



U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Standards for Airport Sign Systems

Date: September 30, 2024

AC No: 150/5340-18H

Initiated by: AAS-100

Change:

1 **Purpose.**

This Advisory Circular (AC) contains the Federal Aviation Administration (FAA) standards for the siting, design, and installation of signs on airport runways and taxiways.

2 **Cancellation.**

This AC cancels AC 150/5340-18G, *Standards for Airport Sign Systems*, dated May 10, 2019.

3 **Applicability.**

This Advisory Circular (AC) establishes Federal Aviation Administration (FAA) standards and guidelines to ensure uniform application of airfield signs for runways, taxiways, and aprons. This AC does not constitute a regulation 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 as described below.

Where applicable, the standards contained in this AC provide an acceptable means of satisfying the requirements of 14 CFR Part 139, *Certification of Airports*; and the requirements for federally obligated airport operators per Grant Assurance 19 and other applicable Grant Assurances. For all other airport operators, conformity with this AC is recommended. The FAA has determined the standards and guidelines contained in this AC are practices which provide an acceptable level of safety, performance and in support of operations for airfield ground navigation.

1. For certificated airports: If an alternate means of compliance is proposed by an airport operator, the FAA will evaluate the request on a case-by-case basis. If the proposal is found to be acceptable by the administrator, those alternate provisions must be documented in the Airports Certification Manual and the Airport Layout Plan if applicable.

2. For federally obligated airports:
 - a. Use of these standards and guidelines is mandatory for projects funded under Federal grant assistance programs, including, but not limited to, the Airport Improvement Program (AIP). See Grant Assurance 34 and other applicable Grant Assurances.
 - b. Use of these standards and guidelines is mandatory, as required by regulation, for projects funded by the Passenger Facility Charge program. See PFC Assurance 9 and other applicable PFC Assurances.
3. The content in this AC has been evaluated for conformity with applicable International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs) in effect at the time of publication, which may further emphasize the importance of conforming with these standards.

4 **Background.**

Airport sign systems provide visual cues to pilots and vehicle operators that enhance safe and efficient movement within the airfield environment. Elevated signs protect aeronautical surfaces and convey ground navigation information that enhances situational awareness when maneuvering on the airfield. The standards of this AC establish uniformity of sign systems throughout the National Airspace System (NAS) for consistent application and interpretation.

Standards of this AC correlate with standards in the following ACs:

- AC 150/5300-13, *Airport Design*
- AC 150/5340-1, *Standards for Airport Markings*
- AC 150/5345-39, *Specification for L-853, Runway and Taxiway Retroreflective Markers*
- AC 150/5345-44, *Specification for Runway and Taxiway Signs*

5 **Principal Changes.**

This AC change contains the following principal changes:

1. Paragraph 1.4:
 - a. Implemented new paragraph structure to improve user understanding of content.
 - b. Added text addressing necessary considerations when planning changes to taxiway designations. Added emphasis on collaboration and addressing existing problematic taxiway system.
 - c. Introduced terms for “Primary” taxiways and “secondary” taxiways.
 - d. Added recommended practice to assign primary taxiways close to the main terminal with “A” and “B.”

- e. Added new section addressing taxiway designation for taxiways between parallel runways.
 - f. Added new section addressing naming considerations for airports with multiple parallel runways separated by a terminal area.
2. Paragraph 1.5:
- a. Implemented paragraph-heading structure to improve user understanding of content.
 - b. Added clarifying language explaining when holding position signs for runway ends need to indicate both runway designations.
 - c. Clarified an elevated sign is standard for each taxiway with a mandatory holding position.
 - d. Established language addressing sign legend for Land and Hold Short Operation (LAHSO) when holding point is due to intersecting taxiway.
 - e. Increased emphasis on confirmation of Approach/Departure surfaces is via an aeronautical study versus solely the information provided within AC 150/5300-13.
 - f. Increased emphasis on advance coordination with Air Traffic Control (ATC) Air Traffic Manager (ATM) prior to submitting the aeronautical study to address ATC factors that may influence holding positions for protection of APCH/DEP obstacle clearance surfaces (OCSs).
 - g. Removed text addressing microwave landing system (MLS) sign legend.
3. Paragraph 1.10:
- a. Implemented paragraph-heading structure to improve user understanding of content.
 - b. Clarified application of destination signs.
 - c. Clarified the standards for outbound destination signs
 - d. Clarified the standards for inbound destination signs
 - e. Expanded the list and description of common destination signs.
4. Paragraph 1.11:
- a. Implemented paragraph-heading structure to improve user understanding of content.
 - b. Clarified left side placement of VSR holding position sign.
 - c. Updated references to AC 150/5300-13.
 - d. Established 36 inches (91 cm) above grade as the optimum sign installation height.
 - e. Clarified what signage is appropriate for protecting ILS critical areas that intersect a vehicle service road (VSR). Removed reference to L-858R sign.

5. Paragraph 1.14:
 - a. Implemented paragraph-heading structure to improve user understanding of content.
 - b. Added content addressing uniformity of sign size as optimum configuration.
 - c. Created separate paragraphs for sign selection factors.
 - d. Added Visual effectiveness of sign.
 - e. Added text establishing offset distances in Table 1-1 assumes standard taxiway widths.
 - f. Added language addressing taxiway entrances exceeding the standard taxiway widths (Example: DFW).
 - g. Added language addressing substandard taxiway widths.
 - h. Added language to paragraph 1.14.7.2 addressing canting of sign inward vs outward.
 - i. Added new content in paragraph 1.14.7.3 addressing spacing of consecutive signs on a taxiway.
6. Paragraph A.2:
 - a. Implemented paragraph-heading structure to improve user understanding of content.
 - b. Revised text for consistency with updated changes in the AC regarding complex airports.
7. Paragraph A.3:
 - a. Implemented paragraph-heading structure to improve user understanding of content.
 - b. Revised text for consistency with updated changes in the AC regarding airports with two intersecting runways.
8. Paragraph A.4:
 - a. Implemented paragraph-heading structure to improve user understanding of content.
 - b. Revised text for consistency with updated changes in the AC regarding airports with a single runway.
9. Added new Figure A-4, Examples: Runway Exit Signs at Opposing Acute Angle Taxiways.
10. Added new Appendix B and new Figure B-1, Figure B-2, Figure B-3, and Figure B-4.
11. Revised figures to improve clarity and reflect updates.
12. Made minor editorial changes and layout adjustments throughout.

6 **Implementation.**

Implement changes addressed by this update upon effective date of this AC and as noted below.

