International Civil Aviation Organization

The Seventh Meeting of the Asia/Pacific Aerodrome Design and Operations Task Force (AP-ADO/TF/7)

(Bangkok, Thailand, 17 to 20 February 2026)

Agenda Item 4: Planning, Design, Construction and Operation of Aerodromes

REVIEW ON PROVISION OF THE STOP BAR LIGHTING CONFIGURATION FOR THE STOP BARS AT THE INTERMEDIATE HOLDING POSITION

(Presented by DGCA INDIA)

SUMMARY

This paper presents stop bar lights are provided at the runway holding positions when it is intended that the runway will be used in runway visual range conditions less than a value of 550 m. ICAO Annex 14, Volume I recommends having the stop bar lights at an intermediate holding position also, when it is desired to supplement markings with lights and to provide traffic control by visual means. However, whenever these were provided, it is required to switch off any taxiway centerline lights for a distance of at least 90 m.

1. INTRODUCTION

1.1 The stop bars are in general provided at the runway holding positions. However, in special conditions when an operator desires to supplement markings with lights and to provide traffic control by visual means, the stop bar lights are installed at the Intermediate Holding Positions (IHP). Generally, intermediate holding position lights are installed at the intermediate holding position. However, as explained above some airports chose to have the stop bar lights at these junctions for safety, additional conspicuity and to control the traffic.

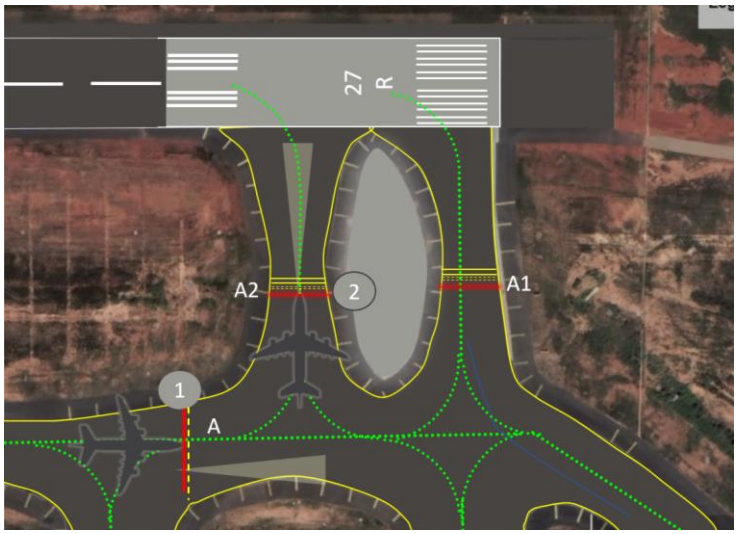


Image depicting the ① intermediate holding position and ② runway holding position with stop bars

1.2 However, in either case for a regular stop bar and stop bar installed at IHP, the taxiway centre line lights of at least 90 m to be controlled (ON & OFF) as per the requirement. While, when we

apply the same when the stop bar is installed at IHP, the execution of the same has some practical difficulties in implementation of the same.

1.3 Regulatory references: From Annex 14, Volume I, Aerodrome Design and Operations Amendment 18:

5.3.20 Stop Bars

5.3.20.3 Recommendation: — A stop bar should be provided at an intermediate holding position when it is desired to supplement markings with lights and to provide traffic control by visual means.

5.3.20.12 The lighting circuit shall be designed so that:

a) stop bars located across entrance taxiways are selectively switchable;
b) stop bars located across taxiways intended to be used only as exit taxiways are switchable selectively or in groups;
c) when a stop bar is illuminated, any taxiway centre line lights installed beyond the stop bar shall be extinguished for a distance of at least 90 m; and
d) stop bars are interlocked with the taxiway centre line lights so that when the centre line lights beyond the stop bar are illuminated the stop bar is extinguished and vice versa.

