



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: Standards for Airport Markings

Date: XX/XX/2020

AC No: 150/5340-1M

Initiated By: AAS-100

Change: 1

1 **Purpose.**

This advisory circular (AC) change contains the Federal Aviation Administration (FAA) standards for markings used on airport runways, taxiways, and aprons.

2 **Applicability.**

No change to paragraph 3, Applicability, dated 5/10/2019.

3 **Principal Changes.**

The AC change incorporates the following principal changes:

1. Page vi, paragraph 5, Implementation, subparagraph 4 replaced as shown below.
2. Paragraph 3.5.1 appended to add four new subparagraphs 3.5.1.1, 3.5.1.2, 3.5.1.3, and 3.5.1.4.

4 **Implementation.**

Implement changes addressed by this change upon effective date of this AC except as noted in Implementation subparagraph 1, dated 5/10/2019, and by the following revised subparagraph 4:

4. Paragraph 3.1, Approach/Departure Holding Position Marking. Implementation of the APCH/DEP signage and conditional marking employs a delayed approach to allow time for: stakeholder outreach; update of the Aeronautical Information Manual (AIM) updates; revision of FAA Orders 7110.65, *Air Traffic Control*, and 7210.3, *Facility Operation and Administration*; FAA assessment of affected runways; and advance coordination with local ATC for development of a local standard operating procedure (SOP) and controller training. Upon completion of an assessment, FAA provides verification to the airport if conditional holding positions

are necessary in the approach/departure area. Upon receiving verification, the FAA expects:

- a. Towered airports and airports certified under 14 CFR Part 139 to implement the necessary changes to the holding position marking within two years.
- b. Non-towered, non-certificated airports to implement marking changes with the next airfield development project following the revision of the Aeronautical Information Manual addressing conditional holding marking.

5 Feedback on this AC.

If you have suggestions for improving this AC change, you may use the [Advisory Circular Feedback](#) form at the end of this AC.

John R. Dermody
Director of Airport Safety and Standards



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Advisory Circular

Consolidated AC includes Change 1

Subject: Standards for Airport Markings

Date: 5/10/2019

AC No: 150/5340-1M

Initiated By: AAS-100

Change:

1 **Purpose.**

This advisory circular (AC) contains the Federal Aviation Administration (FAA) standards for markings used on airport runways, taxiways, and aprons.

2 **Cancellation.**

This AC cancels AC 150/5340-1L, *Standards for Airport Markings*, dated September 27, 2013.

3 **Applicability.**

The Federal Aviation Administration recommends the standards and guidelines in this AC to establish uniform application of airfield surface markings for runways, taxiways and aprons. This AC does not constitute a regulation, is not mandatory and is not legally binding in its own right. It will not be relied upon as a separate basis by the FAA for affirmative enforcement action or other administrative penalty. Conformity with this AC is voluntary, and nonconformity will not affect rights and obligations under existing statutes and regulations, except for the projects described in subparagraphs 2, 3 and 4 below:

1. The standards and guidelines contained in this AC are practices the FAA recommends to establish an acceptable level of safety, performance and operation for airfield ground navigation.
2. This AC provides one, but not the only, acceptable means of meeting the requirements of 14 CFR part 139, *Certification of Airports*.
3. Use of these standards and guidelines is mandatory for projects funded under Federal grant assistance programs, including the Airport Improvement Program (AIP). See Grant Assurance #34.

4. This AC is mandatory, as required by regulation, for projects funded by the Passenger Facility Charge program. See PFC Assurance #9.

4 **Principal Changes.**

The AC incorporates the following principal changes:

