

# Ask the CFI

## Why does the instrument approach at Galt Airport only have circling minimums?

You may have noticed that the final approach course for the RNAV (GPS)-B instrument approach at Galt Airport (10C) is 270° which is exactly aligned with runway 27. So why does the approach plate list circling only minimums instead of a straight-in approach?

There are generally three reasons for circling-only minimums;

- 1) The final approach course alignment with the runway centerline exceeds 30°
- 2) The descent gradient is greater than 400 ft/NM from the FAF to the TCH
- 3) The runway is not clearly defined on the airfield

The approach at Galt is aligned with the runway so let's take a look at the other two reasons.

### Descent gradient

The descent gradient is usually measured from the final approach fix (FAF) to the threshold crossing height (TCH). The TCH is a theoretical height above the runway threshold at which the aircraft's glide slope antenna would be if the aircraft maintained the trajectory established by the mean ILS or RNAV glide slope. This approach does not have any vertical guidance so strictly speaking there is no defined TCH.

The usual TCH for a non-precision approach, per the US Standard for Terminal Instrument Procedures or TERPS, would be 40 feet. If you were to calculate the descent angle from the final approach fix (FAF) at GENBE to 40 feet at the runway threshold, the result would be 425 feet per nautical mile. This definitely exceeds the recommended descent gradient for a straight in approach.

### Runway markings

There are also four runway marking elements that are required for a non-precision instrument approach; the numbers, a centerline, the runway threshold and an aiming point. If any one of these are missing at the time the approach is being designed it will not meet the requirements for a straight in approach. Runway 27 has very clearly marked numbers, centerline and threshold markings, but there are no aiming point markings.

The aiming point markings are two rectangular broad white stripes located on either side of the runway centerline approximately 1,000 feet from the landing threshold. They serve as a visual aiming point for landing aircraft and are typically where a ILS or LPV glide slope would meet the runway. Without these, the approach will not have straight in minimums.

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