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GSM-AUS-CPL.006

DOCUMENT TITLE
AIR LAW 1 (AUS)

CHAPTER 2 – AERODROMES

Version 2.2
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CONTENTS ..... PAGE

AERODROMES

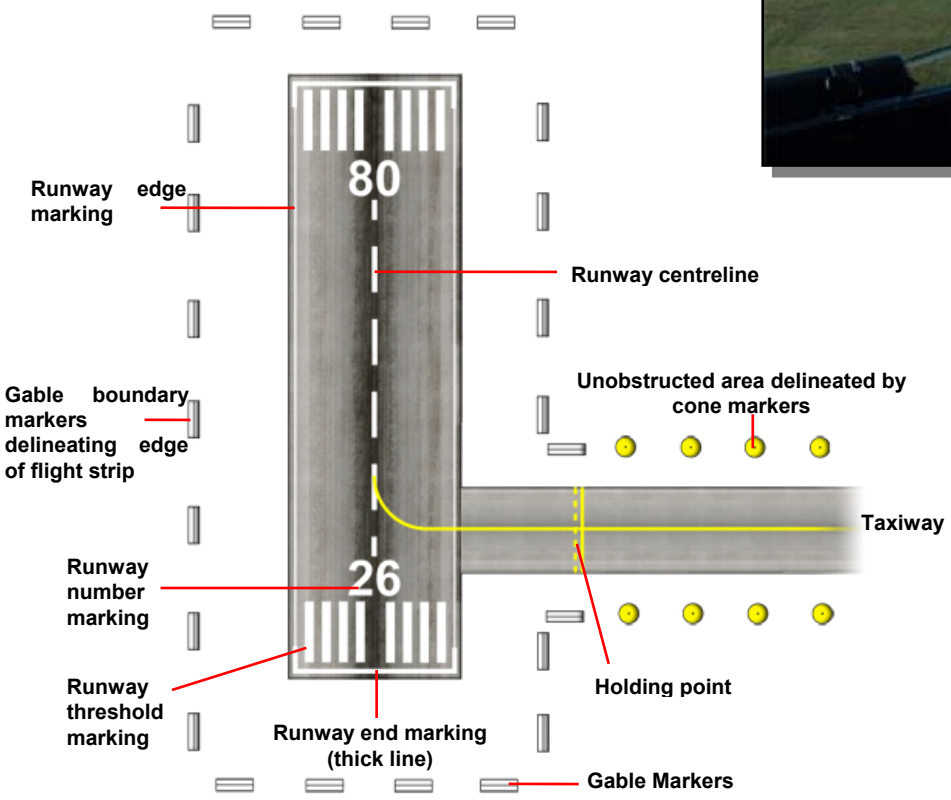
2.1 Introduction

Before flight operations and air traffic control procedures are discussed, it is important that the terminology associated with aerodromes and their operating environments be correctly defined and understood in order to avoid misunderstandings amongst aviation personnel.

2.2 Definitions

2.2.1 Runway

A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

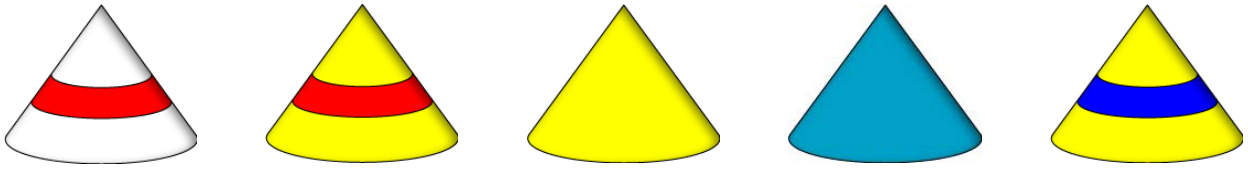


2.2.2 Cone and Gable Markers

Cone and gable markers are generally used to mark the boundaries on grass or gravel runways and taxiways.

2.2.2.1 Cone markers

Each colour is used for a specific purpose:



White and Red
Unserviceable areas / obstructions

Yellow and Red
Parking areas

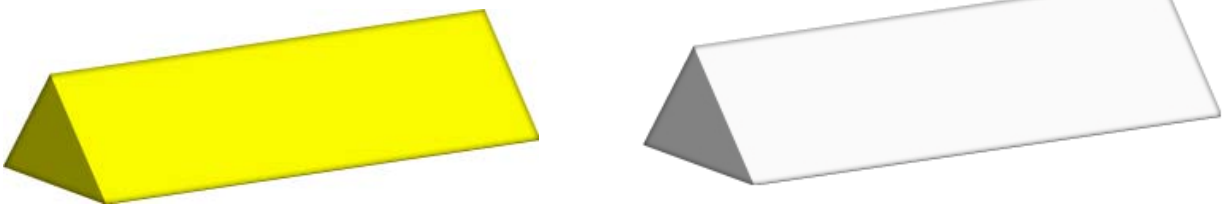
Yellow
Taxiways

Blue
Helicopter manoeuvring areas

Yellow and Blue
Helicopter Taxiways

2.2.2.2 Gable markers

White is used to mark the edges of runways. Yellow is used along taxiways.



2.2.3 Apron

A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance.

When the taxiway and apron surface is bitumen, asphalt or concrete, markings are always painted in yellow.

2.2.4 Taxiway

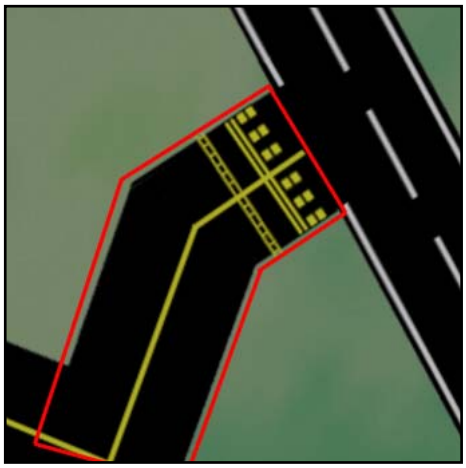
A defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another.

The taxiway markings on aerodromes provide the pilot with information regarding position on the taxiway, points at which the aircraft is required to stop, and indications as to when the taxiway is to be exited.

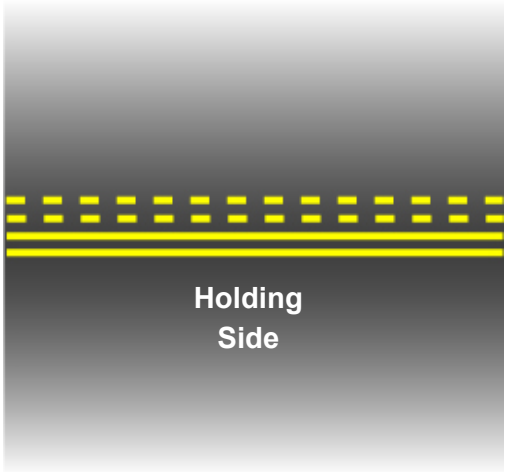
Taxiway markings are always yellow.

In order to accomplish this, the following markings are used:

- Taxiway centre line marking
- Runway turn pad marking
- Runway-holding position markings
- Intermediate holding position marking

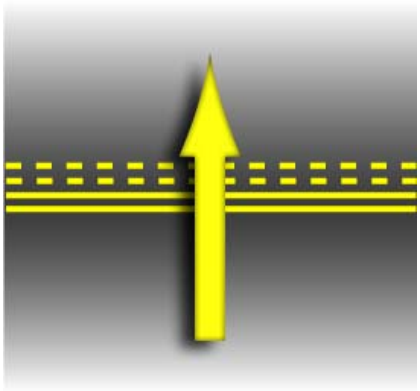


2.2.5 Runway Holding Point

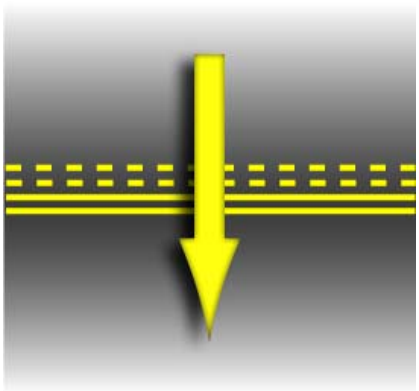


The Holding Point is a designated location on the manoeuvring area of an aerodrome at which an aircraft carries out an engine run-up or is held before entering a runway for take-off.

