

- b) the aircraft type and model for which the guidance is provided;
- c) an indication of the lateral displacement of the aircraft relative to the stand centre line;
- d) the direction of azimuth correction needed to correct a displacement from the stand centre line;
- e) an indication of the distance to the stop position;
- f) an indication when the aircraft has reached the correct stopping position; and
- g) a warning indication if the aircraft goes beyond the appropriate stop position.

5.3.26.7 The A-VDGS shall be capable of providing docking guidance information for all aircraft taxi speeds encountered during the docking manoeuvre.

Note.— See the Aerodrome Design Manual (Doc 9157), Part 4, for an indication of the maximum aircraft speeds relative to distance to the stopping position.

5.3.26.8 The time taken from the determination of the lateral displacement to its display shall not result in a deviation of the aircraft, when operated in normal conditions, from the stand centre line greater than 1 m.

5.3.26.9 **Recommendation.**— *The information on displacement of the aircraft relative to the stand centre line and distance to the stopping position, when displayed, should be provided with the accuracy specified in Table 5-4.*

5.3.26.10 Symbols and graphics used to depict guidance information shall be intuitively representative of the type of information provided.

Note.— The use of colour would need to be appropriate and need to follow signal convention, i.e. red, yellow and green mean hazard, caution and normal/correct conditions, respectively. The effects of colour contrasts would also need to be considered.

5.3.26.11 Information on the lateral displacement of the aircraft relative to the stand centre line shall be provided at least 25 m prior to the stop position.

Note.— The indication of the distance of the aircraft from the stop position may be colour-coded and presented at a rate and distance proportional to the actual closure rate and distance of the aircraft approaching the stop point.

5.3.26.12 Continuous closure distance and closure rate shall be provided from at least 15 m prior to the stop position.

5.3.26.13 **Recommendation.**— *Where provided, closure distance displayed in numerals should be provided in metre integers to the stop position and displayed to 1 decimal place at least 3 m prior to the stop position.*

Table 5-4. A-VDGS recommended displacement accuracy

Guidance information	Maximum deviation at stop position (stop area)	Maximum deviation at 9 m from stop position	Maximum deviation at 15 m from stop position	Maximum deviation at 25 m from stop position
Azimuth	±250 mm	±340 mm	±400 mm	±500 mm
Distance	±500 mm	±1 000 mm	±1 300 mm	Not specified

5.3.26.14 Throughout the docking manoeuvre, an appropriate means shall be provided on the A-VDGS to indicate the need to bring the aircraft to an immediate halt. In such an event, which includes a failure of the A-VDGS, no other information shall be displayed.

5.3.26.15 Provision to initiate an immediate halt to the docking procedure shall be made available to personnel responsible for the operational safety of the stand.

5.3.26.16 **Recommendation.**— *The word “stop” in red characters should be displayed when an immediate cessation of the docking manoeuvre is required.*

5.3.27 Aircraft stand manoeuvring guidance lights

Application

5.3.27.1 **Recommendation.**— *Aircraft stand manoeuvring guidance lights should be provided to facilitate the positioning of an aircraft on an aircraft stand on a paved apron or on a de-icing/anti-icing facility intended for use in poor visibility conditions, unless adequate guidance is provided by other means.*

Location

5.3.27.2 Aircraft stand manoeuvring guidance lights shall be collocated with the aircraft stand markings.

Characteristics

5.3.27.3 Aircraft stand manoeuvring guidance lights, other than those indicating a stop position, shall be fixed yellow lights, visible throughout the segments within which they are intended to provide guidance.

5.3.27.4 **Recommendation.**— *The lights used to delineate lead-in, turning and lead-out lines should be spaced at intervals of not more than 7.5 m on curves and 15 m on straight sections.*

5.3.27.5 The lights indicating a stop position shall be fixed unidirectional lights showing red.

5.3.27.6 **Recommendation.**— *The intensity of the lights should be adequate for the condition of visibility and ambient light in which the use of the aircraft stand is intended.*

5.3.27.7 **Recommendation.**— *The lighting circuit should be designed so that the lights may be switched on to indicate that an aircraft stand is to be used and switched off to indicate that it is not to be used.*

5.3.28 Road-holding position light

Application

5.3.28.1 A road-holding position light shall be provided at each road-holding position serving a runway when it is intended that the runway will be used in runway visual range conditions less than a value of 350 m.

