



AERODROME LIGHTING SYSTEM

1. Introduction

This chapter will show the wide variety of approach lighting systems before the runway threshold and systems present on runways.

2. Runway approach ramps

2.1. Simple version of approach lights

A simple version of approach lighting consists of a low intensity **white** centreline and cross bar. It starts 500m prior to the runway threshold (the green lights).

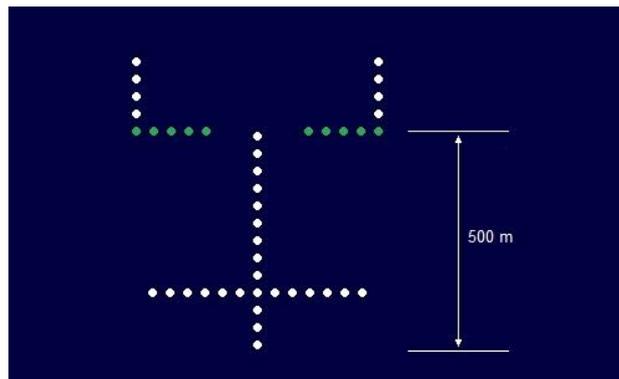


Figure: simple approach light system

2.2. Precision version of approach lights

Airfields can have more complex approach lighting systems used mainly in association with ILS equipped runways.

A well-known system is the Calvert Approach lighting system.

The Calvert system consists of a **white** centreline and 5 **white** cross bars. It commences 900m prior to the runway threshold (see the next figure).

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At aerodromes where CAT II and III approaches are conducted, supplementary approach lights are added to the system.

Supplementary approach lights are installed the last 300m prior the runway threshold, consisting of a **white** centreline barrette and two **red** side barrettes.