At all Australian aerodromes the Hold Points are marked with two solid lines and two broken lines.



Entering a runway –
permission from ATC required before crossing Hold Point.



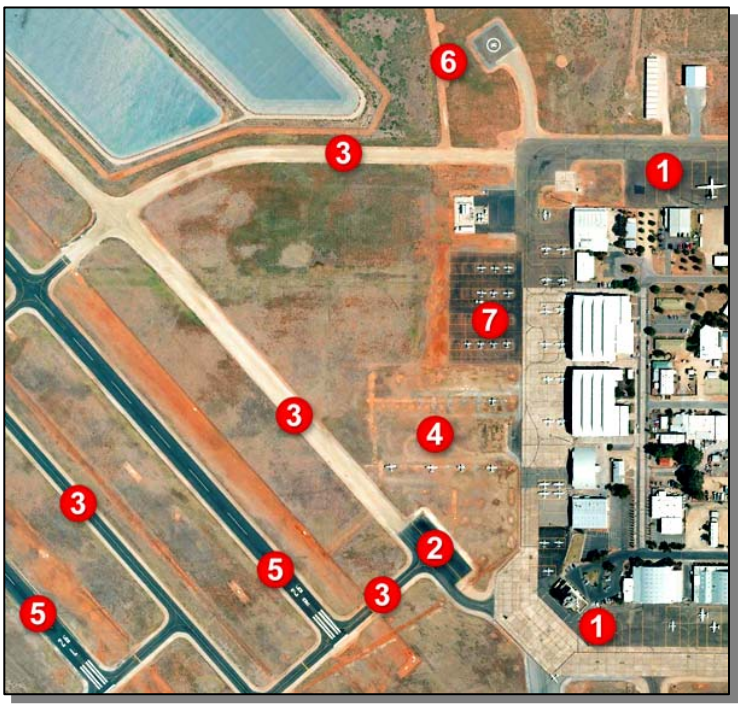
Leaving a runway –
permission not required before crossing the Hold Point.

2.2.6 Manoeuvring Area

That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

2.2.7 Movement Area

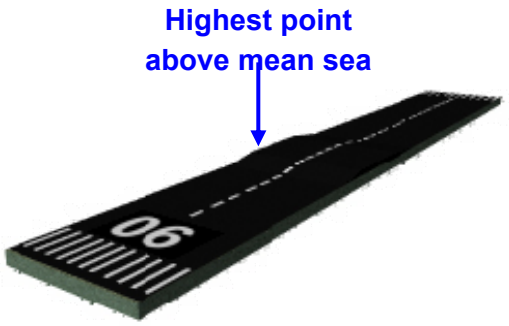
The movement area is made up of all of the parts of an aerodrome which are used for surface movements of aircraft including take-off and landing.



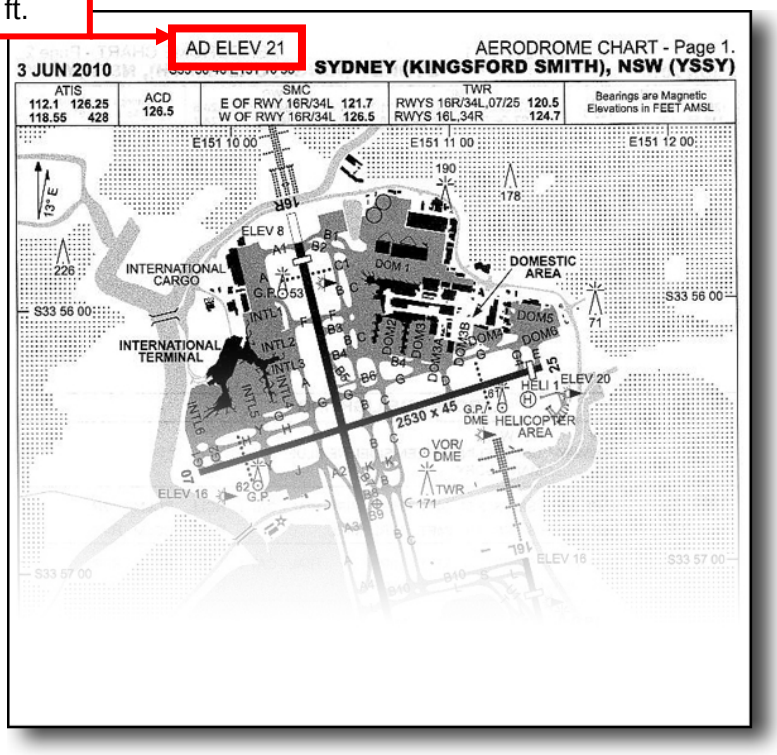
1. Apron
2. Run-up bay
3. Taxiway
4. Grass parking area
5. Runway
6. Helipad
7. Bitumen parking area

2.2.8 Aerodrome Elevation

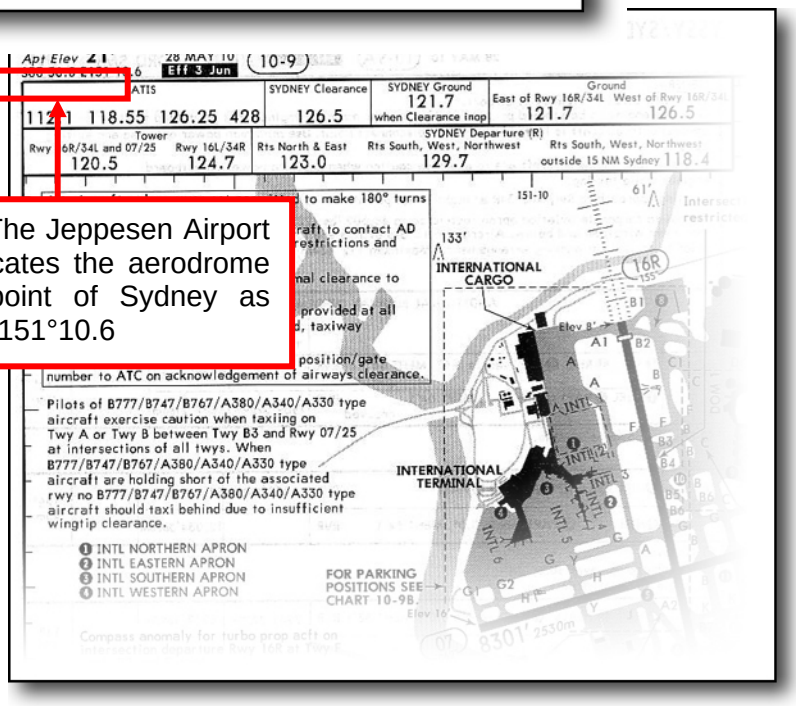
The elevation of the highest point of the landing area



Example: The aerodrome elevation of Sydney is 21 ft.