5.3.28.2 **Recommendation.**— *A road-holding position light should be provided at each road-holding position serving a runway when it is intended that the runway will be used in runway visual range conditions of values between 350 m and 550 m.*

Location

5.3.28.3 A road-holding position light shall be located adjacent to the holding position marking 1.5 m (± 0.5 m) from one edge of the road, i.e. left or right as appropriate to the local traffic regulations.

Note.— *See 9.9 for the mass and height limitations and frangibility requirements of navigation aids located on runway strips.*

Characteristics

5.3.28.4 The road-holding position light shall comprise:

- a) a controllable red (stop)/green (go) traffic light; or
- b) a flashing-red light.

Note.— *It is intended that the lights specified in sub-paragraph a) be controlled by the air traffic services.*

5.3.28.5 The road-holding position light beam shall be unidirectional and aligned so as to be visible to the driver of a vehicle approaching the holding position.

5.3.28.6 The intensity of the light beam shall be adequate for the conditions of visibility and ambient light in which the use of the holding position is intended, but shall not dazzle the driver.

Note.— *The commonly used traffic lights are likely to meet the requirements in 5.3.28.5 and 5.3.28.6.*

5.3.28.7 The flash frequency of the flashing-red light shall be between 30 and 60 flashes per minute.

5.3.29 No-entry bar

Note 1.— *A no-entry bar is intended to be controlled manually by air traffic services.*

Note 2.— *Runway incursions may take place in all visibility or weather conditions. The provision of no-entry bars at taxiway/runway intersections and their use at night and in all visibility conditions can form part of effective runway incursion prevention measures.*

Application

5.3.29.1 **Recommendation.**— *A no-entry bar should be provided across a taxiway which is intended to be used as an exit only taxiway to assist in preventing inadvertent access of traffic to that taxiway.*

Location

5.3.29.2 **Recommendation.**— *A no-entry bar should be located across the taxiway at the end of an exit only taxiway where it is desired to prevent traffic from entering the taxiway in the wrong direction.*

Characteristics

5.3.29.3 **Recommendation.**— *A no-entry bar should consist of unidirectional lights spaced at uniform intervals of no more than 3 m showing red in the intended direction(s) of approach to the runway.*

Note.— *Where necessary to enhance conspicuity, extra lights are installed uniformly.*

5.3.29.4 **Recommendation.**— *A pair of elevated lights should be added to each end of the no-entry bar where the in-pavement no entry bar lights might be obscured from a pilot's view, for example, by snow or rain, or where a pilot may be required to stop the aircraft in a position so close to the lights that they are blocked from view by the structure of the aircraft.*

5.3.29.5 The intensity in red light and beam spreads of no-entry bar lights shall be in accordance with the specifications in Appendix 2, Figures A2-12 through A2-16, as appropriate.

5.3.29.6 **Recommendation.**— *Where no-entry bars are specified as components of an advanced surface movement guidance and control system and where, from an operational point of view, higher intensities are required to maintain ground movements at a certain speed in very low visibilities or in bright daytime conditions, the intensity in red light and beam spreads of no-entry bar lights should be in accordance with the specifications of Appendix 2, Figure A2-17, A2-18 or A2-19.*

Note.— *High-intensity no-entry bars are typically used only in case of an absolute necessity and following a specific study.*

5.3.29.7 **Recommendation.**— *Where a wide beam fixture is required, the intensity in red light and beam spreads of no-entry bar lights should be in accordance with the specifications of Appendix 2, Figure A2-17 or A2-19.*

5.3.29.8 The lighting circuit shall be designed so that:

- a) no-entry bars are switchable selectively or in groups;
- b) when a no-entry bar is illuminated, any taxiway centre line lights installed beyond the no-entry bar, when viewed towards the runway, shall be extinguished for a distance of at least 90 m; and
- c) when a no-entry bar is illuminated, any stop bar installed between the no-entry bar and the runway shall be extinguished.

5.4 Signs

5.4.1 General

Note.— Signs shall be either fixed message signs or variable message signs. Guidance on signs is contained in the Aerodrome Design Manual (Doc 9157), Part 4.

Application

5.4.1.1 Signs shall be provided to convey a mandatory instruction, information on a specific location or destination on a movement area or to provide other information to meet the requirements of 9.8.1.

Note.— See 5.2.17 for specifications on information marking.

5.4.1.2 **Recommendation.**— *A variable message sign should be provided where:*

- a) the instruction or information displayed on the sign is relevant only during a certain period of time; and/or*
- b) there is a need for variable predetermined information to be displayed on the sign to meet the requirements of 9.8.1.*

Characteristics

5.4.1.3 Signs shall be frangible. Those located near a runway or taxiway shall be sufficiently low to preserve clearance for propellers and the engine pods of jet aircraft. The installed height of the sign shall not exceed the dimension shown in the appropriate column of Table 5-5.

