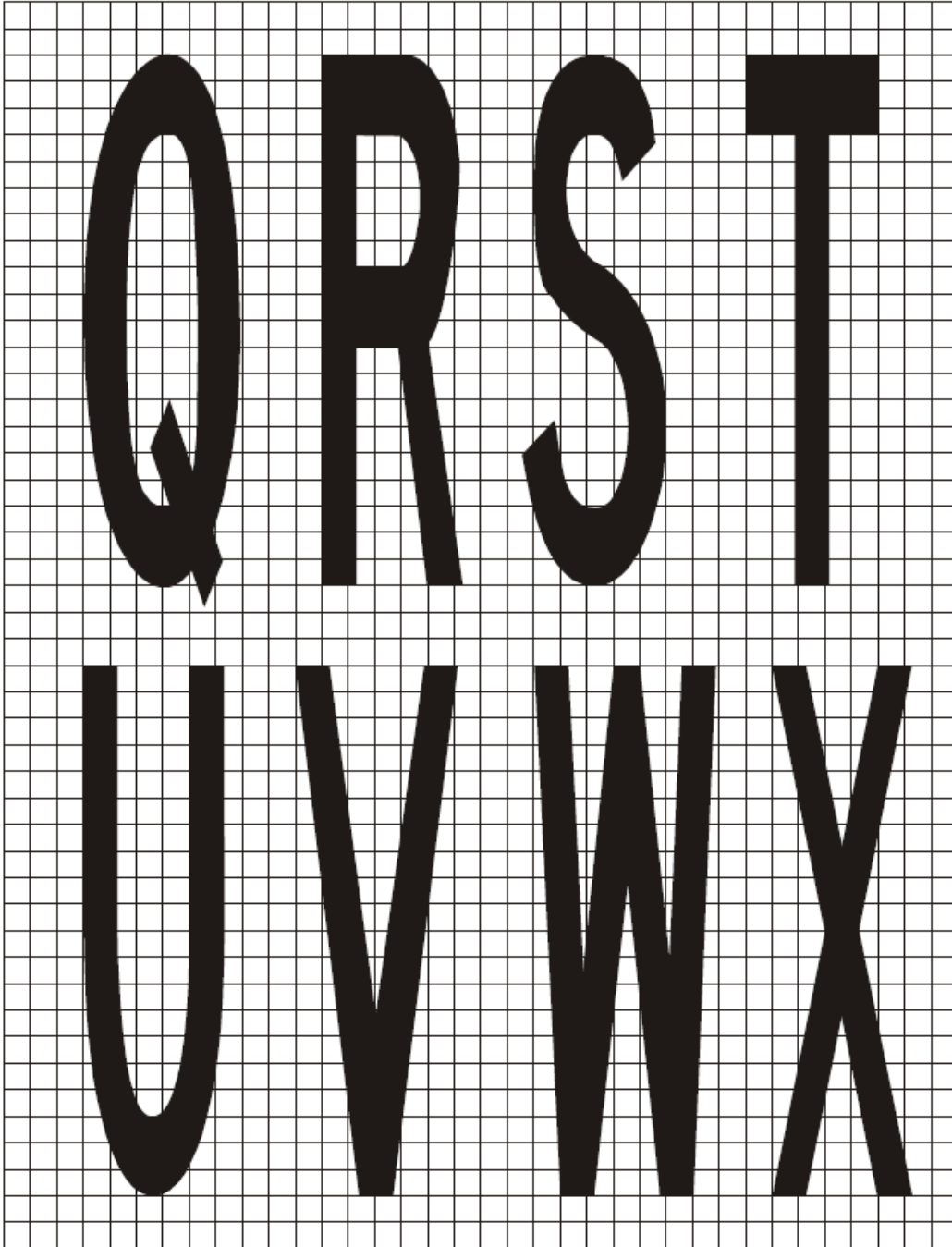
See ASD, for specifications on the application, location and characteristics of mandatory instruction markings and information markings.