Example: The Jeppesen Airport Layout indicates the aerodrome reference point of Sydney as S33°56.8' E151°10.6



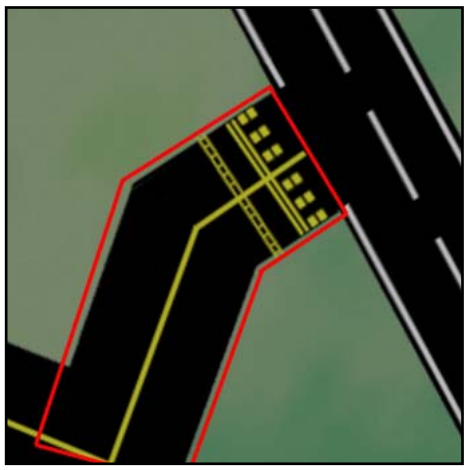
2.2.9 Aerodrome Reference Point

The designated geographical location of the aerodrome

ANNEX 14 - AERODROMES

2.3 Visual Aids for Navigation: Taxiway Markings

2.3.1 Introduction



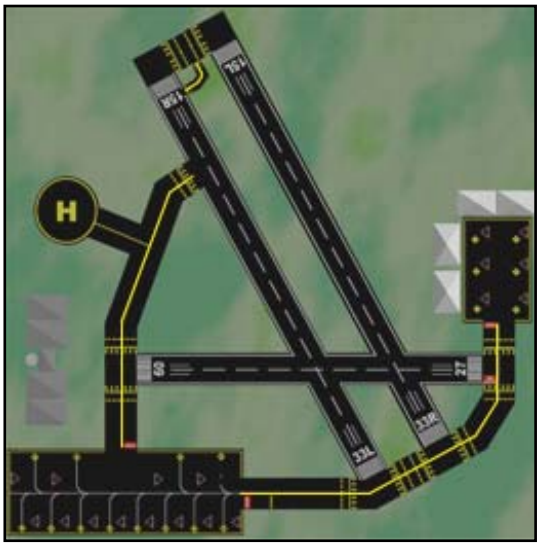
The taxiway markings on aerodromes provide the pilot with information regarding position on the taxiway, points at which the aircraft is required to stop, and indications as to when the taxiway is to be exited.

In order to accomplish this, the following markings are used:

- Taxiway centre line marking
- Runway turn pad marking
- Runway-holding position markings
- Intermediate holding position marking

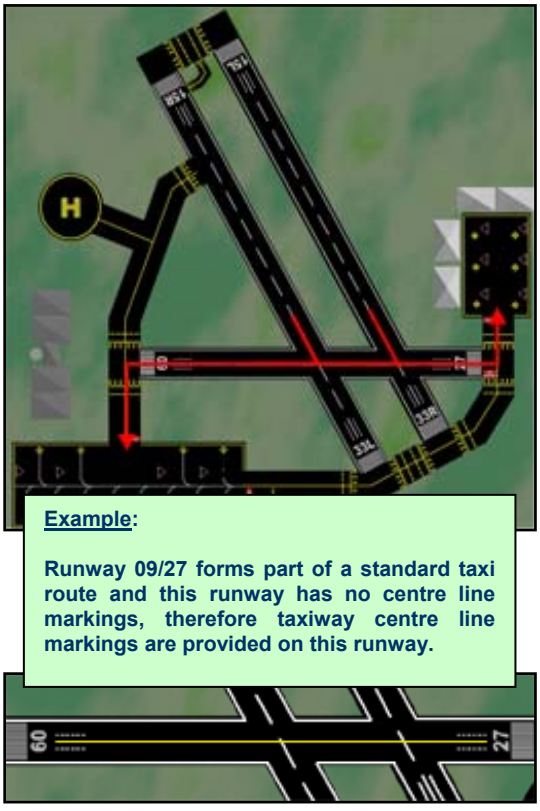
2.3.2 Taxiway Centre Line Markings

2.3.2.1 Requirements



Taxiway centre line markings are to be provided on paved taxiways, de/anti-icing facilities and aprons 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. Taxiway centre line markings are to be provided on a paved runway when the runway is part of a standard taxi route and there are no runway centre line markings;

OR



Example:

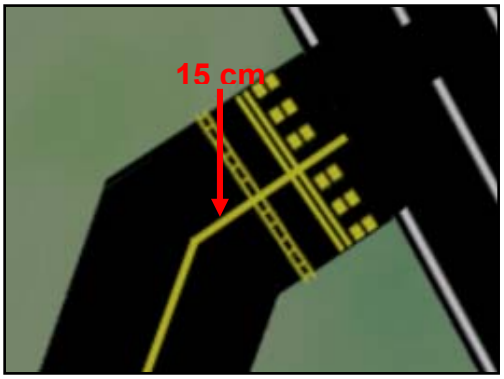
Runway 09/27 forms part of a standard taxi route and this runway has no centre line markings, therefore taxiway centre line markings are provided on this runway.

Taxiway centre line markings are to be provided on a paved runway when the runway is part of a standard taxi route and where the taxiway centre line is not coincident with the runway centre line.

Example:

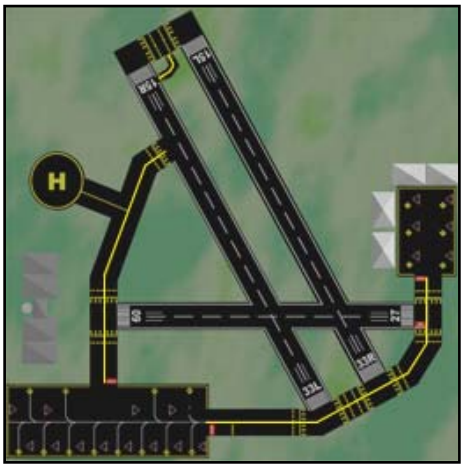
As with the previous example, runway 09/27 forms part of a standard route, however here only the right-hand side of runway 09 and thus the left-hand side of runway 27 is used as a taxiway. Thus, the runway centre-line cannot be used as it is not coincident with the taxiway centre line, therefore taxiway centre line markings has to be provided on the runway.

2.3.2.2 Characteristics



The taxiway centre line markings are to be at least 15 cm in width; and

Be continuous in length except where it intersects with a runway holding position marking or an intermediate holding position marking.



2.4 Runway Turn Pad Marking

2.4.1 Application

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.

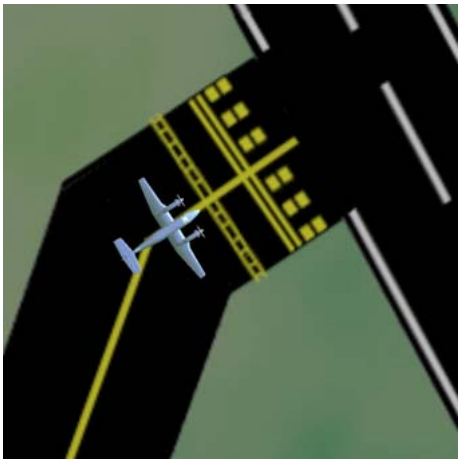
2.4.2 Characteristics

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

2.5 Runway-Holding Position Markings

2.5.1 Requirements

A runway-holding position marking indicates the position where an aircraft is to hold before entering the runway.



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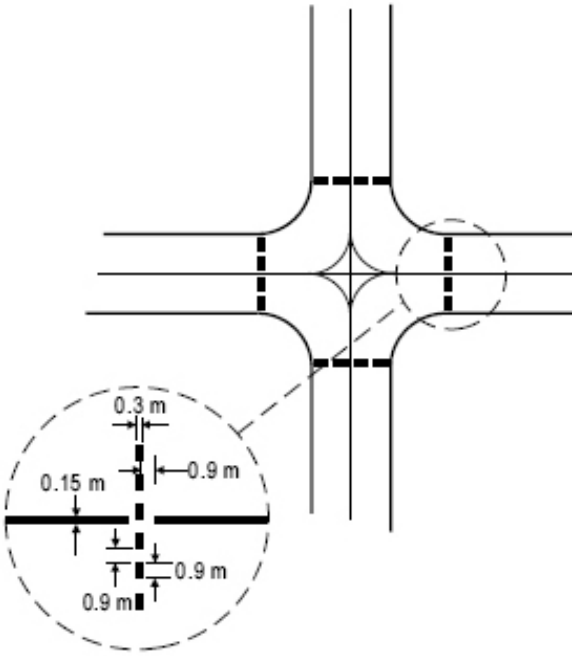
A runway-holding position marking is normally required at the intersection of a taxiway with a non-instrument, precision approach or take-off runway.

2.5.2 Intermediate Holding Position Marking

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.

An intermediate holding position marking shall consist of a single broken line as shown.