1. New criterion for centering runway landing designators (common industry practice). See paragraph 2.3.5 and the green instructional box titled “Centering of Runway Landing Designators, Width of Rectangular Boxes (Painting).”
2. Paragraph 1.2, no-taxi islands definition. Added new definition to define no-taxi islands applicable to this advisory circular.
3. Paragraph 1.3.2. Added new red safety box informing airport operators not to apply preformed thermoplastic markings on the runway due to their significant reduction in pavement friction as compared to bare pavement.
4. Paragraph 1.3.8. The advisory circular makes the recommendation for training of personnel that perform application of surface markings, prepare surfaces to receive surface markings, remove markings, etc., as important aspects to obtaining desired markings and longevity.
5. Paragraph 1.3.9. Added new paragraph to clarify that all surface markings painted by the use of stencils are not to leave stencil gaps.
6. Paragraph 1.4. Added new notes to Table 1-2 that clarifies the relationship of Table 1-2 with Table 1-1 when dealing with the requirements for black borders.
7. Paragraph 1.5. Added new paragraph explaining the functions and applications of no-taxi islands to mitigate runway incursions and taxiing excursions. Deleted previous no-taxi island criteria from paragraph 4.4.5.2 and paragraph 4.10.4. Revised the red safety box in paragraph 4.4.5.2 to reference new paragraph 1.5 criteria.
8. Paragraphs 2.1.1. Added “*Engineered Materials Arresting Systems (EMAS)*” to the end of the paragraph as another example of paved areas prior to the runway end (start of runway). Clarified that Table 2-1 applies to runways that lack stopways, blast pads, displaced thresholds, or aligned taxiways.
9. Paragraph 2.9. Revised text in subparagraphs 2.9.1 and 2.9.2 to clarify the functions of a displaced threshold, the location where a displaced threshold begins as compared to a non-displaced threshold, and the use of arrow shafts.
10. Paragraphs 3.1 and 3.5. Pattern A is replaced by the Pattern B surface marking to protect the Approach/Departure Areas of the runway. This interchange is a direct result from the FAA Technical Center R&D report DOT/FAA/TC-16/26, *Evaluation of Enhanced Visual Cues for Runway Approach and Runway Safety Areas*, published in April 2016. This change in pattern will be accompanied with the installation of a new vertical sign to be promulgated by a change to AC 150/5340-18G.

11. Paragraph 4.3.4. Revised text to align FAA criterion with International Civil Aviation Organization (ICAO) Annex 14, Volume I criterion for enhanced taxiway centerline surface markings that are collinear with on-centered surface painted holding position signs. Revised Figure D-6 to reflect new criterion.
12. Paragraph 4.3.4. Added an instructional green box with guidance on how to relocate surface painted holding position signs between the two taxiway width categories (off-taxiway centerline placement and on-taxiway centerline placement).
13. Paragraph 4.4.5.4.2. Replaced criterion for the case not outlined in black when a taxiway edge marking is located at a runway holding position to read – a 6-inch (12 cm) gap is left between the holding position marking and the taxiway edge marking.
14. Paragraph 4.11.3.1. Replace 600 RVR with 500 RVR to agree with FAA Order 7110.65, *Air Traffic Control* (latest edition).
15. Paragraph 5.3.5, Item 4. Replaced the word “*interior*” with “*exterior*.”
16. Paragraph 5.6.1. Added more guidance regarding when to remove existing runway markings when a runway is closed or from an intersecting runway that has been closed.
17. Figures as follow:
 - a. Figure A-10 and Figure A-11 added the word “*Displaced*” to the phrase “*Runway Threshold Bar (white)*”;
 - b. Figure A-12 added the word “*Yellow*” to Note 2;
 - c. Figure A-13 added the word “*each*” to the phrase “*2 Lines and 1 Space are each 12” [30 cm] Wide*”;
 - d. Figure A-16 added to Note 3 the reference to paragraph 320 of AC 150/5300-13, *Airport Design*;
 - e. Figure A-18 clarified the design criterion to build taxiway/taxiway intersections with cockpit-over centerline fillets and marking criterion to use curved taxiway centerline markings by added the phrase “*until such substandard fillets are widened to full standard design criteria*” to the end of the existing phrase “*Taxiway centerline markings at intersection having less than standard fillets and requiring judgmental over steering*”;
 - f. Figure A-19 redrawn to emphasize the design criteria for standard width of taxiway entrances with a no-taxi island between entrance taxiways to a runway and for the elimination of paved areas within a POFZ;
 - g. Figure A-23 added the pictorial symbol for a vertical sign to reinforce placement of a vertical sign at runway holding position locations;
 - h. Figure D-5, Figure D-7, and Figure D-8 added the phrase “*The SPHPS to the right of the taxiway centerline is not always required in most cases.*” to the table within the first row.
 - i. Figure D-6 revised to show new marking pattern per ICAO Annex 14. Introduced new dimension “D” and removed taxiway centerline marking

between the surface painted holding position sign (SPHPS) and the runway holding position marking (Pattern A).