1. Apply current standards for projects involving new construction, rehabilitation, or reconstruction as per the applicability criteria of paragraph 3.
2. For existing non-standard conditions, develop a strategy through the airport planning process as detailed in Chapter 2 of AC 150/5300-13.
3. For existing non-standard conditions at a Part 139 airport discovered as part of an inspection, consult with the assigned airport certification safety inspector to:
 - a. Ensure the airport certification manual properly documents the nonstandard condition.
 - b. Discuss airport's proposed actions to mitigate or otherwise address any associated interim risk.
 - c. Discuss airport's proposed plan to meet standards.
4. Taxiway Designations. It is not necessary for an airport to take immediate action to correct existing taxiway systems not conforming to paragraph 1.4 naming conventions. Develop a strategy to manage interim risk and to attain standard taxiway designations over time through normal planning processes. As practical, implement changes with an associated airfield re-construction or rehabilitation project. Managed incremental improvements overtime lessens the confusion risk that may temporarily result from change.
5. Departure Area Signs. The recent change to the departure protection surface significantly reduces the surface footprint and thus will likely result in relocation or removal of existing approach/departure holding positions on parallel taxiways. Assess existing taxiway departure holding positions per paragraph 1.5.7.4 and coordinate any change, including removal of existing signs, with the FAA per paragraph 1.5.7.5.
6. Opposing High-speed Taxiway Exits. Where existing high-speed exits have a history of pilot confusion due to proximity of an opposing high-speed exit, implement corrective actions as soon as practical to meet paragraph 1.8.1.2. Refer to the Taxiway and Taxilane Design chapter of AC 150/5300-13 for high-speed exit separation design.
7. Destination Signs. Installation of destination signs are optional based on ground navigation confusion risk. Conform to standards when installing new sign assemblies or replacing existing signs.
8. Vehicle Service Road Signs. Conform to standards when installing new sign assemblies or replacing existing signs. For existing non-standard VSR signs with a history of vehicle operator deviations, take necessary action to correct the non-standard condition as soon as practical.
9. Using this Document.

Hyperlinks (allowing the reader to access documents located on the internet and to maneuver within this document) are provided throughout this document identified by underlined text. When navigating within this document, return to the previously viewed page by pressing the “ALT” and “ ← ” keys simultaneously.

To aid in document navigation, users may add custom bookmarks to the bookmark panel list. Navigate to the location you want to bookmark. Highlight and select the text to appear on the bookmark, then click the “add bookmark” button at the top of the bookmark panel and edit the bookmark text as needed. New bookmarks appear at the end of the bookmark list, but you may drag and drop them to a preferred position.

Figures in this document are schematic representations and are not to scale. Size of signs is exaggerated to aid user viewing.

7 **Use of Metrics.**

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

8 **Where to Find this AC.**

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

9 **Feedback on this AC.**

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



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GLOSSARY OF TERMS

This following table lists and defines terms and acronyms used within the document.

Term/Acronym	Description
ACM	Airport Certification Manual
ACSI	Airport Certification Safety Inspector
Alphanumeric	A taxiway designation convention consisting of letters and numbers. Alphanumeric designations start with a letter and end with a number.
AOA	Air Operations Area. Refer to AC 150/5300-13 for additional information.
APCH/DEP	Approach/departure
APS	Approach Protection Surface. Refer to AC 150/5300-13 .
ATC	Air Traffic Control
ATCT	Airport Traffic Control Tower
ATM	Air Traffic Manager
Bypass Taxiway	A secondary taxiway connecting a parallel taxiway to the runway for takeoff operation at a location other than the runway end.
Crossover Taxiway	A secondary taxiway connecting two primary taxiways. As known as a connector taxiway. For example, a short taxiway between two parallel taxiways.
CTAF	Common traffic advisory frequency
DPS	Departure Protection Surface. Refer to AC 150/5300-13 .
EAT	End Around Taxiway. See AC 150/5300-13 .
Entrance Taxiway	Any taxiway that serves to provide entry onto the runway. Entrance taxiways may serve a dual purpose as an exit taxiway.
Exit Taxiway	Any taxiway that serves to provide exit from the runway. Exit taxiways may serve a dual purpose as an entrance or runway crossing taxiway.
FBO	Fixed-base operator

Term/Acronym	Description
GA	General aviation
ILS	Instrument Landing System: A precision instrument approach system consisting of electronic components providing vertical and course guidance to a runway.
INTL	International
LAHSO	Land and Hold Short Operation
MLZ	Military Landing Zone
MUTCD	Manual on Uniform Traffic Control Device
NAS	National Airspace System
OCS	Obstacle Clearance Surface. Terminal Instrument Procedures (TERPS) terminology referring to airspace near the runway required to be clear of obstacles for an instrument approach procedure. Reference FAA Order 8260.19, <i>Flight Procedures and Airspace</i> , for additional information. The APS and DPS surfaces of AC 150/5300-13 model the Approach OCS and Departure OCS.
OFZ	Obstacle Free Zone. Refer to AC 150/5300-13 for information and details on OFZs.
POFZ	Precision Obstacle Free Zone. Refer to AC 150/5300-13 for complete information and detail on POFZs.
Primary Taxiway	A functional design grouping describing taxiways interconnecting runways and other primary taxiways to airside facilities such as terminal areas, aprons, and hangar areas. The designation aligns with terminology within International Civil Aviation Organization (ICAO) Doc 9157, <i>Aerodrome Design Manual</i> . Primary taxiway characteristics include frequent daily use and taxiway lengths allowing sustained taxi speeds. Examples include parallel taxiways, long connector taxiways, high-frequency runway crossing taxiways, and end-around taxiways. The classification is principally for establishing appropriate taxiway designations and has no operational purpose.
Provide	The term provide means to furnish and install, complete in place and ready for intended use.
Recommendation/Recommend	Supplemental measures and guidelines the FAA recognizes as promoting safety, capacity, or efficiency. An airport has the discretion to implement a recommended practice to address a site-specific condition.

Term/Acronym	Description
RSA	Runway Safety Area. Refer to AC 150/5300-13 .
Runway Crossing Taxiway	A primary taxiway that principally serves to taxi aircraft across a runway on a high frequency basis. Aligned secondary taxiways connecting parallel taxiways to a runway do not constitute a runway crossing taxiway.
Runway Safety Surface	A category of various runway areas and zones protecting runway operations. This includes runway safety area, runway object free areas, OFZs, POFZs, ILS critical areas, approach and departure protection surfaces, visual obstacle clearance surfaces, etc.
Secondary Taxiway	A functional design grouping describing taxiways interconnecting a primary taxiway to a runway, other primary taxiway, or an apron area. Secondary taxiway characteristics typically include short lengths and slow taxi speeds. Examples include entrance and exit taxiways, short connectors (aka stub), short crossover taxiways, and bypass taxiways. The classification is solely for establishing appropriate designations.
TERPs	Terminal Instrument Procedures. Refer to FAA Order 8260.3 , United States Standard for Terminal Instrument Procedures.
TLOFA	Taxilane object free area
TOFA	Taxiway object free area
VOR	VHF omnidirectional range
VSR	Vehicle service road

GLOSSARY OF SIGN TYPES

The following are the main categories and brief descriptions of sign types:

Sign Type	Brief Description
Boundary Signs	Boundary signs identify the location of the boundary of the RSA/OFZ or ILS critical area for a pilot exiting the runway. The sign has a black inscription on a yellow background. See Figure 1-4 and Figure 1-11 , details a and b.
Destination Signs	A destination sign has a black inscription on a yellow background and always contains an arrow. These signs indicate the general direction to a remote location. See Figure 1-13 , details b through d.