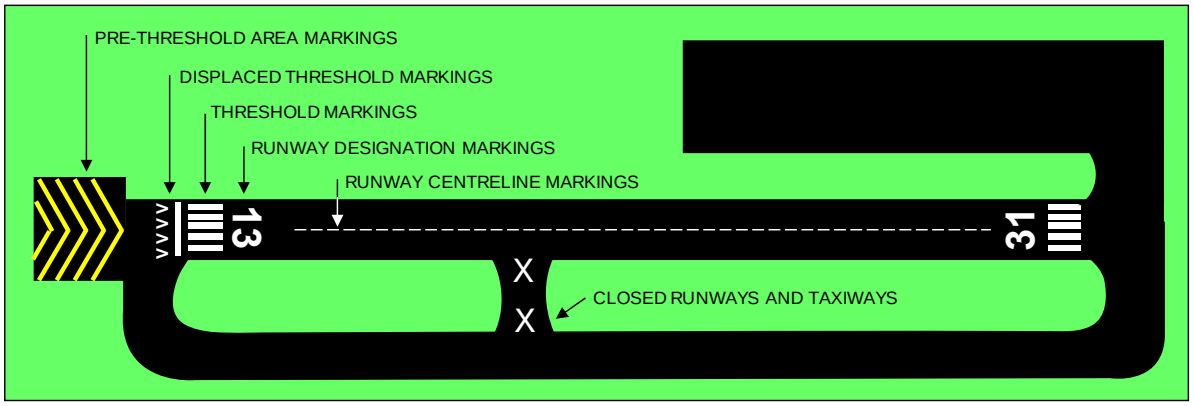


2.6 Runway Markings

2.6.1 Introduction

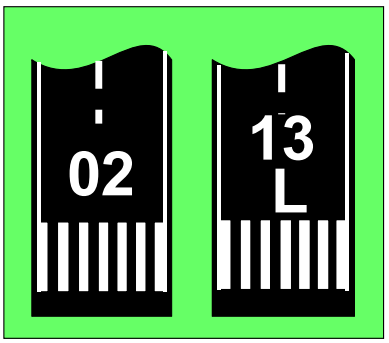
Runway markings are designed in order to differentiate between the sides, thresholds, and touchdown points of a runway. The following are types of markings found on runways:

- Runway designation marking
- Runway centre line marking
- Threshold marking
- Displaced threshold markings
- Pre-threshold Area
- Closed runways and Taxiways, or Parts Thereof



2.7 Runway Designation Marking

Runway designation marking shall be provided at the thresholds of paved runways.



2.7.1 Characteristics

A designation marking shall consist of a two digit number (e.g. 02).

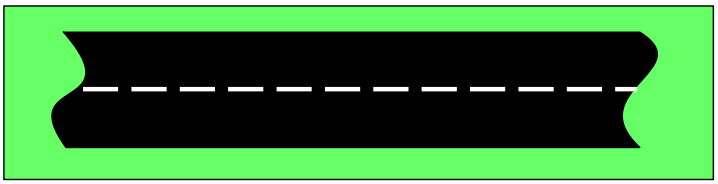
On a single runway, dual parallel runways and triple parallel runways the two digit number shall be the whole number nearest one-tenth of the magnetic North when viewed from the direction of approach (e.g. a runway with a magnetic heading of 023°, shall be 02.)

When the above rule would give a single digit number, a zero shall precede it.

2.8 Runway Centre Line Markings

Centre line markings shall be provided on paved runways.

It should be located along the centre line of the runway between the runway designation markings.



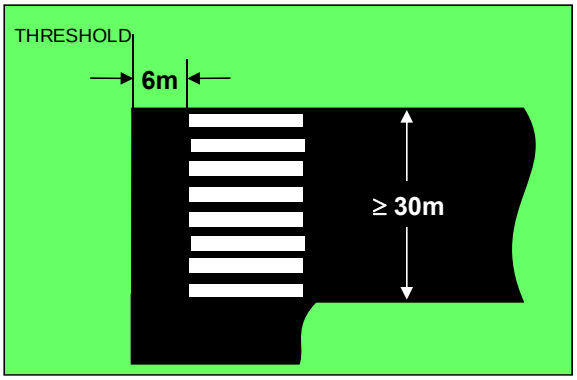
2.8.1 Characteristics

It consists of a line of uniformly spaced stripes and gaps.

2.9 Threshold Marking

A threshold marking shall be provided at the threshold of a paved instrument runway.

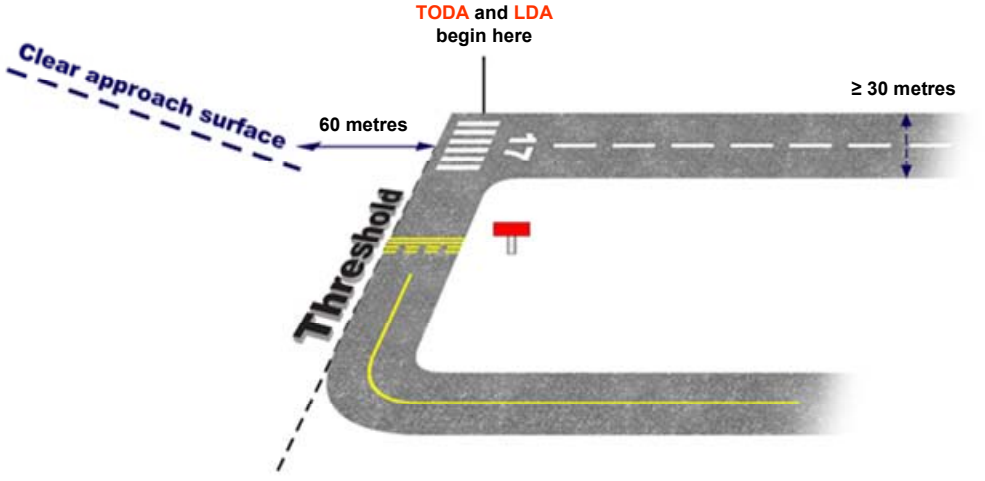
The stripes of the threshold marking shall commence 6 m from the threshold.



Threshold markings consisting of parallel longitudinal white lines resembling "piano keys" are used at the ends of sealed or concrete runways of 30M or greater width. For runways less than 30metres wide, threshold markings may or may not be used.

TODA = Take Off Distance Available

LDA = Landing Distance Available



2.9.1 Characteristics

Threshold markings consist of a pattern of longitudinal stripes of uniform dimensions disposed symmetrically about the centre line of a runway.

The number of stripes shall be in accordance with runway width as follows:

Runway Width	Number of Stripes
18 m	4
23 m	6
30 m	8
45 m	12
60 m	16

2.10 Displaced Threshold Marking

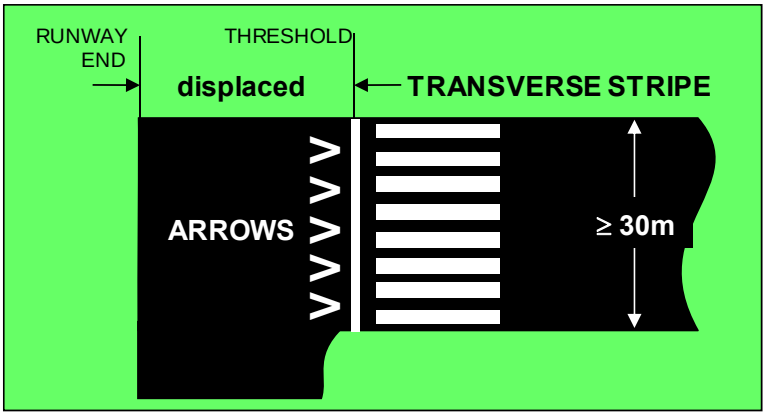
Two types of markings are provided to indicate displaced thresholds. They are transverse stripes and arrows.

2.10.1 Transverse Stripe

The transverse stripe is added where a threshold is displaced from the extremity of a runway.