5.4.1.4 Signs shall be rectangular, as shown in Figures 5-30 and 5-31 with the longer side horizontal.

5.4.1.5 The only signs on the movement area utilizing red shall be mandatory instruction signs.

5.4.1.6 The inscriptions on a sign shall be in accordance with the provisions of Appendix 4.

Table 5-5. Location distances for taxiing guidance signs including runway exit signs

Code number	Legend	Sign height (mm)		Perpendicular distance from defined taxiway pavement edge to near side of sign	Perpendicular distance from defined runway pavement edge to near side of sign
		Face (min.)	Installed (max.)		
1 or 2	200	400	700	5–11 m	3–10 m
1 or 2	300	600	900	5–11 m	3–10 m
3 or 4	300	600	900	11–21 m	8–15 m
3 or 4	400	800	1 100	11–21 m	8–15 m

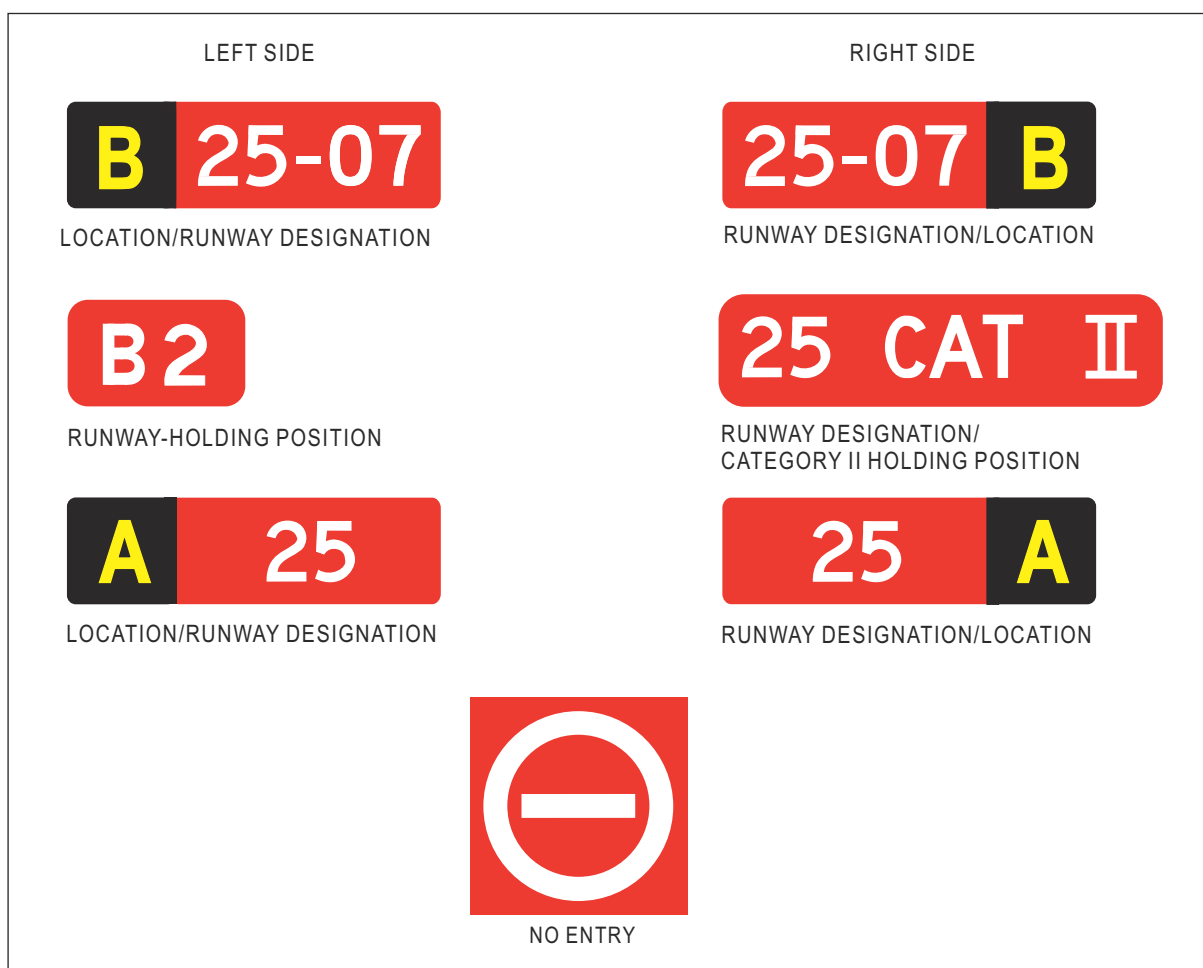


Figure 5-30. Mandatory instruction signs

5.4.1.7 Signs shall be illuminated in accordance with the provisions of Appendix 4 when intended for use:

- a) in runway visual range conditions less than a value of 800 m; or
- b) at night in association with instrument runways; or
- c) at night in association with non-instrument runways where the code number is 3 or 4.

5.4.1.8 Signs shall be retroreflective and/or illuminated in accordance with the provisions of Appendix 4 when intended for use at night in association with non-instrument runways where the code number is 1 or 2.

5.4.1.9 A variable message sign shall show a blank face when not in use.

5.4.1.10 In case of failure, a variable message sign shall not provide information that could lead to unsafe action from a pilot or a vehicle driver.

5.4.1.11 **Recommendation.**— *The time interval to change from one message to another on a variable message sign should be as short as practicable and should not exceed 5 seconds.*