Sign Type	Brief Description
Direction Signs	A direction sign has a black inscription on a yellow background and always contain arrows. The signs indicate directions of taxiways leading out of an intersection. The signs may also indicate a taxiway exit from a runway. See Figure 1-13 , detail a.
Information Signs	These signs reside on the airside of an airport and provide information other than mandatory holding positions, taxiway guidance, and runway distance remaining signs. An information sign has a black inscription on a yellow background.
Location Signs	These signs identify the taxiway or runway upon which the aircraft is located. The sign has a yellow inscription with a yellow border on a black background. The yellow border is set in from inner edge of the sign to yield a continuous black margin. See Figure 1-10 , details a and b.
Mandatory Instruction Signs	A mandatory instruction sign has a white inscription (legend) with a black outline on a red background. They denote taxiway/runway intersections, runway/runway intersections, ILS critical areas, POFZ boundaries, runway approach/departure areas, CAT II/III operations areas, military landing zones, and no entry areas. See Figure 1-3 , details a through e.
Runway Distance Remaining Signs	Runway distance remaining signs provide distance remaining information to pilots during takeoff and landing operations. The sign has a white numeral inscription on a black background. See Figure 2-1 and Figure 2-2 .
Taxiway Ending Marker	This marker sign indicates that a taxiway does not continue beyond an intersection. See Figure 1-13 , detail e.
Vehicle Roadway Signs	These are signs located on the airfield providing ground navigation cues solely for vehicle operators. See Figure 1-16 .

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CHAPTER 1. RUNWAY AND TAXIWAY GUIDANCE SIGNS

1.1 General.

A properly designed and standardized runway and taxiway guidance sign system is essential for the safe and efficient operation of aircraft and ground vehicles on the airport movement area. Essential characteristics of a standard sign system include:

1. Provide the ability to easily determine the designation of any pavement on which the aircraft is located.
2. Readily identify routes toward a desired destination.
3. Indicate mandatory holding positions, including holding positions used to maintain aircraft separation during low-visibility weather operations.
4. Identify boundaries for approach/departure areas, ILS critical areas, the POFZ, and RSA /OFZ.

1.2 Planning.

Users of this AC may recognize that the functional layout of each airport is different. Although two airports may have similar runway and taxiway configurations, the number of signs needed to provide the pilot with the necessary taxiway guidance information may differ. Several factors influence this difference such as ground traffic patterns, the presence of an ATCT, the location of terminals, fixed-base operators and other facilities, the number of aircraft operations, and types of operators. In view of the differences in each airport's functional layout, collaborate with the FAA and airport users to ensure development and installation of a runway and taxiway guidance sign system conforming to the standards of this AC as practicable. At Part 139 airports, coordinate all proposed changes to the Airport Signage Plan with the Regional FAA Airport Certification Safety Inspector prior to installation of new signage. Update the ACM as appropriate.

1.3 Components of a Sign System.

A standardized system of signs enhances safety at all airports within the NAS. Paragraphs 1.5, 1.6, 1.7, 1.8, 1.9, and 1.10 contain standards for different types of runway and taxiway guidance signs and along with paragraphs 1.13, 1.14, 1.15, and 1.17, provide information on their general signing conventions, size and location, operation, and installation. Figures included in this chapter, as well as Appendix A and Appendix B show graphic depictions of these signs and common applications. The location and types of signs installed as part of a runway and taxiway guidance sign system at a particular airport will vary depending upon functional layouts, as discussed in paragraph 1.2. Apply the following guidelines when designing signs as part of this system at a particular airport:

- 1.3.1 Install a holding position sign and taxiway location sign at the holding position on any taxiway that provides access to a runway.
- 1.3.2 When it is necessary to protect a navigational signal, airspace, or the RSA/OFZ, install a holding position sign on any taxiway at the boundary of the ILS critical area, the POFZ, or the runway approach/departure area and, as appropriate, at the CAT II/III operations holding position.
- 1.3.3 Install a holding position sign on any runway that intersects with another runway.
- 1.3.4 Install a sign array consisting of taxiway direction signs prior to each taxiway/taxiway intersection where it is normal for aircraft to turn or to hold short of the intersection. The signs in the array include a taxiway designation panel with an arrow for each taxiway where an aircraft might turn or hold short. Include a taxiway location sign as part of the sign array unless determined to be unnecessary, as shown in [Figure 1-15](#). A sign array is not necessary at a taxiway/taxiway intersection where the aircraft turn is restricted, not customary, or would create a hazard such as an intersection between a parallel taxiway and an exit high-speed exit taxiway.
- 1.3.5 Install a runway exit sign along each runway for each normally used runway exit.
- 1.3.6 At uncontrolled airports (i.e., airports without an operating ATCT), consider whether it is preferable to substitute destination signs for the signs described in paragraphs [1.3.4](#) and [1.3.5](#).
- 1.3.7 Install standard highway stop or yield signs on vehicle roadways at the intersection of each roadway with a runway or taxiway. See paragraph [1.11](#) for additional details about the signs and their locations.
- 1.3.8 Install additional signs on the airfield where they are necessary to eliminate confusion or provide confirmation. For example, it may be necessary to install a taxiway location sign at the entrance to a taxiway from an apron area where several entrances exist. Similarly, on runway exit taxiways where ATC regularly requests pilots to report clear of the runway or where an aircraft regularly stops after clearing the runway, it may be beneficial to install an RSA/OFZ boundary sign to assist the pilot in making this report. At complex intersections or intersections along low visibility routes, it may be beneficial to install location signs on the far side of the intersection so the pilot can confirm the correct taxi path.
- 1.3.9 For airports certified under Part 139, provide lighted signs for all mandatory instruction signs, location signs, directions signs, and runway distance remaining signs. Refer to §139.311 for regulatory requirements.
- 1.3.10 For non-139 airports, installation of unlighted signs with retroreflective panel legends may be a more economical option. Consider the number of night operations, available instrument approaches, and the effectiveness of lighted signs versus unlighted retroreflective signs. Lighted signs are generally more discernable at a greater distance than retroreflective signs. If using a mix of lighted and unlighted signs at the airport,

place priority on installing lighted signs for all runway mandatory holding position signs.

1.4 **Developing Taxiway Designations.**

The guidelines and standards in this section establish a taxiway naming convention using logical taxiway designations to facilitate efficient ground navigation. Uniformity of taxiway nomenclature between different airports enhances pilot situational awareness for transient pilots unfamiliar with the airport. Application of these principles:

1. Establishes positive identification of location on the airfield enhancing pilot and vehicle operator situational awareness.
2. Provides a clear and logical taxiway system for pilots, controllers, and vehicle operators.
3. Reduces the risk of navigational error that may lead to a runway incursion or surface incident.
4. Establishes uniformity of taxiway designations in the NAS.

1.4.1 Implementing Taxiway Naming Convention.

As each airport has varying geometries, space constraints, and operational practices, an airport operator will adapt these guidelines to suit the ground navigational needs of the airport. For most airports, multiple solutions are possible. However, the primary objective remains constant for all airports to establish a clear, logical, and uniform taxiway system that enhances awareness of location on the airfield for pilots and vehicle operators.

