International Civil Aviation Organization

Sixth Meeting of the Asia/Pacific Aerodrome Design and Operations Task Force (AP-ADO/TF/6)

Langkawi, Malaysia, 18 - 21 February 2025

Agenda Item 4: Planning, Design and Construction of Aerodromes

ADDRESSING AIMING POINT MARKING ISSUES ON A 30-METER-WIDE RUNWAY

(Presented by India)

SUMMARY

This paper presents the issue of overlapping aiming point and runway side stripe markings on 30-meter-wide runways, which can create misleading visual cues for pilots during landings, especially in low visibility. To mitigate this risk, it is proposed to adjust the width and lateral spacing of aiming point markings in accordance with the runway width rather than runway length solely.

1. INTRODUCTION

1.1 The Airports Authority of India (AAI), as the leading airport operator in India, adheres to ICAO Standards and Recommended Practices (SARPs) as mandated by the Directorate General of Civil Aviation (DGCA). While standard runway markings are designed for a minimum width of 45 meters, narrower runways (30 meters wide) often face challenges in maintaining adequate separation between critical markings, such as aiming points and runway side stripes. This working paper examines the operational risks posed by the overlapping of these markings and proposes mitigation measures to enhance safety and operational clarity.

2. DISCUSSION

Aiming point marking

2.1 The aiming point marking overlaps the runway side stripe marking, creating misleading visual clues to the landing aircraft for narrower runways (30-meter-wide), as reported by pilots.

2.2 In addition, the spacing of the aiming point markings might be insufficient for clear identification, especially during low visibility conditions, which could affect touchdown accuracy.

2.3 A runway aiming point marking provides a visual aiming point for landing operations.

2.4 Normally standard markings assume a minimum runway width of 45 meters, which allows ample spacing. On a narrower runway (30-meter-wide), there is less room for proper separation between the markings, like the aiming point and runway edge marking.

2.5 ICAO Annex 14- Aerodromes, Chapter 5 Para 5.2.5.4 states- “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.

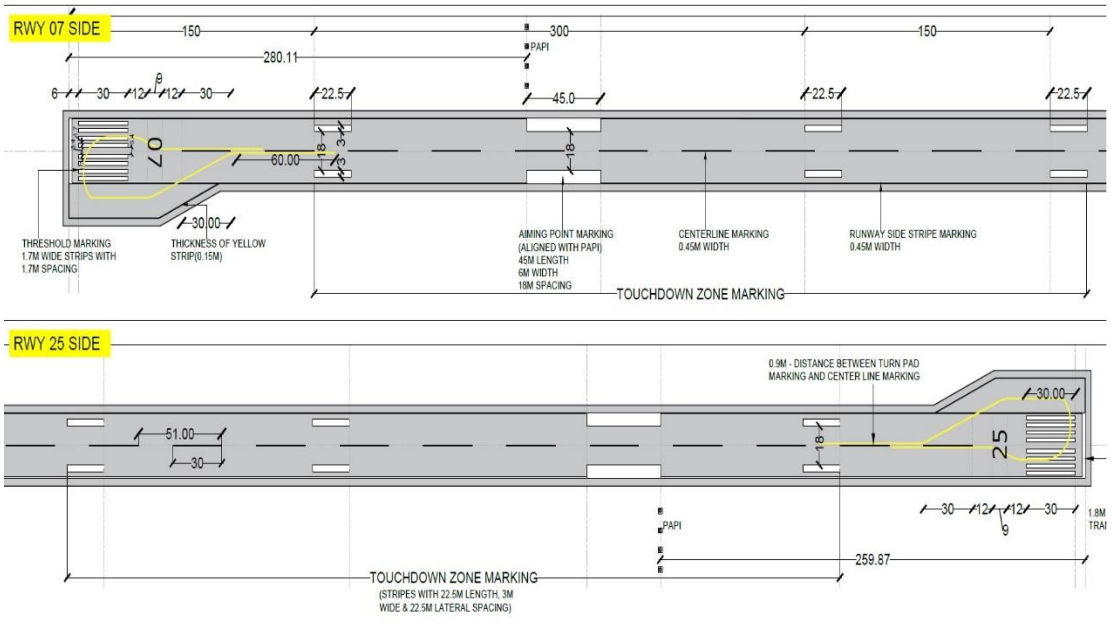
Where a touchdown zone marking is provided, the lateral spacing between the markings shall be the same as that of the touchdown zone marking."

Table 5-1. 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.

2.6 For runway having landing distance available length above 1200m and width 30 m the standard aiming point marking will be-



Width of each stripe: 6 to 10 meters.
Length of each stripe: 45 to 60 meters.
Lateral spacing between inner sides of stripes: 18 to 22.5 meters.

Standard Markings with minimum dimensions:
Total width occupied = 6×2+18=30 meters, leaving no clearance on the 30 meter-wide runway.

Actual site photographs:

2.7 Here the dimensions and lateral spacing for aiming points marking has been fixed in accordance with the Landing distance available only, due to which for narrower runways say 30-meter-wide, and length more than 1200 meter (suitable for ATR-42/72 aircraft operations) the aiming point marking overlaps the runway side stripe marking, creating misleading visual clues to the landing aircraft, as reported by pilots.

2.8 In addition, the spacing of the aiming point markings might be insufficient for clear identification, especially during low visibility conditions, which could affect touchdown accuracy.

Mitigation/Suggestion

2.9 In order to mitigate/eliminate the risk associated, it is proposed that the width and lateral spacing between the inner edges of the aiming point marking should be in accordance with the runway width, as is being done for runway threshold marking.

2.10 The length of the aiming point may continue to be in accordance to the landing distance available.

2.11 Where a touchdown zone marking is provided, the lateral spacing between the markings shall be the same as that of the aiming point marking.

Runway aiming point marking as per FAA AC No: 150/5340-1M

Standard Runway Width as per FAA	**Width of each rectangular marking**	**Lateral spacing between inner sides of runway aiming point markings**	**Clearance to the Runway Edges**
60 feet (18.3 m).	12 feet (3.7 m)	28.8 feet (8.8 m).	Total width occupied = 3.7 × 2 + 8.8 = 16.2 meters, leaving 2.1 **meters of clearance**.
75 feet (22.9 m).	15 feet (5 m)	36 feet (11.0 m).	Total width occupied = 5 × 2 + 11 = 21 meters, leaving 1.9 **meters of clearance**.
100 feet (30.5 m).	20 feet (6 m)	48 feet (14.6 m).	Total width occupied = 6 × 2 + 14.6 = 26.6 meters, leaving 3.9 **meters of clearance**.
150 feet (45.7 m)	30 feet (9.1 m)	72 feet (21.9 m).	Total width occupied = 9.1 × 2 + 21.9 = 16.2 meters, leaving 5.6 **meters of clearance**.

2.12 As per the above the width of aiming point marking is 20% of the width of runway. Lateral spacing is 48% of the width of runway.

2.13 Hence for 30 m wide runway, the width of each aiming point marking can be 6 m and the lateral spacing can be 14.4 m.

Total width occupied = 6 × 2 + 14.4 = 26.4 meters, leaving 3.6 meters of clearance.

Considering 0.9 m of runway edge marking will leave 1.80 meter of total clearance i.e. 0.9 m each side.

2.14 Hence, it is proposed that the width and lateral spacing between the inner edges of the aiming point marking should be in accordance with the runway width to cater the marking overlapping issue.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Note the information contained in this paper; and

b) Discuss any relevant matters as appropriate.

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