

PRIVATE PILOT

III. AREA OF OPERATION: AIRPORT AND SEAPLANE BASE OPERATIONS

C. TASK: AIRPORT AND RUNWAY MARKINGS AND LIGHTING

OBJECTIVE

To determine that the applicant:

1. Exhibits knowledge of the elements related to airport / seaplane base, runway, and taxiway operations with emphasis on runway incursion avoidance.
2. Properly identifies and interprets airport / seaplane base, runway, and taxiway signs, markings, and lighting.

ELEMENTS

1. Runway markings are white and taxiway markings are yellow.
2. The three categories of markings are visual, nonprecision instrument, and precision instrument.
3. Runway designators:
 - a. The runway number is the whole number nearest one-tenth of the magnetic azimuth.
 - b. For parallel runways, "L" (left), "C" (center) and "R" (right) follow the runway number.
4. Runway centerline marking: Uniformly spaced white stripes and gaps providing alignment guidance.
5. Runway aiming point marking:
 - a. Broad white rectangular stripe on each side of the runway centerline approximately 1000 feet from the landing threshold.
 - b. Serves as a visual aiming point for landing aircraft.
6. Runway touchdown zone marking:
 - a. Three, two, and then one pair of white rectangular bars symmetrically arranged about the runway centerline to convey 500-foot increments.
 - b. Identifies the touchdown zone for landing.
7. Runway side stripe marking: Continuous white stripes delineating the edges of the runway providing visual contrast between the runway and abutting terrain or shoulders.
8. Runway shoulder markings: 45° white stripes to supplement runway side stripes in identifying pavement areas not intended for use by aircraft.
9. Runway threshold markings:
 - a. Longitudinal white stripes of uniform disposed symmetrically about the runway centerline.
 - b. Number of stripes can designate runway width (4=60', 6=75', 8=100', 12=150', 16=200').
 - c. Helps identify the beginning of the runway (threshold bar) that is available for landing.
 - d. In some cases the runway threshold may be relocated or displaced.
10. Relocated threshold: A threshold that has been moved due to construction, maintenance, etc.
11. Displaced threshold:
 - a. A ten-foot wide white stripe across the width of the runway located at a point other than the physical beginning of the runway.
 - b. White arrows are located along the centerline in the area between the beginning of the runway and the displaced threshold.
 - c. White arrowheads are located across the width of the runway prior to the threshold bar.
 - d. Runway behind a displaced threshold is available for takeoffs in either direction or landing roll from the opposite direction.
12. Runway threshold bar: A ten-foot wide white stripe across the width of the runway identifying the beginning of the runway that is available for landing
13. Demarcation bar: A three-foot wide yellow stripe delineating a runway with a displaced threshold from a blast pad, stopway or taxiway that precedes the runway.
14. Chevrons: Yellow markings used to show pavement areas aligned with the runway that are unusable for landing, takeoff and taxiing.
15. Taxiway centerline marking: A single continuous yellow line providing alignment guidance.
16. Continuous taxiway edge marking: A continuous double yellow line used to define the taxiway edge from areas not intended for use by aircraft.
17. Dashed taxiway edge marking: A broken double yellow line used to define the taxiway edge from areas that are intended for use by aircraft (aprons, run-up areas, etc.).

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18. Taxi shoulder markings: Perpendicular yellow lines covering areas not intended for use by aircraft.
19. Surface painted direction signs: Surface signs with yellow background and black inscription (letter or number and arrow) provided when direction signs are not practical.
20. Surface painted location signs: Surface signs with black background and yellow inscription (letter or number) provided when location signs are not practical.
21. Geographic position markings: Pink circles on taxiways allowing pilots to report position.
22. Runway hold position markings:
 - a. Four yellow lines, two solid and two dashed across the width of taxiway / runway.
 - b. The two solid lines are always on the side where the aircraft is to hold (think "a solid citizen stops before a solid line").
 - c. On taxiways: Locations at which aircraft are supposed to stop until cleared.
 - d. On runways: Locations at which aircraft are to stop ("land and hold short").
23. ILS critical area markings: Two solid yellow lines connected by pairs of solid yellow lines protecting an ILS critical area. Aircraft is to stop prior to such markings until cleared.
24. Surface painted holding position signs: Surface signs with red background and white inscription used to supplement hold position markings.
25. Vehicle roadway markings: Defines a path for vehicle operations on areas intended for aircraft.
26. VOR receiver checkpoint markings:
 - a. A painted circle with an arrow in the middle (like a compass rose).
 - b. Allows the pilot to check aircraft instruments with navigational aid signals.
27. Nonmovement area boundary markings:
 - a. Two yellow lines, one solid and one dashed denoting the boundary of a movement area (i.e. under air traffic control / ground control).
 - b. The solid line is always on the side where the aircraft is to hold (like the hold position markings, think "a solid citizen stops before a solid line").
28. Permanently closed runways and taxiways: Yellow crosses are placed at each end of the runway and at 1000-foot intervals.
29. Temporarily closed runways and taxiways: Yellow crosses or raised yellow crosses are placed on the runway only at each end.
30. Helicopter landing area markings: A square containing a black "H" aligned with the intended direction of approach.
31. Mandatory instruction signs: Red background with white inscription. Includes runway hold position signs, runway approach area holding position signs, ILS critical area holding position signs and no entry signs.
32. Location signs: Black (or yellow) background with yellow (or black) inscription. Includes taxiway location signs (yellow on black), runway location signs (yellow on black), runway boundary signs (black on yellow) and ILS critical area boundary signs (black on yellow).
33. Direction signs: Yellow background with black inscription.
34. Destination signs: Yellow background with black inscription with arrow(s).
35. Information signs: Yellow background with black inscription.
36. Runway distance remaining signs: Black background with white inscription showing distance (in thousands of feet) of runway remaining.

COMMON ERRORS

- a. Failure to comply with airport / seaplane base, runway and taxiway signs and markings.
- b. Failure to comply with airport / seaplane base, runway and taxiway lighting
- c. Failure to use proper runway incursion avoidance procedures.

REFERENCES

1. AC 61-23 / FAA-H-8083-25, Pilot's Handbook of Aeronautical Knowledge, Chapter 12.
2. AIM, Aeronautical Information Manual, Chapter 2.