18. The format of the document has been updated in this version, and minor editorial changes have been made throughout.

5 Implementation.

Implement changes addressed by this revision upon effective date of this AC except as noted by the following:

1. Paragraph 2.3.5. FAA expects airports certificated under Part 139 to apply the guidelines for centering runway landing designator markings upon the next repainting project.
2. Paragraph 1.3.2, Preformed Thermoplastic Surface Marking on Runways. In the case of existing preformed thermoplastic markings on a runway, FAA expects airports certificated under Part 139 to correct such applications within one year of the effective date of this change.
3. Paragraph 1.3.9, Stencil Templates. For instances of existing surface markings with stencil gaps, FAA expects airports certificated under Part 139 to correct existing stencil gaps during the next painting project.
- ~~4. Paragraph 3.1, Approach/Departure Holding Position Marking. Implementation of the APCH/DEP signage and marking will employ a delayed approach to allow time for stakeholder outreach and familiarization activities to take place.

 - ~~a. Delay installation of APCH/DEP signage and marking until after January 1, 2021.~~
 - ~~b. For airports certified under 14 CFR Part 139 and those with an air traffic control tower, FAA expects conformance to the standards of paragraph 3.5 no later than December 31, 2022.~~
 - ~~c. Non-towered, general aviation airports may defer action on conforming to paragraph 3.5 until the next planned development project at the airport (i.e., signage and marking project, or pavement rehabilitation project).~~~~
5. Paragraph 4.3.4, Enhanced Taxiway Centerline Surface Marking. FAA expects airports certificated under Part 139 to conform to Figure D-6 for enhanced taxiway centerline surface marking collocated with on-center surface painted holding position signs when carrying out the next repainting project.

6 How to use this AC.

1. This AC includes color-coded text boxes to emphasize safety initiatives, solutions to painting difficulties, and general remarks.
 - a. Green (Painting) – explains painting precautions and solutions, such as when proportioning is permissible for runway surface markings.
 - b. Red (Safety) – emphasizes safety initiatives.

- c. Gray (General) – contains general remarks.
2. All references to other FAA ACs and Orders are interpreted as the current version.
3. Most figures in this AC are full scale AutoCAD drawings saved as MS Word versions. For some figures, certain details may appear to be missing (missing or broken lines) when either printed or viewed on a computer monitor. To view all the details in these figures, use the appropriate ZOOM function. In some instances, where there is a large surface area, a ZOOM value of over 250% may be necessary to view all details. Both this AC and the original AutoCAD files for all figures are available for download at the FAA web site:
http://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.list/parentTopicID/85.
4. Hyperlinks (allowing the reader to access documents located on the internet and to maneuver within this document) are provided throughout this document and are identified with underlined text. When navigating within this document, return to the previously viewed page by pressing the “ALT” and “ ←” keys simultaneously.

7 **Measurements in this AC.**

This AC uses U.S. customary units followed with “soft” (rounded) conversion to metric units. The U.S. customary units govern.

8 **Copies of this AC and Other FAA Publications.**

You can view a list of all ACs at http://www.faa.gov/regulations_policies/advisory_circulars/. You can view the Federal Aviation Regulations at http://www.faa.gov/regulations_policies/faa_regulations/.

9 **Feedback on this AC.**

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/signed/

John R. Dermody
Director of Airport Safety and Standards

- 3.4.4.3.2 If the ILS holding position marking is not outlined in black, a 6-inch gap is left between the holding position marking and the taxiway edge marking (see [Figure A-13](#)).
- 3.4.4.4 Pattern B is painted perpendicular to the taxiway centerline but may be canted from the perpendicular in unusual situations, such as an extremely acute, angled taxiway. For such unusual situations, it may be necessary to install additional runway holding position signs, runway guard lights, or stop bars to emphasize the location of the surface painted runway holding position marking.
- 3.4.4.5 Pattern B on converging taxiways meet at an angle when two or more taxiways intersect the same ILS holding position marking. On any angled taxiway to the runway, consideration must be given to locate the painted marking so no portion of an aircraft, e.g., wing tip or tail, penetrates the protected surface. See [AC 150/5300-13](#) for detailed requirements and information about clearance requirements by aircraft on taxi routes.
- 3.4.4.6 For taxiways connecting to runways serving ADGs V and VI whose taxiway shoulder markings interfere with or are within 10 feet (3.1 m) from the extended ILS holding position marking (see paragraph [3.4.4.3](#)), the taxiway shoulder markings are to be removed (omitted) from that location.