Note: — Care is required in the design of the electrical system to ensure that all of the lights of a stop bar will not fail at the same time. Guidance on this issue is given in the Aerodrome Design Manual (Doc 9157), Part 5.

2. DISCUSSION

2.1 As per the above regulations, whenever a stop bar is illuminated, taxiway centre line lights installed beyond the stop bar shall be extinguished for at least 90 m. The main purpose of this is to prevent incursion and inadvertent access. When the stop bar is illuminated, the TCLs are OFF and when Aircraft is cleared to proceed, the stop bar is made to OFF and the TCLs are ON. The same is being achieved through different means which includes sensor control mechanism integrated with ALCMS and at some airports, this is being achieved by the timer-based control also. The phenomenon of the same is explained in Aerodrome Design Manual (Doc 9157), Part 4 – Visual Aids, Chapter 10.

2.2 In general, the control of 90 m of taxiway centre line lights is easily achievable for the runway holding position, while following the same configuration for the intermediate holding positions w.r.t stop bar and controllable section of 90 m, in some cases, the geometrical configuration of the taxiway layout doesn't permit this.

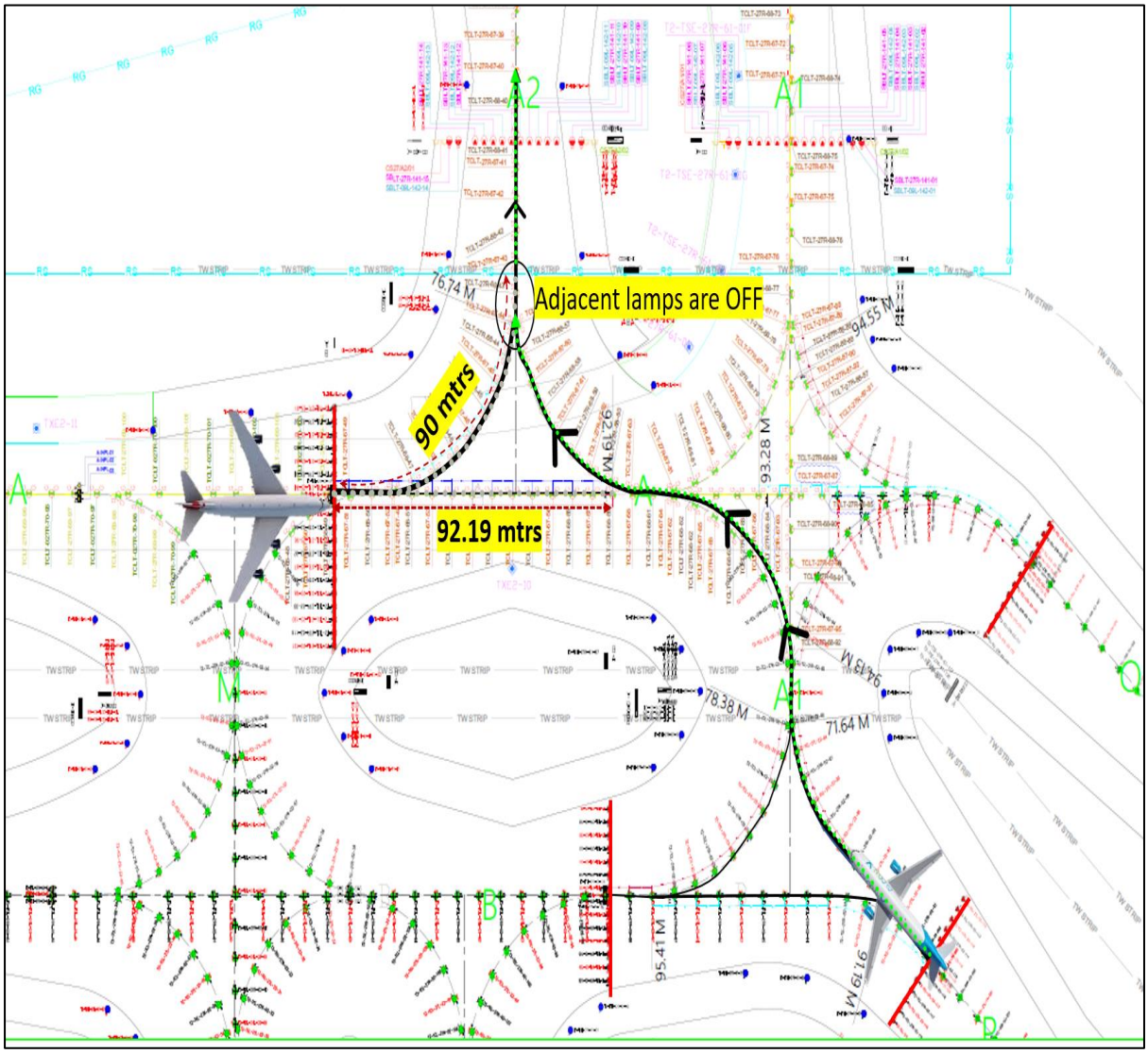
2.3 Above is the scenario at an airport, where the stop bar installed at IHP location on A taxiway, has only a provision of control of 76.74 m of TCL section. While, controlling of the 90 m section of lights which means beyond a section of 14 m appx. (2 lights) can be controlled. However, when this is done an Aircraft intending to vacate from A2 from the other taxiways (P → A1 → A → A2) from the right curve identifies that the common section of 14 m which is additionally controlled when the aircraft is holding at the IHP position A, makes the system non-compliance as per the clause below.