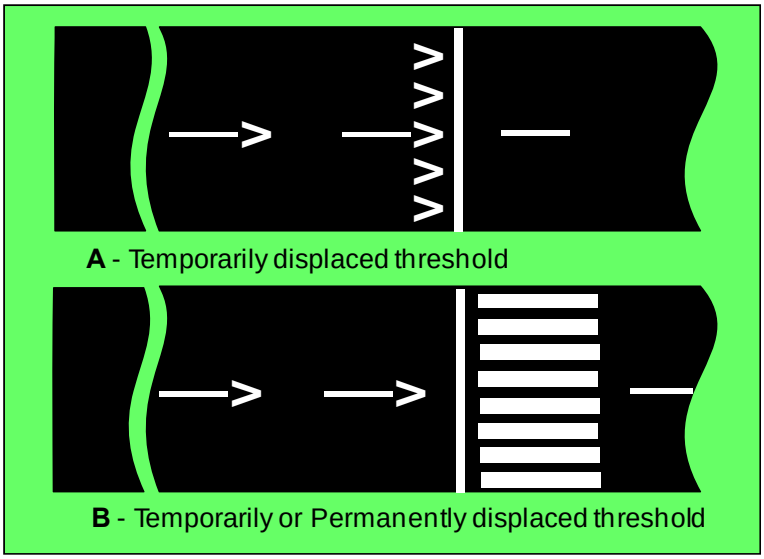
2.10.2 Arrows

Where a runway threshold is permanently displaced, arrows shall be provided on the portion of the runway before the displaced threshold.



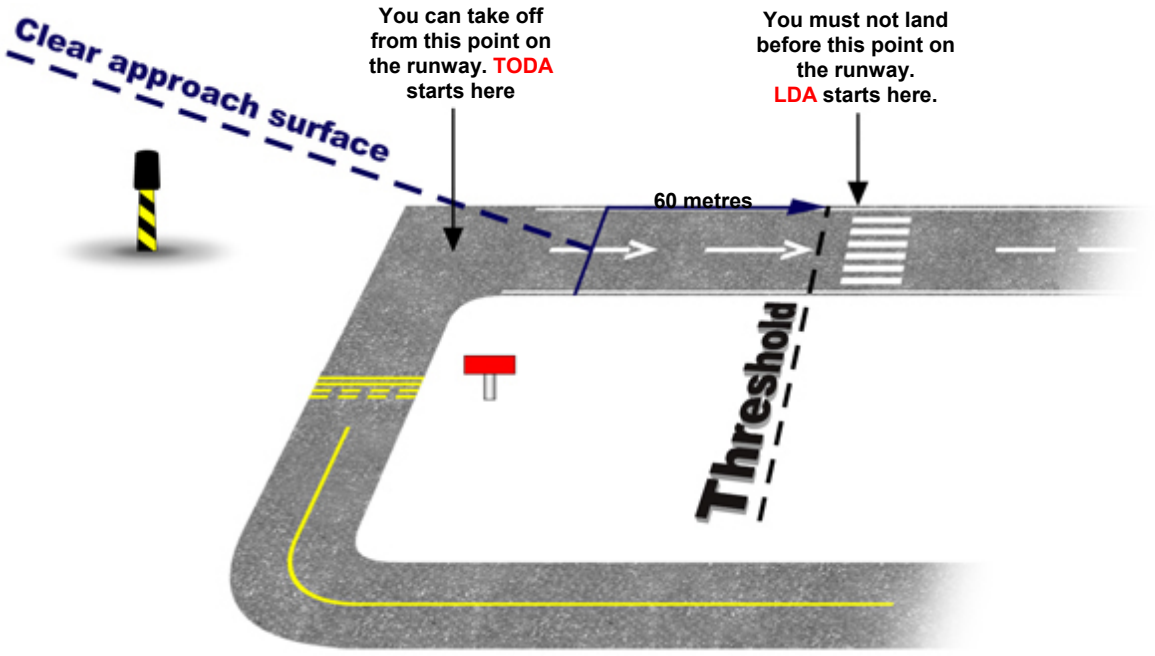
2.10.3 Temporarily and Permanently Displaced Thresholds

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



2.10.4 Permanently Displaced Threshold Markings

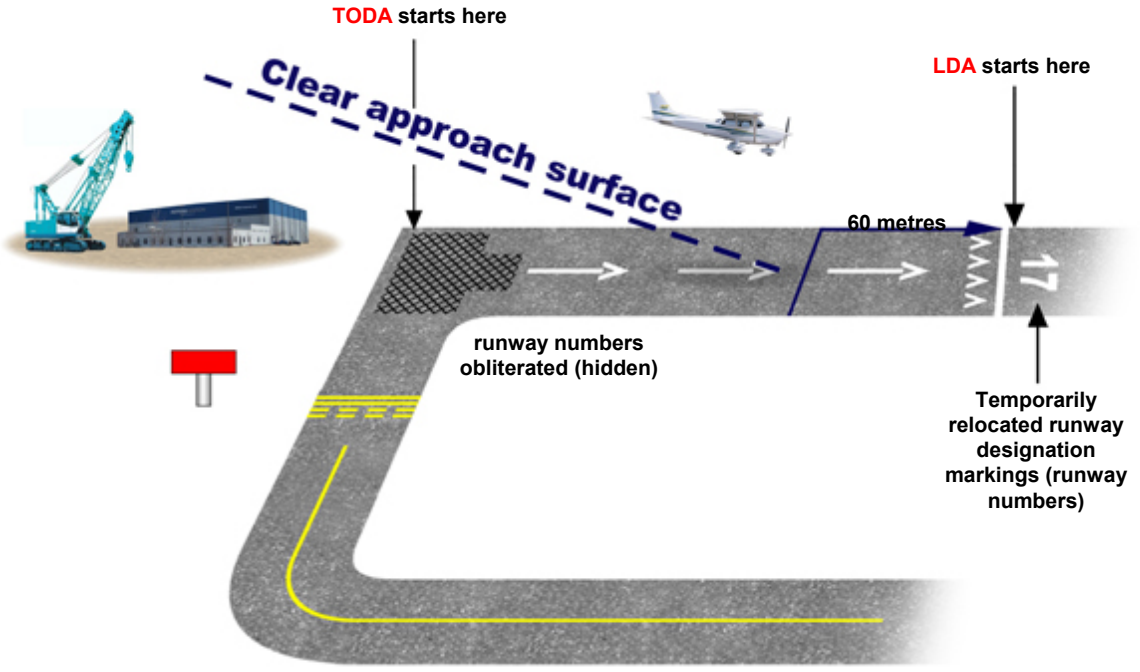
"Piano key" markings displaced from the runway end indicate that the normal approach is obstructed by a permanent obstacle, or that a permanent hazardous surface condition exists near the end of the runway.



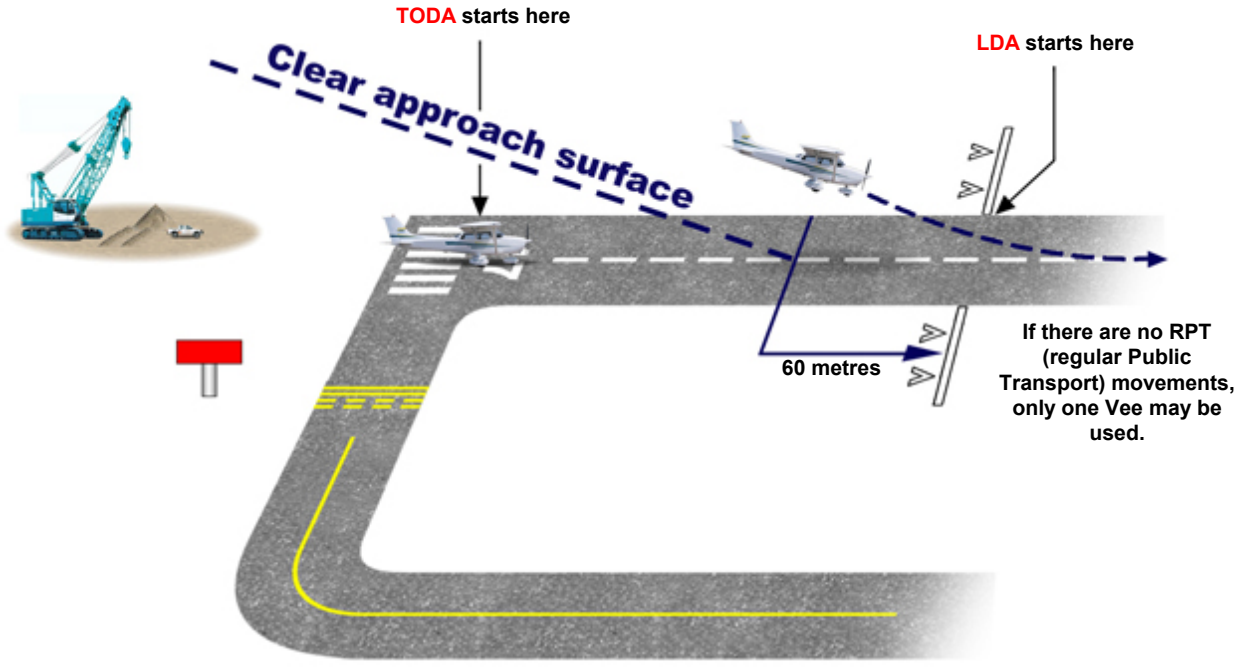
2.10.5 Temporary - Infringement on the Approach Path