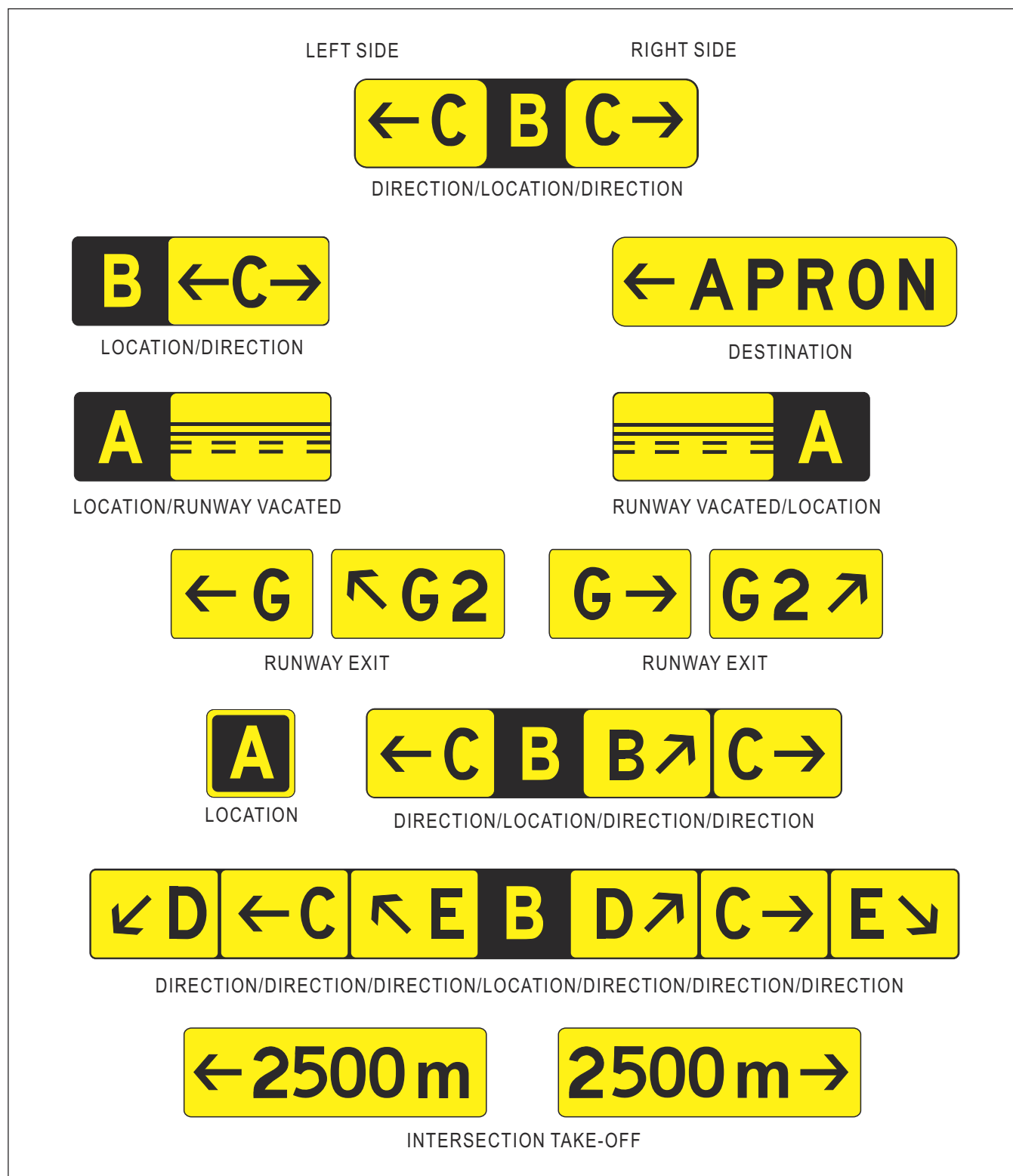


Figure 5-31. Information signs

5.4.2 Mandatory instruction signs

Note.— See Figure 5-30 for pictorial representation of mandatory instruction signs and Figure 5-32 for examples of locating signs at taxiway/runway intersections.

Application

5.4.2.1 A mandatory instruction sign shall be provided to identify a location beyond which an aircraft taxiing or vehicle shall not proceed unless authorized by the aerodrome control tower.

5.4.2.2 Mandatory instruction signs shall include runway designation signs, category I, II or III holding position signs, runway-holding position signs, road-holding position signs and NO ENTRY signs.

Note.— See 5.4.7 for specifications on road-holding position signs.

5.4.2.3 A pattern “A” runway-holding position marking shall be supplemented at a taxiway/runway intersection or a runway/runway intersection with a runway designation sign.

5.4.2.4 A pattern “B” runway-holding position marking shall be supplemented with a category I, II or III holding position sign.

5.4.2.5 A pattern “A” runway-holding position marking at a runway-holding position established in accordance with 3.12.3 shall be supplemented with a runway-holding position sign.

Note.— See 5.2.10 for specifications on runway-holding position marking.

5.4.2.6 **Recommendation.**— *A runway designation sign at a taxiway/runway intersection should be supplemented with a location sign in the outboard (farthest from the taxiway) position, as appropriate.*

Note.— See 5.4.3 for characteristics of location signs.