3.5 **Case 5 – Applications of Pattern B for Precision Obstacle Free Zone (POFZ) and Runway Approach/Departure Holding Position Marking.**

3.5.1 Purposes.

Pattern B marking, as shown in [Figure A-13](#), identifies a conditional holding position on a taxiway or holding bay, where a pilot or vehicle driver is to stop when they receive instructions from the airport traffic control tower (ATCT) to hold before entering a protected areas. Use of pattern B markings do not include runway pavement applications. [Figure A-14](#) depicts the application of a pattern B marking for a POFZ holding positions. Figure 1-4 and Figure 1-5 in [AC 150/5340-18G](#), *Standards for Airport Sign Systems*, depicts application of a pattern B marking for a runway Approach/Departure area. The marking is used also at non-towered airport where the runway end has an approved vertical guidance of $\frac{3}{4}$ -statute mile approach visibility minimum or less. The intent of the marking is to protect the authorized landing minima (TERPS) for a given runway end and the Runway Approach/Departure Areas of a runway. See [AC 150/5300-13](#) for detailed information about these protected areas. For signage and lighting provisions, see [AC 150/5340-18](#) and [AC 150/5340-30](#). Install this marking when a POFZ or the Runway Approach/Departure Areas of a runway exists.

- 3.5.1.1 **The airport designates the boundaries of the POFZ and Approach/Departure surfaces for review and concurrence by the**

responsible FAA office. The dimensional values in AC 150/5300-13 for the POFZ and the Approach/Departure surfaces represent preliminary points for the FAA evaluation.

- 3.5.1.2 For the approach/departure surfaces, FAA applies data provided by the airport, (e.g. approach minima, surface elevation information, airfield geometry, most demanding tail height, etc.) to evaluate the preliminary holding position locations.
- 3.5.1.3 For towered airports, advance coordination with the local air traffic control tower is necessary to permit time for development of a local standard operating procedure for conditional holding positions and ATC training. The design phase is the optimum time to engage the local ATC and limit potential delays to marking installation.
- 3.5.1.4 Changes at an airport can affect existing protection measures in the approach and departure area. In the event of changes to factors that influence a conditional holding position, a new evaluation is necessary using applicable information provided by the airport. This may include but is not limited to the following factors:
 - 1. A change to most demanding aircraft tail height
 - 2. Revised or new approach procedures
 - 3. Geometric changes to airfield pavement in approach/departure area

3.5.2 Location.

Pattern B position marking is located on the taxiway or holding bay at the boundary of the POFZ protected area or the Runway Approach/Departure Areas of a runway as defined by AC 150/5300-13 and, when appropriate, at the holding position for CAT I and CAT II/III operations. Figure A-17 shows the most common POFZ application for this marking, which is L-shaped. Because of the variety of taxiway entrance/holding bay geometries, the Pattern B marking for the POFZ must not be painted over a surface painted holding position sign.

- 3.5.2.1 Certain airfield geometries may cause a taxiway or holding bay to penetrate both an ILS protected area and the Precision Obstacle Free Zone (POFZ) protected area, such as when the threshold is displaced. Under such situations, paint only one pattern instead of two patterns, but only if the single pattern can protect both protected areas. The pattern to be painted is the one whose location offers the most conservative, protective boundary (for example, farthest from the runway). Under this application the ILS holding position (Pattern B) marking or POFZ holding position (Pattern B) marking, which now serves a dual function, cannot be replaced with, or used in lieu of, a runway holding position (Pattern A) marking.
- 3.5.2.2 The FAA Airports Regional Office or Airports District Office will designate the ILS protected area, the Runway Approach/Departure Areas