- 1.4.1.1 The airport planning process is the optimum time to develop a strategy for establishing effective taxiway designations for the airport. Application of a Safety Risk Management process is an effective method to assess risks associated with taxiway designation considerations.
- 1.4.1.2 To limit confusion risk for itinerate pilots, taxiway designation design needs to consider uniformity of sign conventions across the NAS versus customizing designations for individual airports.
- 1.4.1.3 For new taxiways and airports, the design flexibilities associated with new infrastructure development simplifies design and planning strategies. The degree of adverse effects associated with implementing designations for new taxiways will typically be less than that associated with changing existing designations. Inform the ACSI of the effort to determine their interest in participating. Do not expand application of existing substandard designation practices.
- 1.4.1.4 Pilots become accustomed to taxiway systems with existing non-standard or complex taxiway designations even if there is an elevated risk for

ground navigation confusion. Consider the potential for temporary operational disruption any proposed change to existing taxiway designations may create. Extensive changes to an existing taxiway system may cause a temporary state of elevated confusion amongst pilots, controllers, and ground personnel. While pilots, controllers, and vehicle operators eventually acclimate to new taxiway designations, in the short term, there will likely be a state of elevated level of risk for pilot confusion. This temporary risk is not justification to forgo optimization of taxiway designations. Managed incremental change over time minimizes the temporary risk for navigation confusion.

1.4.1.5 The FAA expects an airport with non-standard or complex taxiway designations with risk for ground navigation confusion to develop a strategy to achieve a standard taxiway system over time. Consider the following factors when deciding to implement a change to existing taxiway designations:

1. Taxiways having a history of pilot confusion or loss of situational awareness.
2. Taxiways the owner plans to reconstruct or rehabilitate.
3. Making incremental changes over time to minimize operations disruption.

1.4.2 General Standards.

These standards apply to taxiway designations for all airports.

1.4.2.1 Keep it simple and logical to facilitate pilot understanding of location awareness.

1.4.2.2 Use single letters, double letters or alphanumeric designations based upon the type of taxiway (e.g., primary, entrance, exit, connector taxiway, etc.).

1.4.2.3 Apply a distinguishable pattern when assigning taxiway designations. For contiguous airfield geometries, apply a logical order of letter progression. Examples include east to west, north to south, or clockwise progressions. Figure 1-1 depicts a sequence for the primary taxiways progressing south to north as well as a sequence progressing east to west. For divided airfields such as those with runways separated by a terminal area, the pattern may be a grouping of letters with an identifiable arrangement. For example, apply taxiway designations on one side of the terminal area using letters A through L and on the other side, letters M through Z. The objective is to establish a layout where a pilot, especially a transient pilot, is able to quickly locate a specific taxiway on the airport diagram.

1.4.2.4 Designate each taxiway segment with a unique designation. Use a designation only once to identify a contiguous taxiway section. Ensure no

separate, distinct taxiway segment has the same designation as another taxiway segment.

- 1.4.2.5 Designate secondary taxiways connecting a primary taxiway to a runway with unique alphanumeric designations to facilitate positive location identification on the airfield.
- 1.4.2.6 These naming conventions do not apply to taxilanes, terminal gate areas or other apron parking areas. Use a different distinct naming convention for such areas to avoid confusion with ground navigation on the taxiway system. Consider use of inbound destination signs of paragraph 1.10.4 to supplement taxiway direction signs with identifying distinct areas of a complex terminal area.
- 1.4.2.7 Refer to paragraph 1.4.4.2 for a permissible exception to this standard for taxiways predominantly used as a crossing taxiway.

1.4.3 Non-standard Designation Practices.

The following address non-standard applications that introduce risk to ground navigation of the taxiway system. Do not apply the following:

- 1.4.3.1 Use of numbers by themselves for taxiway designations. Pilots may confuse a numeric taxiway designation for a runway designation.
- 1.4.3.2 Use of the letters “I” and “O”. Pilots may mistake these letter characters as numerals.
- 1.4.3.3 Use of the letter “X”. Pilots may mistake the sign information for a closed taxiway.
- 1.4.3.4 A change of taxiway designation without any discernable change in direction or an intersection with another taxiway or runway.
- 1.4.3.5 Use of alphanumeric combinations that may create confusion with a runway designation. For example, if an airport has a runway “4L” do not use a taxiway designation of “L4” by skipping the number 4.
- 1.4.3.6 Situations where taxiways have similar names as other airfield pavements and areas. For example, having a taxiway C4 designation as well as a terminal gate taxilane C4. Apply a different naming convention for nonmovement area taxilanes that is distinct from the taxiway naming convention.
- 1.4.3.7 Designation of taxiways using an adjective descriptor or a physical object such as “inner,” “outer,” “parallel,” and “bridge” taxiways. Such descriptors may not be known to transient pilots resulting in pilot confusion.

- 1.4.3.8 Use of double different letter designations. This application in the movement area increases the potential risk for communication confusion between the pilot and the controller. For example, a pilot may interpret a controller instruction for taxiway Alpha-Bravo (TWY AB) to mean taxiway Alpha (TWY A) and taxiway Bravo (TWY B). Refer to paragraph 1.4.5.7 for permissible exceptions for entrance connector taxiways to non-movement area aprons.

1.4.4 Primary Taxiways.

Begin assignment of taxiway designations for the airfield system by first identifying and labeling primary taxiways.

- 1.4.4.1 Assign single letter designations to primary taxiways using a progressing order or grouping per paragraph 1.4.2.3. Apply double same letter designations (e.g., AA or BB) only after exhausting single letter designations. Optimizing the use of alphanumeric designations for secondary taxiways, such as entrance taxiways, will typically provide sufficient single letter designations for primary taxiways at most airports.
- 1.4.4.2 Primary taxiways used principally by local ATC for taxiing aircraft across a runway may retain the same taxiway designation. Taxiway “F” and Taxiway “G” in Figure 1-1 illustrate this situation. This application does not apply to entrance taxiways at runway ends or secondary taxiways occasionally used for crossing traffic across a runway as indicated by Taxiway D3 and Taxiway B3. Coordinate with the facility ATC ATM to establish primary taxiways with predominant use as runway crossing taxiways.
- 1.4.4.3 A primary taxiway may include a curved section without a change in designation when the turn leads to another taxiway. In Figure 1-1, the short connector between Taxiways T and A retains the Taxiway “T” designation. If the taxiway turn leads to a runway entrance, apply an alphanumeric designation for the short connector as shown for Taxiway B6.
- 1.4.4.4 **Recommended Practice.**
Assign primary taxiways closest to the main terminal area with letter characters early in the alphabet (e.g., Taxiway A, Taxiway B). See Figure 1-1. This practice assists transient pilots with locating the terminal area.

1.4.5 Secondary Taxiways.

Assign secondary taxiways using alphanumeric designations. Application of alphanumeric designations promotes positive location identification, reducing the risk for pilot confusion of their position on the airport.

- 1.4.5.1 General conventions for designating secondary taxiways.

