

AERODROME MARKINGS 101

All aerodrome users should be as familiar with aerodrome markings as they are with road markings. Not knowing what they represent could lead to a dangerous situation.

Negotiating the concrete and asphalt maze of taxiways, turnoffs, holding points, and apron areas at aerodromes can be rather confusing.

Ground movement charts for the major aerodromes and a number of provincial aerodromes are provided in *AIP New Zealand*.

Contained in this article are some of the main aerodrome markings you might expect to see while operating in New Zealand.

Details of New Zealand standards for runway, taxiway, and apron markings can be found in Advisory Circular AC139-6 *Aerodrome Design Requirements*, Appendices 1 to 3. Although this information is designed for aerodrome operators, it provides useful illustrations for pilots.

Runway markings

All runway surface markings are painted white, sometimes edged with black (on concrete runways to provide better definition). At the intersection of two paved runways, markings on the primary runway only are displayed.

Threshold markings

Threshold markings are provided on all paved runways. They're commonly referred to as 'piano keys'. They're a series of parallel longitudinal stripes (30 m in length) across the width of the runway, starting at a point 6 m from the runway end.

Displaced landing threshold

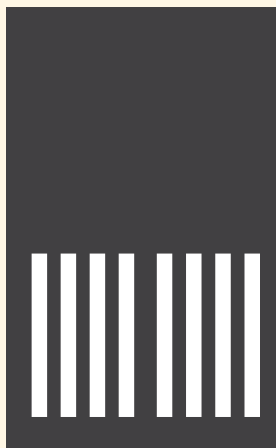
When necessary, the landing threshold will be displaced to a point along the runway where the approach profile will allow an aircraft to clear a particular obstacle. The threshold may be temporarily or permanently displaced. If the obstacle will eventually be removed, then a temporarily displaced threshold is marked either by wing bars, cones, or marker boards placed outside the runway edge. If the obstacle cannot be removed, a permanently displaced threshold is marked by a transverse stripe 6 m before the new threshold marking. Arrows between the paved runway end and the transverse stripe are located at a fixed distance back from the threshold stripes.

Landing aircraft should not touch down before the displaced landing threshold and should be flown across the threshold markings at approximately 50 feet AGL.

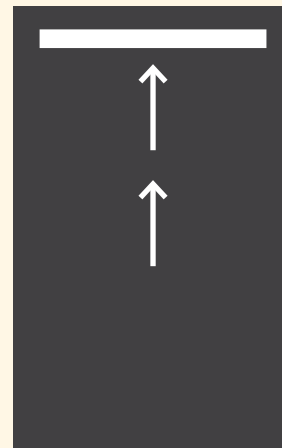
Remember that a displaced landing threshold is not a displaced take-off threshold. It has nothing to do with the point for starting the take-off roll. Failing to use the full take-off distance available could result in the aircraft having inadequate take-off distance available, with reduced obstacle clearance in the climb.

Centreline markings

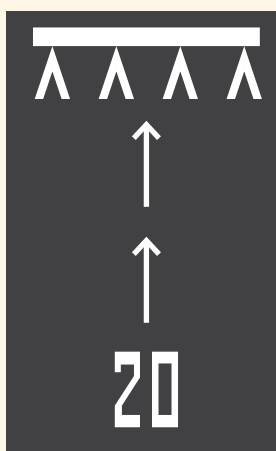
Centreline markings are on each paved runway, starting from the runway designation marking. The centreline is a series of evenly spaced lines and gaps along the centre of the runway throughout its length. »



// Threshold markings



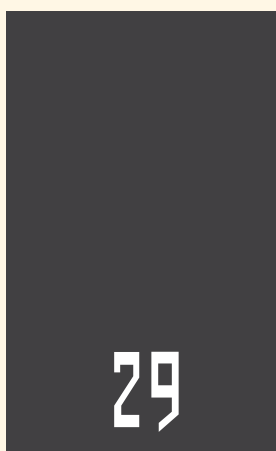
// Permanently displaced threshold



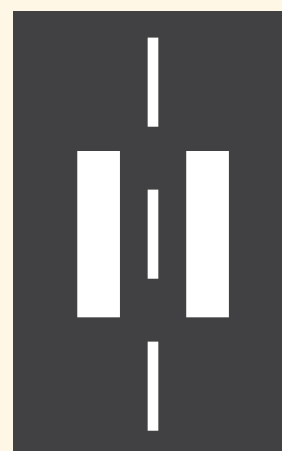
// Temporarily displaced threshold



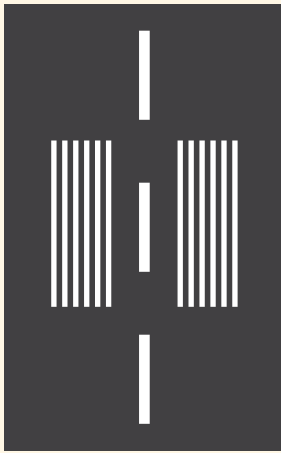
// Centreline markings



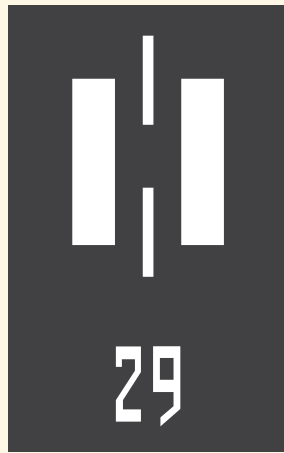
// Runway designation



// Aiming point markers



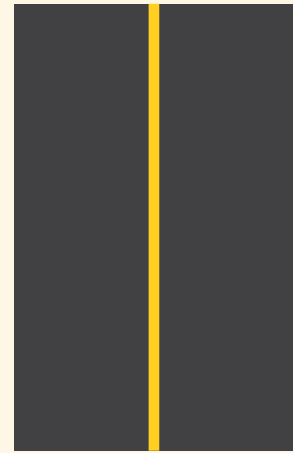
// Fixed distance markers



// Touchdown zone marking



// Touchdown zone limit marking



// Taxiway centreline marking

Runway designation

The runway designation is just beyond the threshold marking of each paved runway. It consists of the first two digits of a magnetic bearing relating to the runway centreline, with those digits rounded. For example, if the runway centreline is 286 degrees magnetic, the runway designation will be Runway 29.