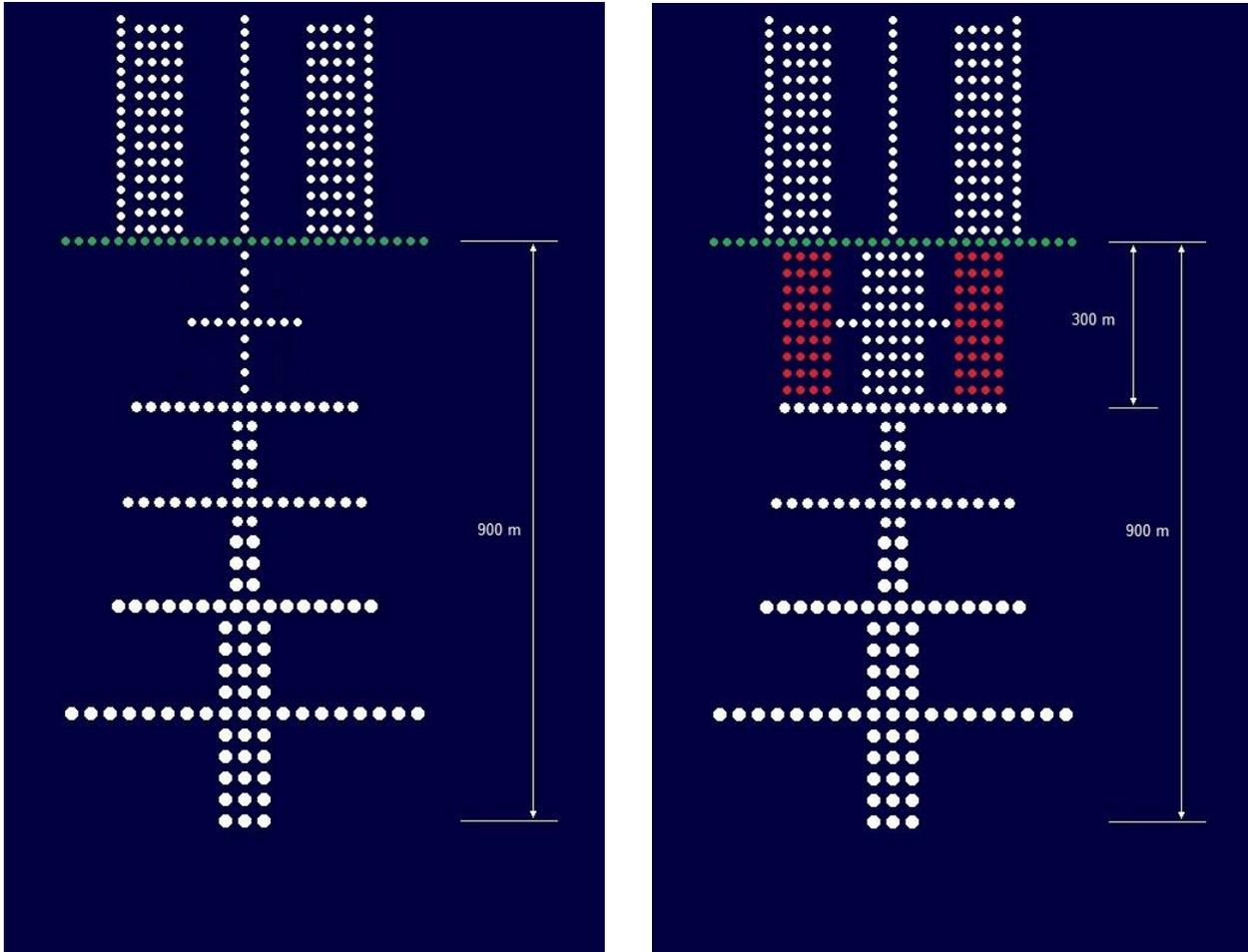


Figure: both Calvert approach light systems

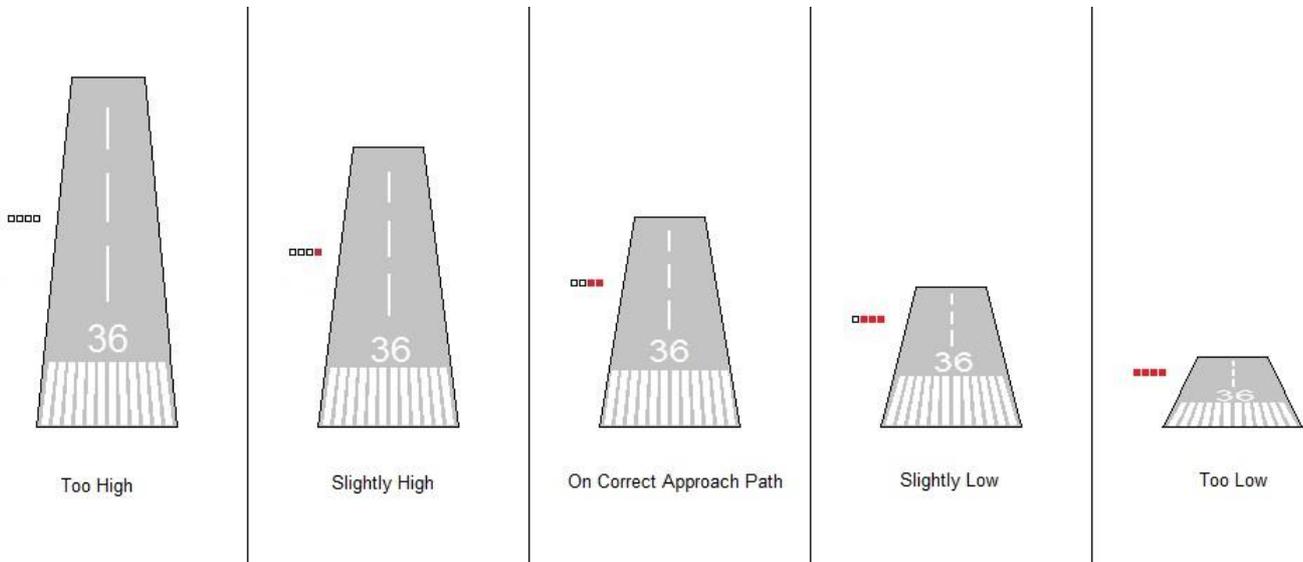
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3. Visual Approach Slope Guidance

3.1. Precision Approach Path Indicator (PAPI)

The PAPI provides a visual aid to determine the correct approach path.

It consists of a single row of 4 **red** and **white** lights. The colour is depending on the vertical angle as shown in the illustration hereunder.



PAPI's are not designed to be used outside 15° of the runway centreline.