1. Use alphanumeric designations starting with a letter followed by number.
 - a. Use the letter of the associated primary taxiway as the base designation followed by the number (example: Taxiway B2 is the second connector taxiway from the base Taxiway B).
 - b. Use of three-character alphanumeric designators using two numerals is acceptable when the number of secondary taxiways connecting to a primary taxiway exceeds nine.
 - c. For a secondary taxiway connector between two secondary taxiways, use a double same letter designation based on one the secondary taxiway designation (e.g., TWY CC between TWY C1 and TWY C2 in Figure 1-1).
 - d. Do not use a letter following the number (e.g., B2A).
2. Establish an increasing order from number one to the highest applicable alphanumeric designation for the associated primary taxiway.
3. The alphanumeric order may skip numbers to align designations with other secondary taxiways or to account for future secondary taxiways provided the number progression remains logical as shown in Figure 1-1 for taxiway A, B, C, and D.
4. Except as noted in paragraph 1.4.6, secondary taxiways with an alphanumeric designation physically connect to the associated base primary taxiway.
5. Establish a distinguishable system that facilitates location on the airfield by applying an alphanumeric designation progression in the same general direction (e.g., North to South) as shown in Figure 1-1.
6. Runway exit taxiways designations generally follow the same alphanumeric sequence applied to the runway entrance taxiways. See Taxiways C3, C5, and B4 in Figure 1-1. Runway exit taxiways providing a frequent taxi path to the terminal area may apply a letter designation in lieu of the alphanumeric designation, subject to coordination with the local ATCT. See high-speed taxiways F and Taxiway G in Figure 1-2.

1.4.5.2 Assign runway entrance taxiways with alphanumeric designations using the letter designation of the parallel taxiway closest to the runway and applying a progressing numeric order per paragraph 1.4.5.1.

1. All connector taxiways to a runway end are secondary taxiways with alphanumeric designations.
2. Start the alphanumeric designations with number one located at a runway physical end. See Taxiways B1, C1, and D1 in Figure 1-1.

3. Where a primary taxiway intersects a parallel taxiway at a runway end, terminate the primary taxiway designation at the parallel taxiway and assign an alphanumeric designation for connector taxiway segment to the runway as shown for TWY B6 in Figure 1-2.
- 1.4.5.3 Runway exit taxiways connecting to a primary taxiway predominantly used as a frequent taxi path to the terminal area may apply the single letter primary taxiway designation in lieu of an alphanumeric designation, subject to coordination with the local ATCT. See exit Taxiway E in Figure 1-1 and Taxiways F and G in Figure 1-2.
- 1.4.5.4 For connector taxiways between parallel taxiways, apply the same numeric order established for the opposite sides of the primary taxiways. See taxiways A1, A2, and A4 in Figure 1-1.
1. Where connector taxiways align, apply the same number across the primary taxiways as shown for Taxiway B2 and A2 in Figure 1-1.
 2. The alphanumeric letter for the connector taxiway between primary taxiways starts with the letter designation of the primary taxiway farthest from the runway as shown in Figure 1-1.
- 1.4.5.5 The same alphanumeric designation may cross the associated primary taxiway where deemed beneficial for ground navigation and there is no potential for pilot confusion. See Taxiway C6 in Figure 1-1.
- 1.4.5.6 An alphanumeric designation may not cross a different letter primary taxiway. Example: Taxiway B1 may connect Taxiway B to Taxiway A but may not crossover to the opposite side of Taxiway A.
- 1.4.5.7 For connector taxiways between a primary taxiway and an apron area, the complexity of the airport terminal area influences the logical assignment of secondary taxiway designations. Collaborate with key stakeholders to include local pilots, airlines, and the ATC ATM to establish logical designations for entry into an apron area.
1. Use alphanumeric designation based on an apron perimeter taxiway as illustrated by Taxiways T1, T2 and T3 in Figure 1-1.
 2. In order to conserve use of single letters for primary taxiways, do not use single letter designation for short apron connector taxiways unless the segment is part of a primary taxiway to the apron area such as Taxiway E in Figure 1-1.
 3. Because apron areas may interface with various primary taxiways with different orientations and configurations, it is not necessary for the numeric order of apron connector taxiway to align with the adjacent primary taxiway number order.

4. Use of double-same letters (**example:** Taxiways AA, BB, and CC) is acceptable provided use is logical.
5. Subject to collaboration with key stakeholders, the letter(s) for the alphanumeric designation for apron entry taxiways may consist of characters describing a readily identifiable area provided there is no risk for pilot confusion with other taxiway designations at the airport such as the following examples.
 - a. Taxiways T1, T2, and T3 in Figure 1-1 identify the terminal area connectors.
 - b. Use of double different letter designations to identify distinct non-movement areas such as Taxiway SC (South Cargo Area), Taxiway NC (North Cargo area), TA (terminal A), etc.

1.4.6 Taxiways Between Parallel Runways.

The configuration and spacing of parallel runways will influence optimization of the taxiway designations serving the area between the runways. The use of single letter designations for primary taxiways and alphanumeric designations for secondary taxiways is typically sufficient for airports with parallel runways.

1.4.6.1 **Parallel Runways Without Parallel Taxiway.**

For parallel runways with insufficient space for a parallel taxiway, such as runways 18C and 18R in Figure 1-2, designate the connector taxiway as follows:

1. Apply alphanumeric designations as if a parallel taxiway exists, as shown in Figure 1-2 for Taxiways “E1”, “E2”, and “E6”, or
2. Apply single-letter designations, as shown for taxiways “G” and “F” in Figure 1-2, for exit taxiways with predominant use as a common taxi path to the terminal area.

1.4.6.2 **Parallel Runways Sharing Parallel Taxiways.**

For a parallel taxiway serving two parallel runways, assign different designations to each entrance taxiway to establish a clear differentiation between the two airfield positions. Using the same designation for both runway intersections represents a hazardous situation that may lead to pilot confusion due to similar sounding intersections descriptions. In Figure 1-2, the designations for entrance Taxiways “C6” and “D6” establish distinctive articulation to the similar sounding runways’ designations “18L” and 18C”.

1.4.7 Multiple Parallel Runways Separated by Terminal Area.

Airports with multiple parallel runways separated by a terminal area may benefit by strategic naming of taxiways on each side of the terminal. To benefit pilot awareness of location with relation to the terminal, apply distinct taxiway designations on each side

of the terminal. Consider, for example, an airport with multiple north-south runways separated by a terminal area.

- 1.4.7.1 Applying lower alphabet designations (e.g., A through F) for the east side primary taxiways and upper alphabet designations (e.g., V-Z) to the west side primary taxiways establishes an intuitive separation that conveys relative position.
- 1.4.7.2 Additionally, applying an alphanumeric grid where the southern secondary taxiways commence with the number 1 (e.g., A1, B1, V1, W1) and the northern secondary taxiways have a higher number (e.g., A9, B9, V9, W9) establishes an intuitive order conveying a relative position on the airfield. In all instances, engage key stakeholders per paragraph 1.4.1.1 to determine an optimum taxiway designation strategy.