Temporary Displaced Threshold markings due to obstacle infringement on the approach path:

a. Period – In excess of (more than) 30 days



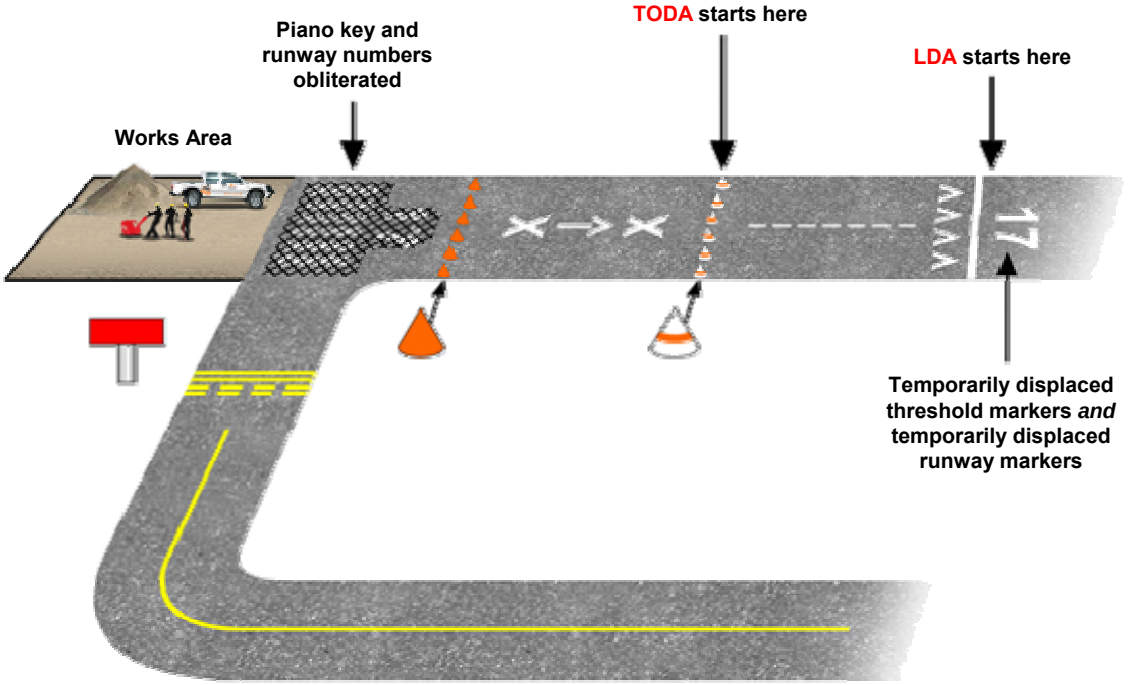
b. Period - Less than 30 days



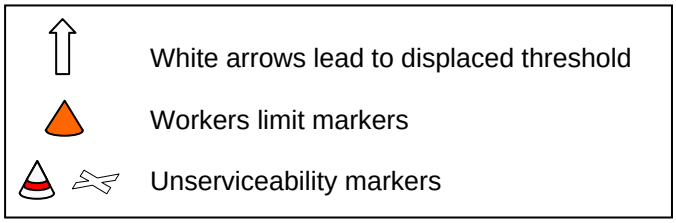
2.10.6 Temporary – Work on the Runway

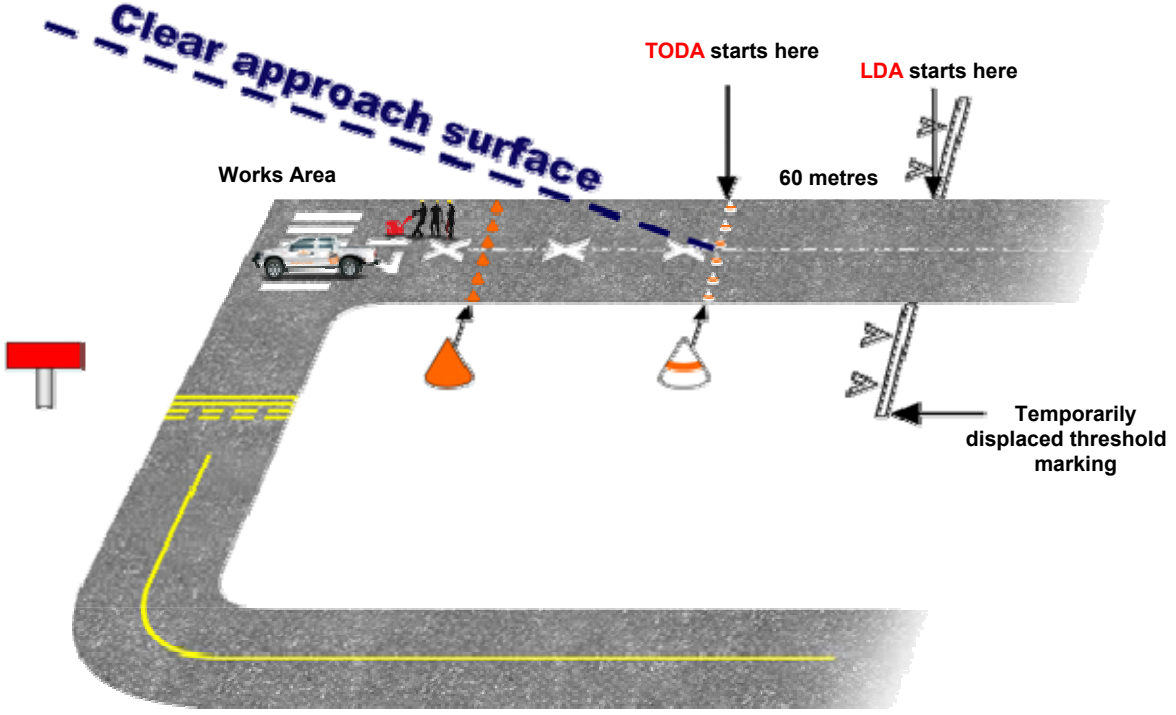
Temporary Displaced Threshold markings due to works on the runway:

a. Period – In excess of (more than) 30 days



b. Period - Less than 30 days





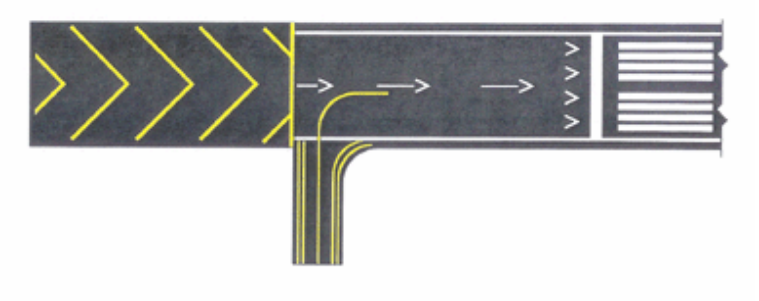
2.10.7 Pre-Threshold Area

2.10.7.1 Application

When the surface before a threshold is paved and exceeds 60 m in length and is not suitable for normal use by aircraft, the entire length before the threshold should be marked with a chevron marking.