PAPI's are usually situated to the left side of the runway. However, where this is impracticable, it may be installed on the right side of the runway. There also are aerodromes where PAPI's are placed on both sides of the runway.

Where a PAPI is used together with an ILS, it is located to align both glide slopes as much as practicable. Any additional restrictions shall be published in the appropriate section in the local AIP.

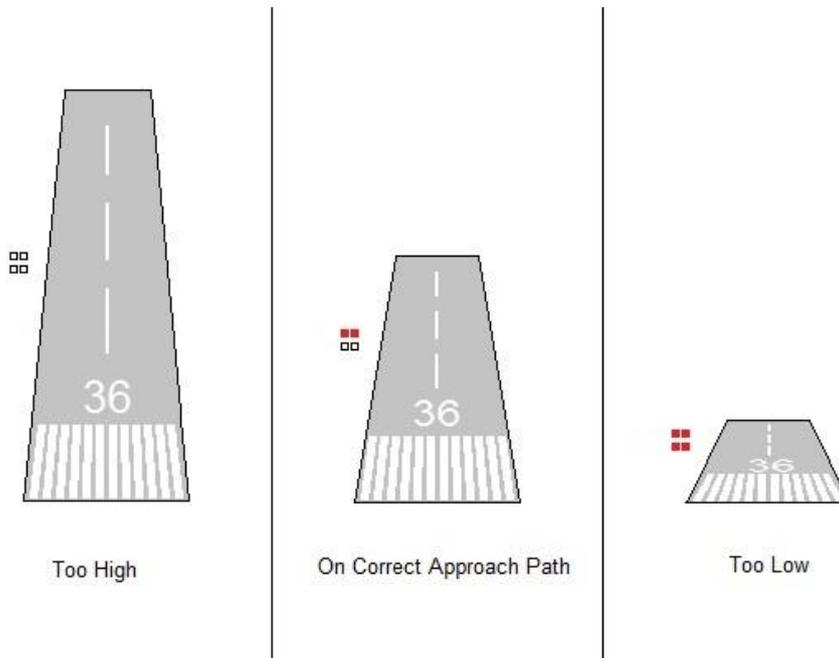
On runways where no public jet transport is carried out an **Abbreviated PAPI (APAPI)** may be installed. An APAPI consists of only 2 light units.

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3.2. Visual Approach Slope Indicator (VASI)

A VASI system does much the same as a PAPI system. It is just a different presentation.

It consists of two rows of two **red** and **white** lights which presentation is as shown below:

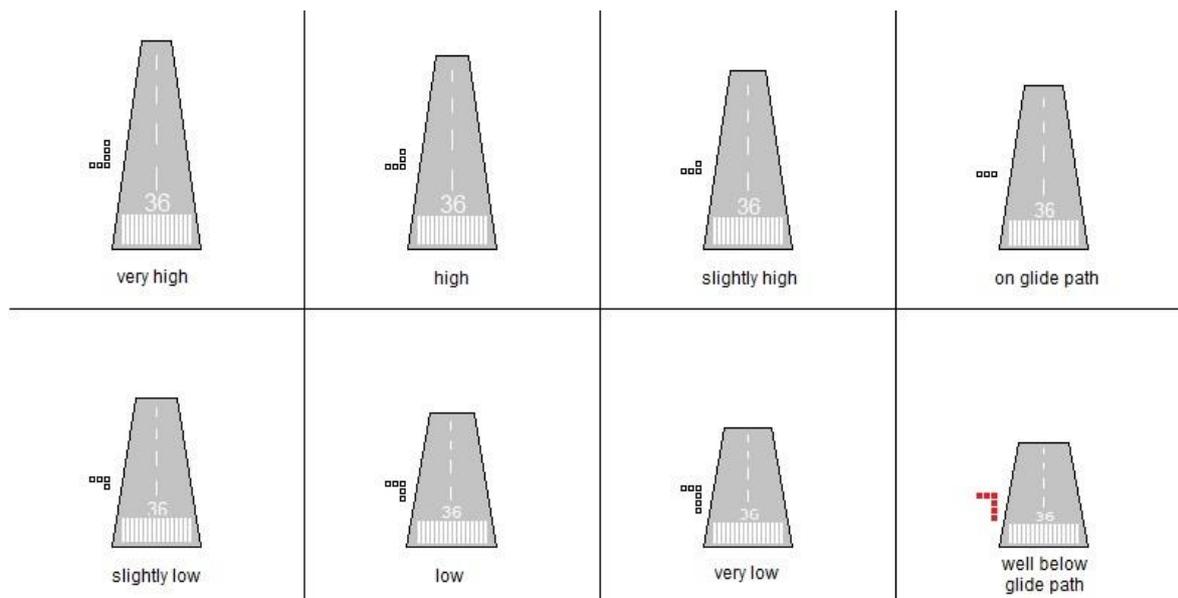


On correct approach path, pilot must see a **red** light row and a **white** light row

There also exists a VASI consisting of three rows. For a normal aircraft the correct approach path in this case would be indicated by two **red** bars and one **white** bar. An aircraft with a high cockpit would have to see one **red** bar and two **white** bars.

3.3. T-VASI

A variation of the VASI is the T-VASI, which presentation is as shown below:



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3.4. Runway lighting

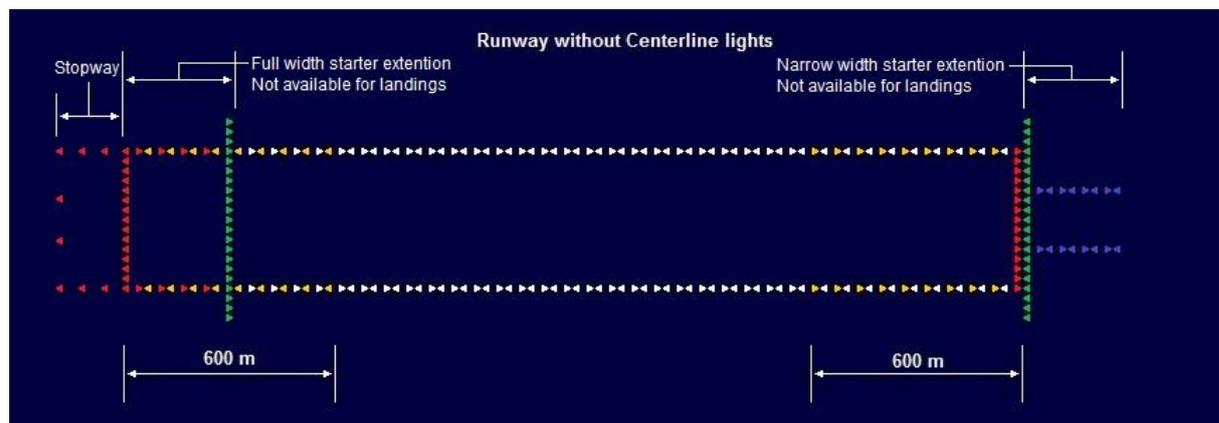
All runways certified for night operations shall have:

- Runway Edge Lights
- Runway Threshold and Runway End Lights

Note that centreline and touchdown zone lights are additional guidance in support of low visibility operations.

3.5. Runway edge lights

Runway Edge Lights are **white** lights situated along the edges of the declared runway width spaced at 60 meters.



They are **white** except for:

- Caution Zone Lights
- Pre-Threshold Lights
- Runway Exit Lights
- Stop way Lights
-

3.5.1. Caution Zone Lights

Yellow caution zone lights are installed on ILS equipped runways without centreline lights, on the last 600m, or one third of the lighted runway length available, whichever is less.

3.5.2. Pre-Threshold Lights

On a runway with a displaced landing threshold (an available area in front of the threshold for the take-off run and not the landing), the runway edge lights from the beginning of the pavement up to the displaced threshold are **red**.

Where the area in front of the threshold is narrower than the associated runway width, the edges are lighted in **blue**.

3.5.3. Runway Exit Lights

One or two Omni-directional **blue** lights may replace or supplement the edge lights to indicate an exit taxiway.