1.5 **Mandatory Instruction Signs.**

Mandatory instruction signs identify locations where aircraft or vehicles hold, when applicable, prior to entering a protected runway safety surface area or restricted airfield zone. The type of protected safety surface will influence the necessary action of a pilot or vehicle operator. At airports with an operating ATCT, pilots and vehicle operators rely on instructions from the controller for the appropriate action at the holding position. At uncontrolled airports, including nonoperating hours of a part time ATCT, pilots and vehicle operators proceed across these holding positions only after exercising self-vigilance to determine their route ensures adequate separation to arriving or departing aircraft.

1.5.1 Application.

Install mandatory instruction signs at locations where any part of an aircraft or vehicle infringes upon a runway safety surface. Refer to Figure 1-5 for relationship between hold sign location and point of infringement for various safety surfaces. Provide an elevated sign for each location. Use of mandatory signs beyond this application represents a non-standard condition. Applicable safety surfaces include the following:

1. RSA boundary
2. OFZ based upon point of infringement
3. Approach/Departure OCS based upon point of infringement
4. POFZ boundary
5. Military landing zones boundary
6. LAHSO location, typically at an RSA boundary with an intersecting runway
7. ILS
 - a. Signal critical area boundary
 - b. CAT II/III protected area

8. No-entry area boundary

1.5.2 Characteristics.

- 1.5.2.1 Mandatory instruction signs have a white inscription with a black outline on a red background (see Figure 1-3).
- 1.5.2.2 The sign inscription denotes the applicable safety surface (e.g., runway designations, ILS, etc.).
- 1.5.2.3 Mandatory signs do not include arrows except as noted in paragraph 1.5.3.3.
- 1.5.2.4 Refer to paragraph 1.14 for the sign size, legend height, location, and separation distance from pavement edge.

1.5.3 Taxiway/Runway Intersections.

Mandatory runway holding position signs demarcate a location on taxiways providing direct access to a runway. At airports with an operating ATCT, pilots and vehicle operators may not cross this holding position without receiving controller clearance. The sign placement protects the most conservative boundary of the following:

1. RSA boundary (see Figure 1-5, detail A).
2. Closest point between an aircraft and the runway centerline where part of the aircraft fuselage infringes upon the ROFZ. (See Figure 1-5, detail B.)
3. The applicable distance resulting from the above sea level elevation adjustment as established within Runway Design Standards Tables in AC 150/5300-13.

- 1.5.3.1 The sign inscription is the runway designation numerals separated by a dash as per Figure 1-3, detail a. The arrangement indicates the direction to the corresponding runway threshold. For example, “15-33” indicates the threshold for runway “15” is to the left and the threshold for runway “33” is to the right when facing the runway at the holding position.
- 1.5.3.2 The sign at each runway end contains the inscription only for the takeoff runway. At towered airports, include the inscription for both the takeoff runway designation and opposite runway end designation where ATC has an operational need to use the runway end taxiways for high frequency daily crossings. This practice does not apply to runway end taxiway entrances the ATCT occasionally uses to cross aircraft. Consult with the local ATCT ATM to determine the level of operational need.
- 1.5.3.3 Apply arrows only if necessary to clarify the orientation of multiple runways that intersect with a common taxiway. See Figure 1-6.

- 1.5.3.4 Install holding position signs on left side of a holding position per paragraph 1.14.
- 1.5.3.5 Install holding position signs on both sides of a holding position for the following situations:
1. Width of taxiway pavement, including fillet and holding bay pavement, at holding position exceeds 150 feet (45.7 m), as shown in Figure 1-4 and Figure 1-7, detail a.
 2. The holding position marking does not extend straight across the holding position, as shown in Figure 1-7, detail c.
 3. Holding position locations are within close proximity to a turn making it difficult to view a left side sign, as shown in Figure 1-7, detail b.
 4. When recommended under a safety risk assessment action.
- 1.5.3.6 Cant (angle) signs inward per paragraph 1.13.14 and Figure B-1 for the following situations:
1. Holding positions immediately following a turn where aircraft does line up perpendicular to the hold line, as shown in Figure 1-7, detail b, and Figure B-4.
 2. Holding positions where a hold line is not parallel to the runway centerline resulting in placement of the sign in the RSA, as shown in Figure 1-7, detail c.
 3. Where necessary to enhance pilot visibility of sign to improve situational awareness.
- 1.5.4 Runway/Runway Intersections.
Mandatory instruction signs, similar to runway holding position signs, identify the RSA boundary of intersecting runway at runway/runway intersections.
- 1.5.4.1 The sign inscription is identical to the signs for runway holding position signs, as described in paragraph 1.5.3.1.
- 1.5.4.2 Locate a sign per the applicable runway centerline to holding position separation distance, as established within AC 150/5300-13.
- 1.5.4.3 For runways that are 150 feet (45.7 m) or less in width, install one sign on the left side of the runway to identify the intersecting runway. Refer to the 13-31 sign to the left of Runway 9 prior to the intersection with Runway 13-31 in Figure 1-8.
- 1.5.4.4 For runways that are more than 150 feet (45.7 m) in width, install holding position signs on both sides of the runway to identify an intersecting runway. Runway 13-31 in Figure 1-8 depicts application of signs on both sides for a 200-ft wide runway.

- 1.5.4.5 Install mandatory instruction signs on both sides of the intersecting runway, regardless of width, where ATC operationally closes the runway to arrivals and departures under a letter of agreement with the airport operator for a temporary period to conduct continual taxi operations through the runway/runway intersection. See [Figure 1-8](#) for Runway 27 prior to the Runway 13-31 intersection. Refer to [AC 150/5340-1](#) for guidance on surface marking hold lines at these locations.

1.5.5 Land and Hold Short Operations (LAHSO).

A LAHSO holding position identifies a location on the runway where pilots hold short of an intersecting runway, taxiway, or approach/departure area after landing. Establishment of LAHSO involves an ATC letter of agreement and installation of necessary signs, surface markings, and lighting.

- 1.5.5.1 For runways with published LAHSO, install signs on both sides of the runway regardless of runway width as depicted in [Figure 1-8](#) for Runway 27 prior to the intersection with Runway 13-31.
- 1.5.5.2 The sign inscription for a LAHSO prior to an intersecting runway is the runway designation numerals separated by a dash. The sign inscription for a LAHSO prior to an intersecting taxiway is the taxiway designation letter. See [Figure 1-3](#), detail f.
- 1.5.5.3 The sign inscription for a LAHSO prior to intersecting an approach/departure area of a converging non-intersecting runway is the same as for the approach/departure areas. See [Figure 1-3](#), detail c.
- 1.5.5.4 Refer to [AC 150/5340-1](#) for guidance on collocating LAHSO holding position signs and surface marking hold lines.

1.5.6 ILS Critical Area/POFZ Boundary.

This mandatory holding position sign protects the ILS signal propagation and the airspace immediately prior to the runway threshold when the POFZ is in effect. The associated holding position may reside on a runway entrance taxiway or a parallel taxiway. See [Figure 1-4](#) for an ILS sign application.