2.10.7.2 Location

A chevron marking should point in the direction of the runway.



2.10.8 Closed runways and Taxiways, or Parts Thereof

2.10.8.1 Application

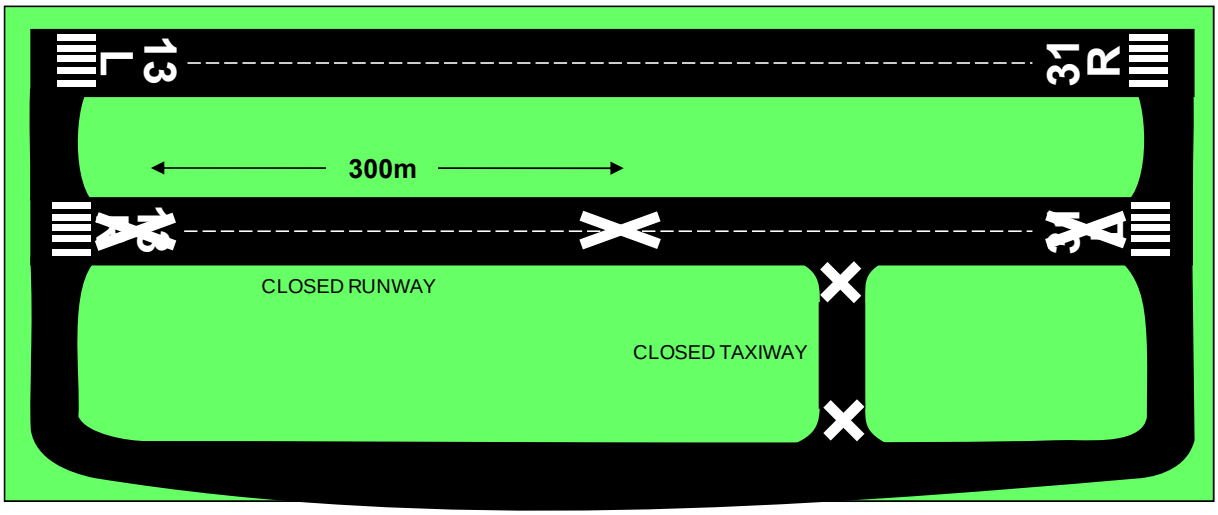
A closed marking shall be displayed on a runway or taxiway, or portion thereof, which is permanently closed to the use of all aircraft.

A closed marking should be displayed on a temporarily closed runway or taxiway or portion thereof, except that such marking may be omitted when the closing is of short duration and adequate warning by air traffic services is provided.

2.10.8.2 Location

On a runway a closed marking shall be placed at each end of the runway, or portion thereof, declared closed, and additional markings shall be so placed that the maximum interval between markings does not exceed 300 m.

On a taxiway a closed marking shall be placed at least at each end of the taxiway or portion thereof closed.



2.11 Indicators and Signalling Devices

2.11.1 Introduction

In the aviation environment, developments are constantly made which assist the flight crew in maintaining a safe and friendly environment. Even in this modern era of aviation, many aids are still required at aerodromes, and if not required, may be employed to assist the crew.

The following operating aids are found on the aerodrome:

- Wind Direction Indicator
- Signalling Lamp
- Ground Signals

2.11.2 Wind Direction Indicator

An aerodrome shall be equipped with at least one wind direction indicator. The purpose of the windsock is to give a clear indication of the direction of the surface wind and a general indication of the wind speed.

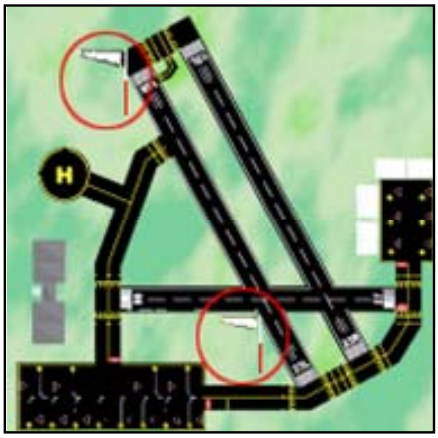
2.11.2.1 Colour

The colour or colours must be selected to be clearly visible and understandable from a height of at least 300 m, having a regard for background. A single colour, preferably white or orange should be used.

2.11.2.2 Marking

The location of at least one wind direction indicator should be marked by a circular band. The band should be centred about the wind direction indicator support and should be in a conspicuous colour, preferably white for the primary wind indicator and orange/yellow for the secondary wind indicators.

2.11.2.3 Location



The wind direction indicator must be located so as to be visible from aircraft in flight or on the movement area and in such a way as to be free from the effects of air disturbances caused by nearby objects. Provision should be made for illuminating at least one wind indicator at an aerodrome intended for use at night.

2.11.3 Signalling Lamp

A signalling lamp shall be provided at a controlled aerodrome in the aerodrome control tower.

2.11.3.1 Characteristics

A signalling lamp should be capable of producing red, green and white signals, and being aimed manually at any target (aircraft, vehicle or person) as required.

The beam spread of a signalling lamp should be not less than 1˚ nor greater than 3˚.

2.11.3.2 Overview

When operating at an aerodrome where there is no radio communication between the controller and an aircraft on the ground or in the air, certain standard light signals are used. (Jeppesen / AIP)

Note:

- A 'steady' light goes on and stays on.
- **A 'flashing' light goes on and off and on and off continuously**.

2.11.4 Light Signals to Aircraft

Light Signal	Meaning in Flight	Meaning on Aerodrome
Steady Green	Authorised to land if pilot satisfied no collision risk exists.	Authorised to take-off if pilot satisfied no collision risk exists.
Steady Red	Give way to other aircraft and continue circling	Stop
Green Flashes	Return for landing	Authorised to taxi if pilot is satisfied that no collision risk exists.
Red flashes	Aerodrome unsafe – do not land	Taxi clear of landing area in use.
White Flashes	No significance	Return to starting point on Aerodrome.

2.11.5 The Ground Signal Area

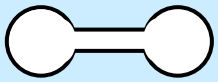
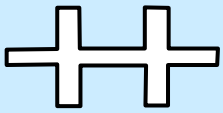
The signal area on the airfield is a dedicated area from which ground signals are laid out as messages for aircraft in flight.

2.11.5.1 Location of Signal Area

The signal area is normally situated adjacent to the primary wind indicator inside the circular band. It is essential that all pilots understand the meaning of ground signals. These signals are usually placed adjacent to the primary wind indicator.

2.11.6 Decoding of Ground Signals

You need to learn the meanings of the following ground signals.