"10.5.9 The system of preventive maintenance employed for a taxiway intended for use in runway visual range conditions less than a value of 350 m shall have as its objective that no two adjacent taxiway centre line lights be unserviceable."

2.4 Also, in the above case we can see most of the lights which are part of the 90 m section are not visible to the pilot in reality due to the fixtures installed on the curve. Hence, controlling the 90 m section practically may not produce the desired result.

2.5 The options one has here is relocating the IHP further back to provide the 90 m, however, in cases where this is not possible due to site restrictions, maximum extent possible only can be extinguished.

Drawing depicting the stop bar at IHP & runway holding position and the concern



2.6 The runway holding position is installed at appx 90 m from the runway centre line for a precision approach runway as per Annex 14, Volume 1, Table 3-2 and the IHP marking is generally placed at 37, 43.5 and 51 m for code D, E and F respectively as per Annex 14, Volume 1, Table 3-1. This has an influence on the length of the view of the visible taxiway centre line lights when the aircraft is holding. From the above explanation it is obvious that the length of effective visual guidance of straight section of taxiway centre line lighting is comparatively lesser for the IHP positions, when provided with stop bar lighting.

2.7 The intent of switching off the 90 m section of the lights is mainly to cut off the guidance when stop bar at either position is ON. Also, the visibility of the curved section of lights when viewed from this position is very minimal. For the IHP position due to smaller straight sections the visible portion of taxiway centre line lights is very less. In low visibilities this condition is worsened due to restricted visibility.

2.8 As per Annex 14, Volume 1, 5.2.11.3, "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."

2.9 The following revisions are recommended to be made:

5.3.20.12 The lighting circuit shall be designed so that:

a) stop bars located across entrance taxiways are selectively switchable;
b) stop bars located across taxiways intended to be used only as exit taxiways are switchable selectively or in groups;
c) when a stop bar is illuminated, any taxiway centre line lights installed beyond the stop bar shall be extinguished for a distance of at least 90 m; ~~and~~
d) when a stop bar is illuminated at the intermediate holding position, if above length is not feasible due to the justified site conditions, maximum extent section possible to be extinguished;
~~d~~ e) stop bars are interlocked with the taxiway centre line lights so that when the centre line lights beyond the stop bar are illuminated the stop bar is extinguished and vice versa.

Note: — Care is required in the design of the electrical system to ensure that all of the lights of a stop bar will not fail at the same time. Guidance on this issue is given in the Aerodrome Design Manual (Doc 9157), Part 5.

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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