Aiming point markers

Aiming point markers are two rectangular stripes either side of the runway centreline indicating where the aircraft should touch down. Sometimes the rectangular marking consists of a series of stripes to provide maximum skid resistance.

Aiming point markings are provided at each end of a paved instrument runway where the aerodrome reference code number is 2, 3, or 4. They're also provided at each approach end of a paved non-instrument runway where the code number is 3 or 4, and a paved instrument runway where the code number is 1, when additional visibility of the aiming point is sought.

Aerodrome reference code numbers depend on the characteristics of the aeroplane for which an aerodrome facility is intended. For more information about this, see *Part 139 Aerodrome – Certification, Operation and Use*, Appendix B.

Fixed distance markers

Fixed distance markings consist of a rectangular marking on each side of the runway centreline, 300 m from the threshold. Each rectangular marking is composed of

a series of thin longitudinal stripes. This is where you should aim to touch down. These markings work on the assumption that you pass over the runway threshold at a height of 50 feet.

Touchdown zone marking

Touchdown zone markings are on runways with instrument approaches, and consist of several pairs of rectangular markings at 150 m intervals from the threshold. They provide reference points for pilots to assess their progress towards the fixed distance markers. The number of pairs varies depending on the landing distance available or the distance between thresholds.

Touchdown zone limit marking

Triangular touchdown zone limit markers are provided at some aerodromes as 'go-around points' for specific types of heavy aircraft that are runway restricted. The marking consists of a series of transverse stripes in a right angle pattern at the runway edges. They are applicable only to those specific aircraft types.

Taxiway and apron markings

Taxiway and apron markings are of a conspicuous colour (yellow) contrasting with the colour used for runway markings. They may also be edged in black to provide better definition.

It's also important to be aware of passenger walkway lines, which are solid blue. Where the passenger walkway crosses a vehicle movement lane, a white zebra crossing may be used.



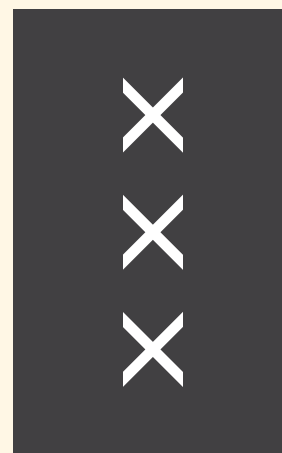
// Intermediate holding position marking



// Runway holding position marking – Pattern A



// Runway holding position marking – Pattern B



// Closed marking

Taxiway centreline marking

A taxiway centreline is a continuous line. On a taxiway curve, the centreline marking will continue from the straight portion(s) of the taxiway at a constant distance from the outside edge of the curve. In the case of large aircraft, it's important that taxiway lines are followed when manoeuvring around the aerodrome, to ensure adequate wing and wheel clearance.

Intermediate holding position marking

An intermediate holding position marking identifies a holding position established to protect a priority route. These markings consist of a single broken line.

Runway holding position marking

A pattern 'A' runway holding position marking is the last holding position before entering a runway. These markings consist of transverse lines across the width of the taxiway. Note that the line nearest the runway is broken and the one on the taxiway side is solid.

A pattern 'B' runway holding position marking identifies a holding point further away from a runway than a pattern 'A' runway holding position marking. A pattern 'B' runway holding position marking has two lines across the runway that are intersected at 90 degrees by small lines. It looks similar to a ladder across the taxiway.

In some domestic aerodromes in New Zealand, the holding position marking may still be a single line with a dashed line closest to the runway.

Aircraft should not proceed beyond a taxiway holding position in the direction of the runway until the pilot is confident the runway and approach are clear; or for a controlled aerodrome, a clearance has been issued by air traffic control.

Closed taxiway or runway markings

Closed marking

If a runway or taxiway (or a portion of either) is closed, crosses near the ends of the closed portion will be painted, or will be formed by white marker boards. The marking will be white on a runway, and yellow on a taxiway.

Marker boards or cones

Marker boards or cones displayed on an aerodrome indicate the safe limits of aircraft movement. Boundary markings should be provided at an aerodrome where the landing area has no defined runway.

They comprise distinctive rectangular boards or pointed cones, coloured white, red, yellow or orange, and they are displayed on the boundaries of the areas concerned.

In situations where an aerodrome has two parallel runways, pilots need to be aware of which runway holding position markings to stop at. Remember that you need to stop the aircraft short of the series of the lines where the closest to you is solid, and the furthest away is broken.

Further information

For more information on aerodromes and aerodrome markings, including Advisory Circular AC139-6 *Aerodrome Design Requirements*, visit www.caa.govt.nz/aerodromes.

See the September/October 2018 issue of *Vector* to read Aerodrome Signs 101. ➡