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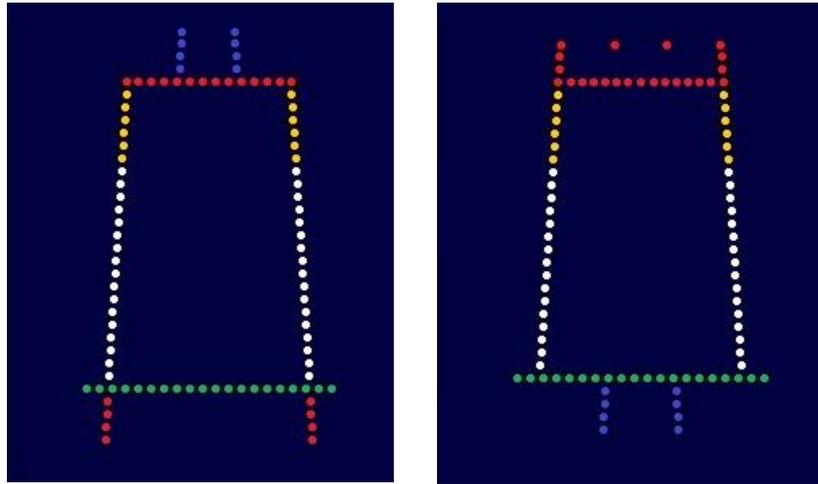
3.5.4. Stop way Lights

Where a stop way is provided, the edge lights are **red** and facing one way so only the landing traffic is able to see them. A stop way is for emergency use only, and not for routine landings.

3.6. Runway threshold and runway end lights

Runway **Threshold** lights are always seen **green** by a pilot on final, indicating the start of the available landing distance.

Runway **End** lights are always seen **red**, indicating the extremity of the runway available for manoeuvring.



Pilots should not land before the green runway threshold lights or not continue the landing roll beyond the red runway end lights.

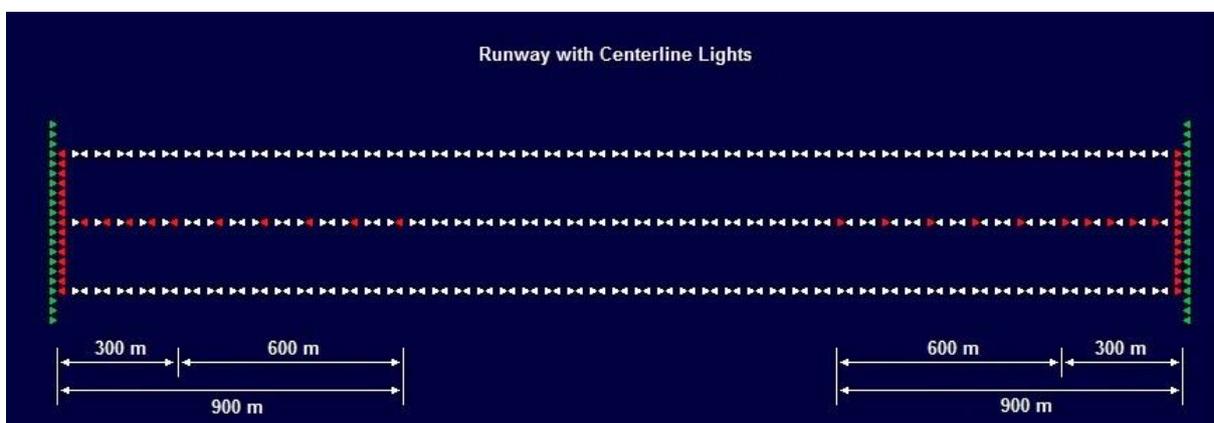
3.7. Runway centreline lights

For runways supporting low visibility operations high intensity runway centreline lights are installed.

Runway centreline lights are colour coded:

- From the threshold until 900 meters from the runway end the centreline lights are **white**.
- The following 600 meters are alternating **red** and **white** lights.
- The last 300 meters are only **red** lights.

Runway centreline lights are spaced each 30 meters. However for CAT III runway operations, they are spaced each 15 meters.