- 1.5.6.1 The sign inscription for the ILS Critical Area or the POFZ boundary holding positions is the abbreviation “ILS” per [Figure 1-3](#), detail b.
- 1.5.6.2 Align front face of holding position sign abeam the pattern B hold line between a point on the outermost parallel line and a point 10 feet (3m) further from the ILS or POFZ boundary. Refer to [AC 150/5340-1](#) for the hold line reference point. Refer to paragraph [1.14.5](#) for lateral sign location criteria. Refer to [AC 150/5340-1](#) for guidance on surface markings hold lines at these locations.

- 1.5.6.3 Where the distance between a runway mandatory holding position marking and the ILS/POFZ holding position marking is 50 feet (15.2 m) or less, place the runway mandatory holding position sign at the location of the ILS/POFZ sign. Omit the ILS legend inscription. See Figure 1-9 for an example.
- 1.5.6.4 Provide a sign on both sides of the taxiway when the holding position meets the geometrical configurations described in paragraph 1.5.3.5.
- 1.5.6.5 The airport operator initially identifies the ILS critical area and POFZ boundaries for review and concurrence by the responsible FAA Airports office. The FAA Technical Operations Office is responsible for confirming ILS critical area boundaries. The FAA Office of Airports is responsible for confirming POFZ boundaries. To initiate the FAA review, submit an SF-7460-1 form specifically addressing the proposed holding position.

1.5.7 Runway Approach/Departure Areas.

This sign protects applicable safety surfaces within a runway approach and departure area. Safety surfaces include RSA, TERPS approach OCS, TERPs departure OCS, and the runway OFZ. Pilots and vehicle operators hold at these locations based upon instructions issued by ATC.

- 1.5.7.1 The inscription on this sign includes the applicable runway designations and associated approach/departure area. A dash separates the approach area and the departure area as follows: “## APCH – ## DEP.” See Figure 1-3, detail c.
- 1.5.7.2 The order of the inscription is relative to the runway/taxiway intersection orientation. The first inscription is the runway end and protected surface to the left-hand side as one is facing the runway from the holding position. See Figure 1-4 for the holding positions for “33 DEP – 15 APCH” and “15 APCH – 33 DEP”.
- 1.5.7.3 Designate the boundaries of the POFZ, approach surface, and departure surface on the airport layout plan using the dimensional values in AC 150/5300-13. These boundaries establish initial study points for the FAA’s evaluation of potential conditional holding positions.
- 1.5.7.4 Determination of the potential need for a holding position to protect approach and departure areas occurs under Part 77 aeronautical studies to evaluate infringement by taxiing aircraft of applicable TERPS OCSs. The FAA relies on data provided by the airport to evaluate the initial holding position locations established in paragraph 1.5.7.3. Multiple study points may be necessary to establish the location of conflict for different aircraft types. The relevant data typically includes:
 - 1. Runway instrument procedures and approach minima.

2. Pavement surface elevation data (e.g., threshold, taxiway centerline, etc.) to a 1A survey accuracy (+20 feet horizontal tolerance and +3 feet vertical tolerance).
3. Airfield geometric layout.
4. Tail heights of aircraft expected to use the taxiway, including the critical aircraft and most demanding aircraft.
5. **Recommendation:** Study the next lowest airplane design group to assess if smaller aircraft can taxi under the affected safety surface that larger aircraft infringe.

1.5.7.5 For airports with an operating ATCT, coordinate the location of potential holding positions with the facility ATM early in the design phase and prior to submittal of the aeronautical study. This advance coordination is beneficial towards identifying factors that may affect the location or need for a holding position to protect approach and departures areas.

Designing for Protection of Approach/Departure Surfaces

The preferred approach to protect runway safety surfaces is to optimize the airfield geometric layout to avoid points of conflict by applying the design standards of AC 150/5300-13. When non-standard or complex airfield geometries exist, the placement of holding positions on taxiways other than those leading directly to a runway may be necessary to protect safety surfaces. While installation of holding positions establishes an acceptable level of safety, it also has potential to effect the efficiency of aircraft ground movement.

Place priority on designing taxiway systems that prevent aircraft from infringing upon a runway safety surface except when the aircraft is taxiing onto the runway. For runway ends with a displaced threshold or a parallel taxiway extending past the runway end, consider offsetting the parallel taxiway as detailed in the Taxiway and Taxilane Design chapter of AC 150/5300-13 to prevent taxiing aircraft from penetrating an approach protection surface.

Where the aeronautical study of paragraph 1.5.7.4 determines a conflict with a safety surface thus indicating the need for a holding position, assess if there is opportunity to make geometric changes that eliminates the conflict. At airports with an ATCT, coordinate with the facility ATM to assess operational impacts a holding position may present.

Depending on the severity of the infringement and the effect upon ground movement efficiency, FAA may consider actions other than placement of a holding position such as raising approach minimums, conducting collision risk modeling, or issuing a regulatory waiver. Install approach/departure holding positions only after receiving confirmation from the FAA Region/ADO.

- 1.5.7.6 Changes at an airport can affect existing protection measures in the approach and departure area. A new evaluation may be necessary if operational changes have the potential to affect existing holding positions for approach or departure surface protection. Such changes include the following:
1. A change to the critical or most demanding aircraft resulting in the need for more restrictive protection or easing of current protections.
 2. Revision of existing approaches or development of new approach procedures.
 3. Geometric changes to airfield pavement in approach/departure area.
- 1.5.7.7 Install a sign on left side of taxiways at locations in the runway approach/departure area prior to where a taxiing aircraft would infringe upon the most conservative safety surface.
1. Except as noted in paragraph 1.5.7.8, the sign protecting the approach and departure areas includes both the approach and departure runway designations even though the most conservative safety surface infringement controls the sign location.
 2. Align front face of holding position sign abeam the pattern B hold line between a point on the outermost parallel line and a point 10 feet (3m) further from the Approach/Departure protected area.
 3. Refer to AC 150/5340-1 for guidance on surface marking hold lines at these locations.
- 1.5.7.8 Airfield geometries and ATC procedures may result in situations where the sign addresses only one of the protected areas. For example, a holding position sign legend may indicate a holding position for only the approach area (## APCH) or the departure area (## DEP). Such situations include:
1. A displaced runway threshold where a taxiway underlies a runway approach area but does not underlie the runway departure area.
 2. An infringement only occurs to one of the applicable safety areas thus there is no cause to hold aircraft for both the approach and departure areas.
 3. Air traffic management practices may result in a benefit to use separate sign locations for the DEP and APCH legends, subject to concurrence from the facility ATC ATM.
- 1.5.7.9 The departure end of a runway is the physical end of the runway pavement. Where taxiways traverse through the safety area off the departure end of a runway, protection of the departure area is necessary regardless of whether the runway has declared distances or published departure procedures.

- 1.5.7.10 An approach/departure holding position may exist on runways where maintenance vehicles (e.g., snow removal equipment) or taxiing aircraft will encounter a runway approach or departure OCS. There is no associated surface painted hold line for runway applications.
- 1.5.7.11 For locations where the distance between an approach/departure holding position and an ILS critical area or POFZ boundary is 50 feet (15.2 m) or less, provide only the APCH/DEP sign at the location farthest from the runway entrance. See Figure 1-4 for example.
- 1.5.7.12 For standard End-Around Taxiways (EATs), approach/departure signs are not necessary as aircraft can taxi without penetrating a protected surface. Approach/departure signs may be necessary for non-standard EATs where aircraft infringe upon an approach or departure safety surface. Refer to AC 150/5300-13 for details on EATs.