Ground Signal	Description	Where the signal is displayed	Meaning
	A horizontal white dumb-bell	adjacent to the windsock	a. Use sealed runways, taxiways and aprons only. b. Where aerodrome has only gravel and natural surface runways, taxiways and aprons, use gravel surfaces only.
	one white cross	adjacent to the windsock	The aerodrome is completely unserviceable.
	one or more white crosses	on the manoeuvring (movement) area	Any area marked by a cross or crosses with the limit delineated (lined or marked) by markers is unfit for use by aircraft.
	a double white cross	adjacent to the windsock	Gliding operations are in progress (see below)

2.12 Visual Aids for Denoting Restricted Areas

2.12.1 Closed runways and Taxiways, or Parts Thereof

2.12.1.1 Application

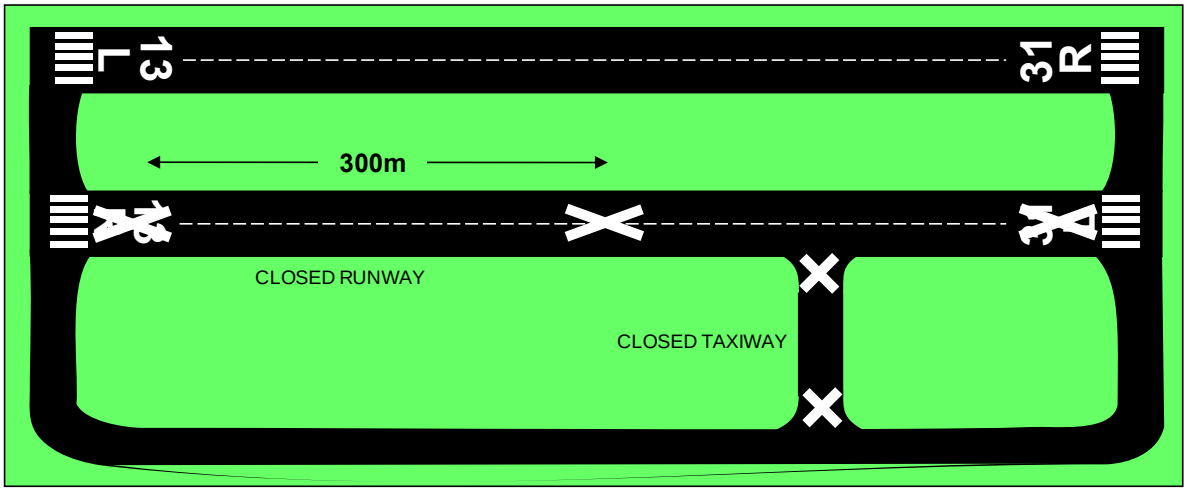
A closed marking shall be displayed on a runway or taxiway, or portion thereof, which is permanently closed to the use of all aircraft.

A closed marking should be displayed on a temporarily closed runway or taxiway or portion thereof, except that such marking may be omitted when the closing is of short duration and adequate warning by air traffic services is provided.

2.12.1.2 Location

On a runway a closed marking shall be placed at each end of the runway, or portion thereof, declared closed, and additional markings shall be so placed that the maximum interval between markings does not exceed 300 m.

On a taxiway a closed marking shall be placed at least at each end of the taxiway or portion thereof closed.



2.12.1.3 Characteristics

The closed marking shall be of the form and proportions as detailed in Figure 1 when displayed on a runway, and shall be of the form and proportions as detailed in Figure 2 when displayed on a taxiway. The marking shall be white when displayed on a runway and shall be yellow when displayed on a taxiway.

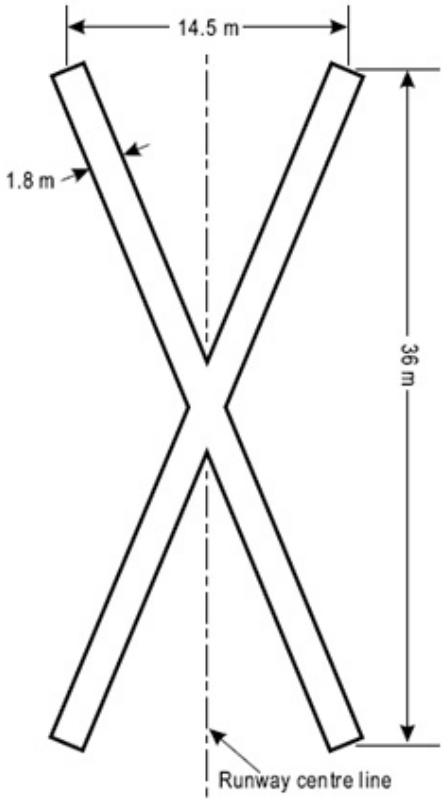


Figure 1

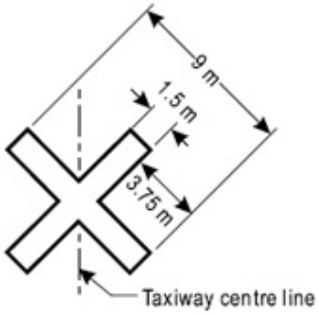


Figure 2

When a runway or taxiway or portion thereof is permanently closed, all normal runway and taxiway markings shall be obliterated. Lighting on a closed runway or taxiway or portion thereof shall not be operated, except as required for maintenance purposes.

In addition to closed markings, when the runway or taxiway or portion thereof closed is intercepted by a usable runway or taxiway which is used at night, unserviceability cones (white and red) and red LED lights shall be placed across the entrance to the closed area at intervals not exceeding 3 m. See Figure 3

Figure 3

2.12.2 Non-Load-Bearing Surfaces

2.12.2.1 Application

Shoulders for taxiways, runway turn pads, holding bays and aprons and other non-load bearing surfaces which cannot readily be distinguished from load-bearing surfaces and which, if used by aircraft, might result in damage to the aircraft shall have the boundary between such areas and the load-bearing surface marked by a taxi side stripe marking.

2.12.2.2 Location

A taxi side stripe marking should be placed along the edge of the load-bearing pavement, with the outer edge of the marking approximately on the edge of the load-bearing pavement.

2.12.2.3 Characteristics

A taxi side stripe marking should consist of a pair of solid lines, each 15 cm wide and spaced 15 cm apart and the same colour as the taxiway centre line marking.

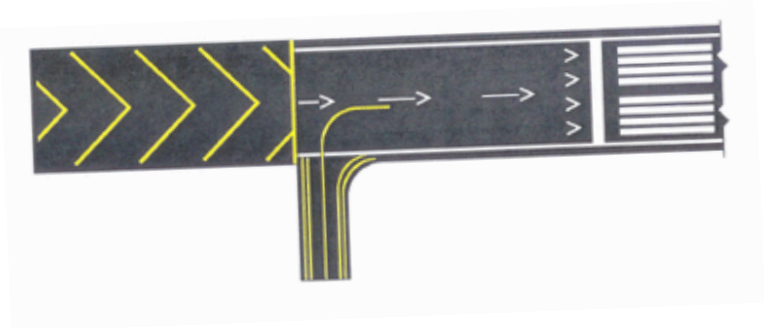
2.12.3 Pre-Threshold Area

2.12.3.1 Application

When the surface before a threshold is paved and exceeds 60 m in length and is not suitable for normal use by aircraft, the entire length before the threshold should be marked with a chevron marking.

2.12.3.2 Location

A chevron marking should point in the direction of the runway.



2.12.3.3 Characteristics

A chevron marking should be of conspicuous colour and contrast with the colour used for the runway markings; it should preferably be yellow. It should have an overall width of at least 0.9 m.

2.12.4 Unserviceable Areas

2.12.4.1 Application

Unserviceability markers shall be displayed wherever any portion of a taxiway, apron or holding bay is unfit for the movement of aircraft but it is still possible for aircraft to bypass the area safely. On a movement area used at night, unserviceability lights shall be used.

Note: Unserviceability markers and lights are used for such purposes as warning pilots of a hole in a taxiway or apron pavement or outlining a portion of pavement, such as on an apron, that is under repair. They are not suitable for use when a portion of a runway becomes unserviceable or on a taxiway when a major portion of the width becomes unserviceable. In such instances, the runway or taxiway is normally closed.

2.12.4.2 Location

Unserviceability markers and lights shall be placed at intervals sufficiently close so as to delineate the unserviceable area.

2.12.4.3 Characteristics

Unserviceability markers shall consist of conspicuous upstanding devices such as flags, cones or marker boards.

An unserviceability light shall consist of a red fixed light. The light shall have intensity sufficient to ensure conspicuity considering the intensity of the adjacent lights and the general level of illumination against which it would normally be viewed. In no case shall the intensity be less than 10 cd of red light.

An unserviceability cone should be at least 0.5 m in height and red, orange or yellow or any one of these colours in combination with white.

An unserviceability flag should be at least 0.5 m square and red, orange or yellow or any one of these colours in combination with white.

An unserviceability marker board should be at least 0.5 m in height and 0.9 m in length, with alternate red and white or orange and white vertical stripes.