5.4.2.7 A NO ENTRY sign shall be provided when entry into an area is prohibited.

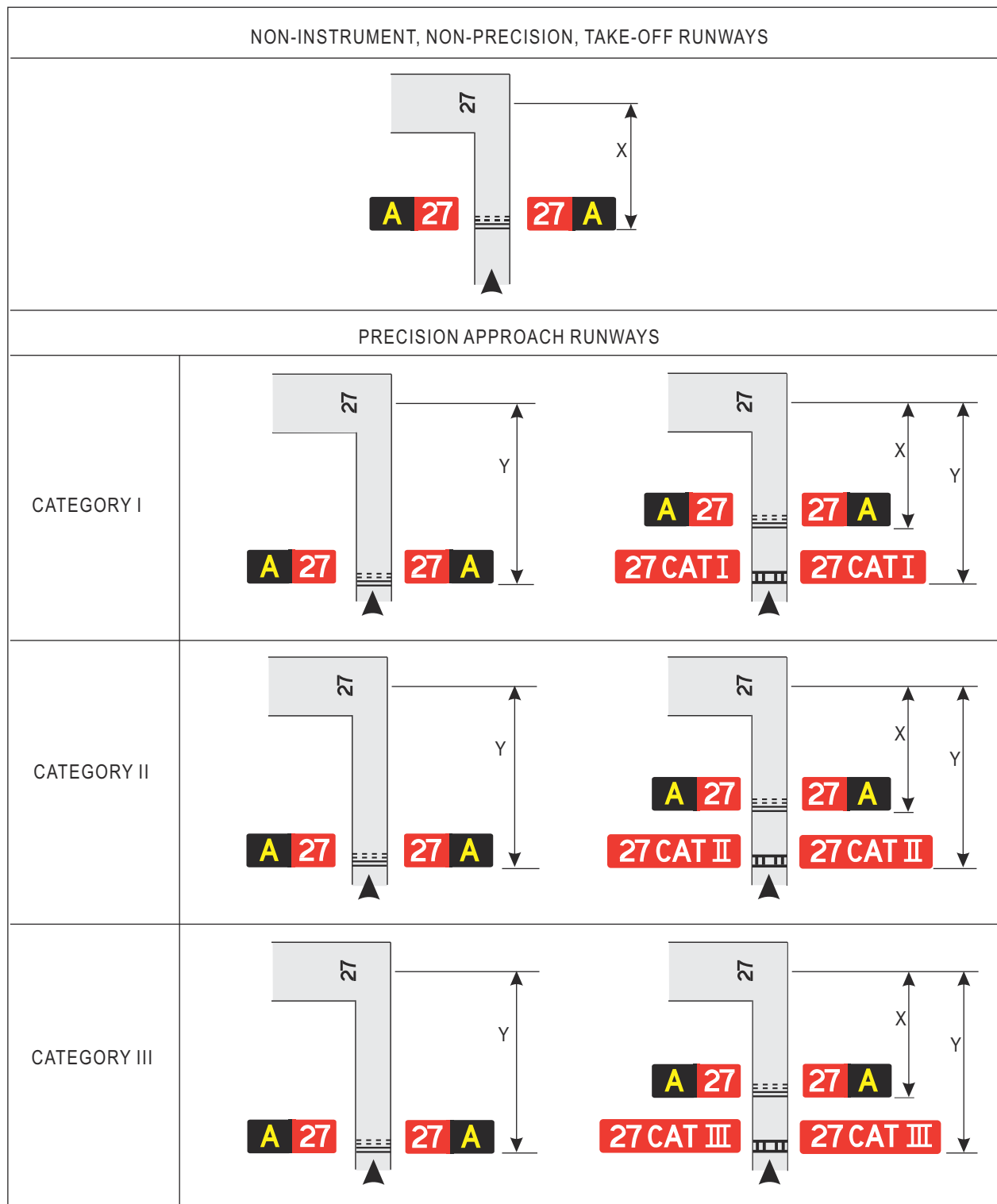
Location

5.4.2.8 A runway designation sign at a taxiway/runway intersection or a runway/runway intersection shall be located on each side of the runway-holding position marking facing the direction of approach to the runway.

5.4.2.9 A category I, II or III holding position sign shall be located on each side of the runway-holding position marking facing the direction of the approach to the critical area.

5.4.2.10 A NO ENTRY sign shall be located at the beginning of the area to which entrance is prohibited on each side of the taxiway as viewed by the pilot.

5.4.2.11 A runway-holding position sign shall be located on each side of the runway-holding position established in accordance with 3.12.3, facing the approach to the obstacle limitation surface or ILS/MLS critical/sensitive area, as appropriate.



Note.— Distance *X* is established in accordance with Table 3-2. Distance *Y* is established at the edge of the ILS/MLS critical/sensitive area.

Figure 5-32. Examples of sign positions at taxiway/runway intersections

Characteristics

5.4.2.12 A mandatory instruction sign shall consist of an inscription in white on a red background.

5.4.2.13 **Recommendation.**— *Where, owing to environmental or other factors, the conspicuity of the inscription on a mandatory instruction sign needs to be enhanced, the outside edge of the white inscription should be supplemented by a black outline measuring 10 mm in width for runway code numbers 1 and 2, and 20 mm in width for runway code numbers 3 and 4.*