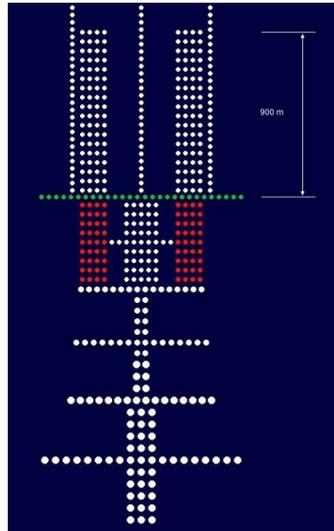


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3.8. Touchdown zone (TDZ) lights

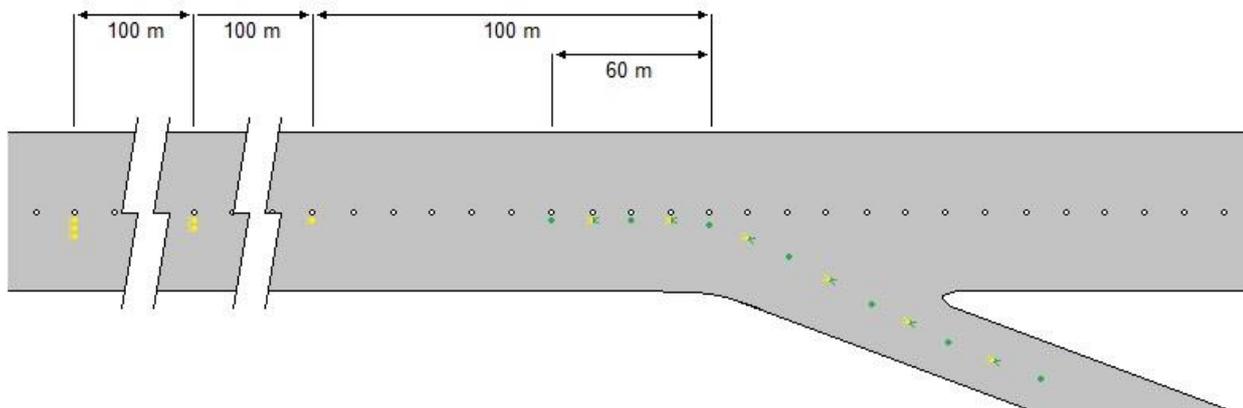
For runways supporting low visibility operations additional touchdown zone lights, consisting of two rows of **white** barrettes are installed.

The touchdown zone lights extend from the threshold light bar for 900 meters or the midpoint of the runway, whichever is the shorter distance.



3.9. Rapid Exit Taxiway Indicator Lights (RETIL)

Rapid exit taxiway indicator lights consist of six **yellow** lights in a three/two/one configuration, spaced 100 meters apart (Where the single **yellow** light is situated 100 meters from the start of the turn).



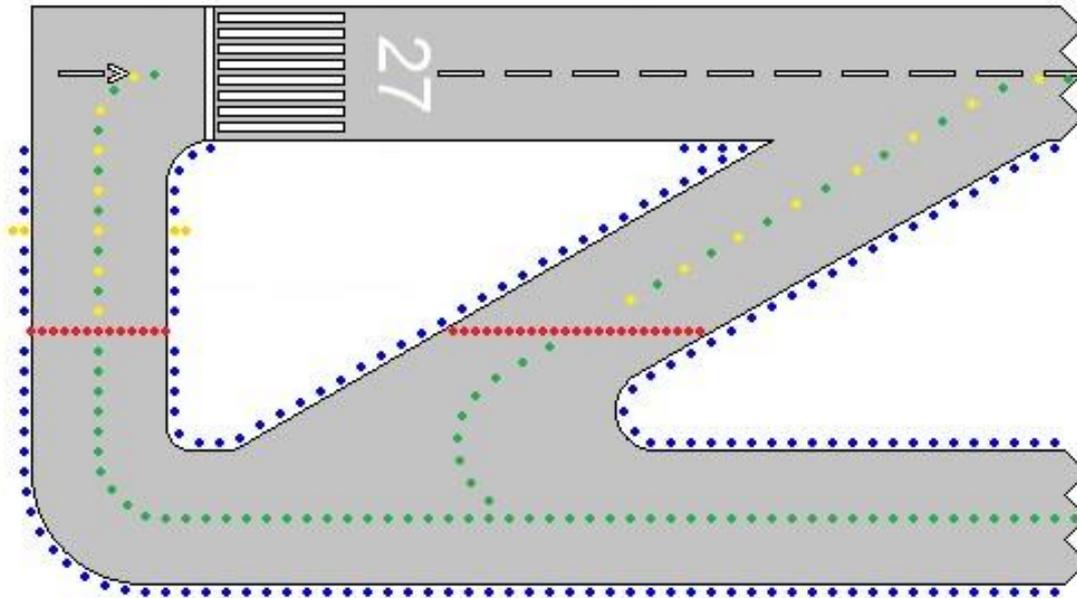
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4. Taxiway Lighting

4.1. Taxiway lights

Taxiway edges are provided with **blue** edge lighting.