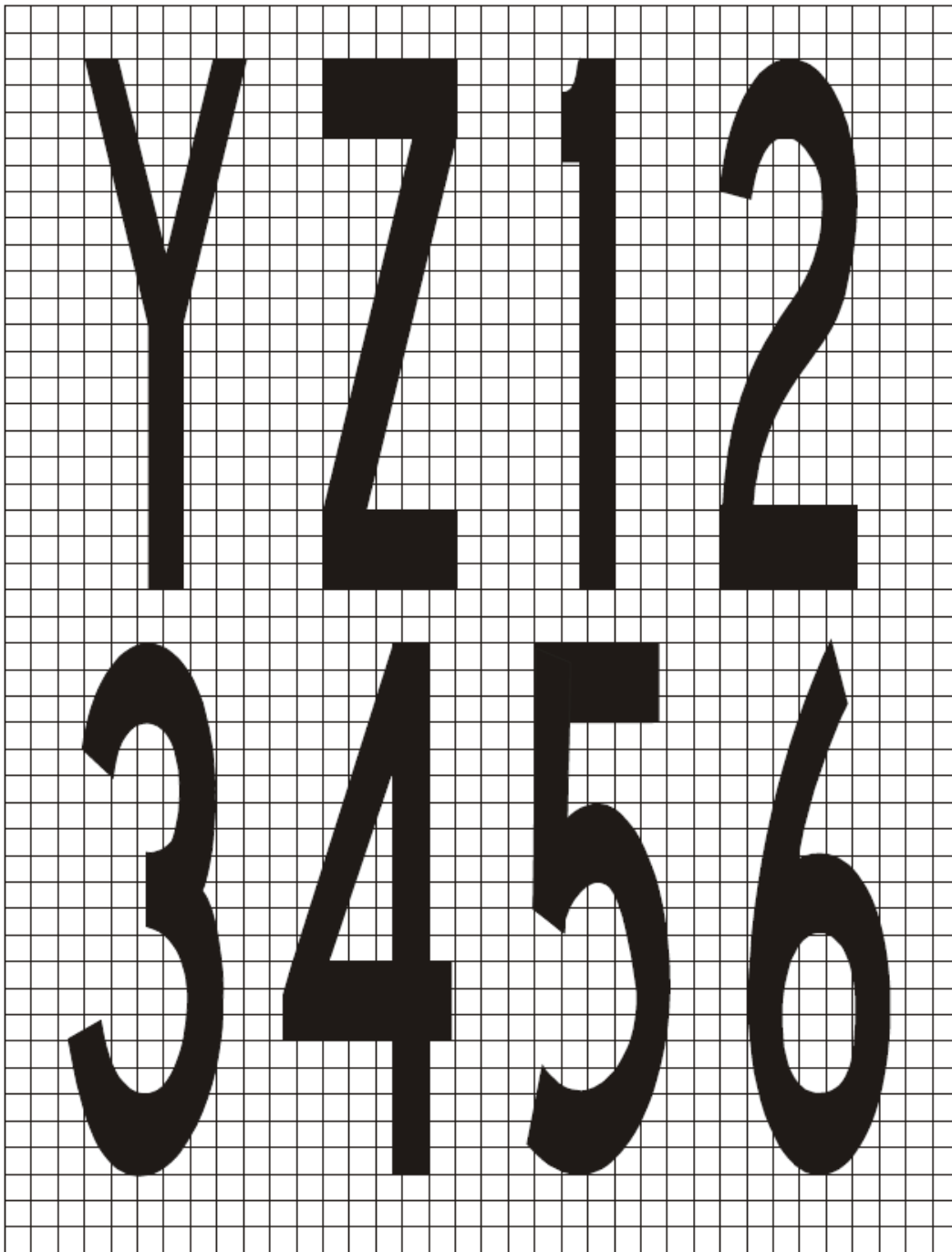
This appendix details and proportions of the letters, numbers and symbols of mandatory instruction markings and information markings on a 20 cm grid.



A







APPENDIX 1