5.4.2.14 The inscription on a runway designation sign shall consist of the runway designations of the intersecting runway properly oriented with respect to the viewing position of the sign, except that a runway designation sign installed in the vicinity of a runway extremity may show the runway designation of the concerned runway extremity only.

5.4.2.15 The inscription on a category I, II, III or joint II/III holding position sign shall consist of the runway designator followed by CAT I, CAT II, CAT III or CAT II/III, as appropriate.

5.4.2.16 The inscription on a NO ENTRY sign shall be in accordance with Figure 5-30.

5.4.2.17 The inscription on a runway-holding position sign at a runway-holding position established in accordance with 3.12.3 shall consist of the taxiway designation and a number.

5.4.2.18 Where appropriate, the following inscriptions/symbol shall be used:

<i>Inscription/symbol</i>	<i>Use</i>
Runway designation of a runway extremity	To indicate a runway-holding position at a runway extremity
OR	
Runway designation of both extremities of a runway	To indicate a runway-holding position located at other taxiway/runway intersections or runway/runway intersections
25 CAT I (Example)	To indicate a category I runway-holding position at the threshold of runway 25
25 CAT II (Example)	To indicate a category II runway-holding position at the threshold of runway 25
25 CAT III (Example)	To indicate a category III runway-holding position at the threshold of runway 25
25 CAT II/III (Example)	To indicate a joint category II/III runway-holding position at the threshold of runway 25
NO ENTRY symbol	To indicate that entry to an area is prohibited
B2 (Example)	To indicate a runway-holding position established in accordance with 3.12.3