Green taxiway centreline lights are provided for low visibility procedures (Where **green** centreline lights are provided, **blue** edge lights may also be provided).



Some aerodromes where CAT II and CAT III operations take place have Taxiway guidance systems installed. However due to limitations of Flight simulation software and IVAO, this will not always be available.

Aerodromes without such guidance systems, but do have complex taxiway intersections, may provide taxiway intersection lights.

They consist of at least 3 steady **yellow** lights, installed symmetrically over the taxiway centreline.

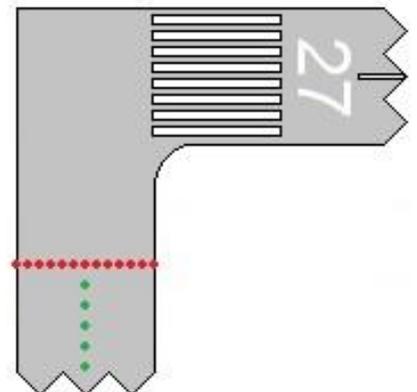
Where taxiway centreline lights are situated within an ILS sensitive area, the lights alternate **yellow** and **green**.

4.2. Stop bar, Lead-on and Lead-off Lights

Aerodromes authorized for low visibility operations have stop bars lights.

Stop bars lights consist of equally spaced **red** lights across the taxiway at a 90° angle to the taxiway centreline.

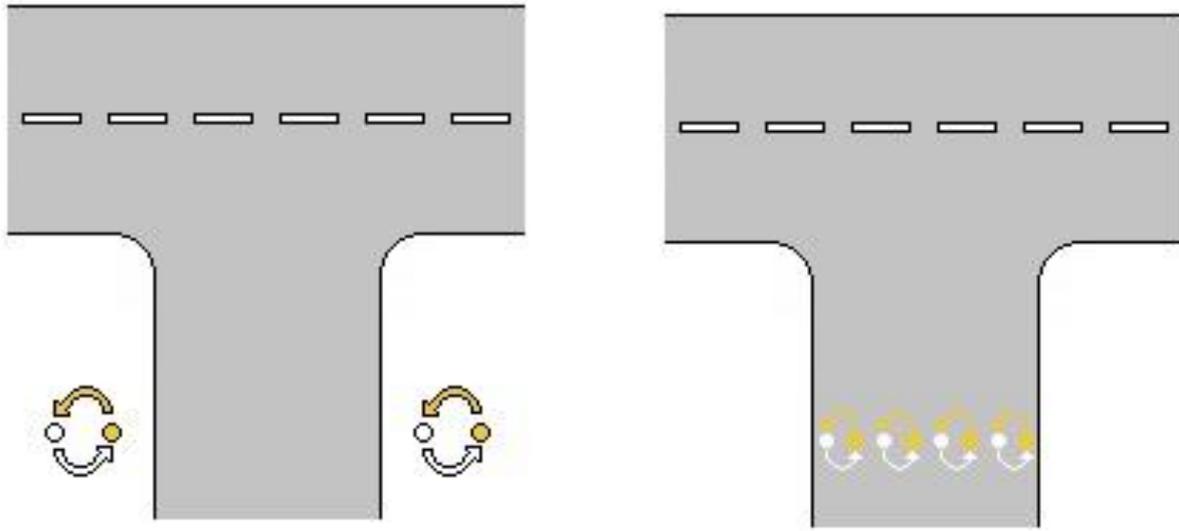
Stop bars are situated at runway entry's and holding points. They may also be installed at taxiway intersections (e.g. associated with a taxiway guidance system). Normally stop bars are installed associated with **green** lead-on lights.



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4.3. Runway guard lights

Runway guard lights are two pairs of alternately flashing **yellow** lights. Each pair located next to the taxiway indicating close proximity to the runway. Where a taxiway is wider than usual an alternate variation may be installed, where additional pairs of alternately flashing **yellow** lights are installed into the taxiway across the full width.



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