1.5.8 CAT II/III Operations.

This sign is located where aircraft are to hold on a parallel taxiway during CAT II/III operations to ensure proper aircraft separation.

- 1.5.8.1 The inscription is the associated runway designation followed by a dash and the abbreviation “CAT II” for Category II operations or “CAT II/III” for Category II/III operations. See Figure 1-3, detail d.
- 1.5.8.2 Provide a sign on both sides of the taxiway when the holding position marking for CAT II/III operations is located in the geometrical configurations described in paragraph 1.5.3.5.
- 1.5.8.3 Determine the location of CAT II/III signs through a Part 77 aeronautical study by submitting FAA Form 7460-1 for the tail height of the most demanding aircraft.
- 1.5.8.4 Refer to AC 150/5340-1 for guidance on collocating surface marking hold lines at these locations.

1.5.9 Military Landing Zones.

This sign identifies a location on a taxiway prior to entering a safety surface of a designated military landing zone.

- 1.5.9.1 When a runway designation exists for the landing zone, the sign inscription identifies the runway designation numerals similar to paragraph 1.5.3.1. When a runway designation does not exist for the landing zone, apply the sign inscription “MIL LZ.”
- 1.5.9.2 Locate the sign per the applicable runway centerline to holding position separation distance, as established within AC 150/5300-13.

- 1.5.9.3 Coordinate MIL LZ sign with the Department of Defense FAA Liaison Detachment and FAA Flight Procedures via a specific Part 77 aeronautical study.

1.5.10 No-Entry Sign.

This sign indicates areas on the airfield restricted to aircraft entry.

- 1.5.10.1 The inscription is a circle with a horizontal bar, as shown in Figure 1-3, detail e.
- 1.5.10.2 Provide a sign on both sides of taxiway prior to pilot encountering the restricted area. Where a safety assessment justifies only one sign, install the single sign on left side of the taxiway.
- 1.5.10.3 Installation of a no-entry sign is acceptable for taxiways exclusively used for one-direction taxi paths, such as a runway exit taxiway. For this application, the no-entry sign does not replace the standard runway/taxiway holding position sign. Locate the no-entry sign on the exit taxiway to warn pilots against turning onto the exit taxiway in the wrong direction.

1.6 **Location Signs.**

Location signs identify the taxiway or runway upon which the aircraft is located. A location sign has a yellow inscription with a yellow border on a black background. The yellow border is set in from the inner edge of the sign to yield a continuous black margin. The location sign does not contain arrows. Location signs include the following:

1.6.1 Taxiway Location Sign.

This sign identifies the taxiway on which an aircraft is located. Figure 1-10, detail a, shows a typical sign. Taxiway location signs may be installed on the back side of a direction sign or a mandatory hold sign.

1.6.2 Runway Location Sign.

Install this sign on runways where the proximity of two runways could create confusion, as shown in Figure 1-6, detail b. Also consider installing this sign on runways at runway/taxiway intersections commonly used for intersection takeoffs. Figure 1-10, detail b, shows a typical sign. This sign is located to clearly identify the runways for pilots and only contains the runway designation for the one runway end.

1.7 **Boundary Signs.**

These signs identify the boundary of the RSA/OFZ or ILS critical area for a pilot exiting the runway.

1.7.1 RSA/OFZ and Runway Approach/Departure Boundary Sign.

This sign identifies the boundary of the RSA/OFZ or the runway approach/departure area for pilots who are exiting these areas. It has a black inscription that depicts the holding position marking on a yellow background, as shown in Figure 1-11, detail a. The sign is typically used only at controlled airports at the request of the ATCT and is located on taxiways where the controller commonly asks the pilot to report “clear of the runway” or where an aircraft is regularly required to stop upon exiting the runway – see Figure 1-4 for examples. The pilot can use the sign as a guide in deciding when to report back to the controller. Consequently, installation of this sign is not necessary at every runway exit or on taxiways having green/yellow color-coded centerline lights. However, this sign may be useful in areas where it is common for the centerline lights to become obscured by snow or ice.

1.7.2 ILS Critical Area/POFZ Boundary and CAT II/III Operations Sign.

This sign identifies either the boundary of the ILS critical area, or the POFZ, or the holding position for CAT II/III operations. The sign has a black inscription that depicts the ILS holding position marking on a yellow background, per Figure 1-11, detail b. Install this sign at controlled airports on taxiways where the controller commonly asks pilots to report, “clear of the ILS critical area” when exiting these areas. The pilot can use the sign as a guide in deciding when to report back to the controller. This sign would not normally be necessary on taxiways having green/yellow color-coded centerline lights but may be desirable in areas where the centerline lights could be obscured by snow or ice. Install this sign only on the back side of an ILS, POFZ, or CAT II/III operations holding position sign (see Figure 1-4 for examples).

1.8 **Direction Signs.**

These signs indicate direction to other taxiways immediately leading out of an intersection. Refer to paragraph 1.13 for criteria associated with collocating direction signs with a location sign.

1.8.1 Applications.

1.8.1.1 **Taxiway Direction Sign.**

Figure 1-13, detail a, shows a typical taxiway direction sign. Application examples are shown in Figure 1-14, Figure 1-15, and Appendix A, Figure A-1, Figure A-2, and Figure A-3.

1. Install direction signs at taxiway/taxiway intersections where aircraft turns are common and intended.
2. Locate direction signs per paragraph 1.14.7.
3. Where necessary to enhance pilot situational awareness for taxiways crossing a runway (e.g., non-standard Y taxiway configuration), locate signs indicating the direction of a taxiway after crossing a runway on the opposite side of the runway/taxiway intersection.

1.8.1.2 **Runway Exit Sign.**

Figure 1-13, detail a, shows a typical runway exit sign. Application examples are shown in Appendix A, Figure A-1, Figure A-2, Figure A-3 and Figure A-4.

1. For taxiways intended only as exits from the runway in one direction, such as taxiways located near the end of the runway or exit taxiway intersecting the runway at an acute angle, install signs only for the intended exit direction.
2. Provide exit signs on both sides of the runway at an intersecting taxiway if it is common for aircraft to exit the runway on either side.
3. Locate signs for runway exits prior to the runway/taxiway intersection on the side and in the direction to which the aircraft exits.
4. Where two acute-angle taxiways (i.e., high-speed exits) for opposite direction exits are located near each other (a non-standard condition):
 - a. Locate runway exit signs prior to the opposing acute-angle taxiway exit where the point of intersection of the two exit taxiway centerlines exceeds 50 feet (15.2 m) from the runway centerline. See Figure A-4, detail a.
 - b. Locate runway exit signs between the opposing acute-angle taxiways where the point of intersection of the two exit taxiway centerlines is 50 feet (15.2 m) or less from the runway centerline. See Figure A-4, detail b.

1.8.1.3 **Application Limitations.**

1. Do not collocate direction signs with holding position signs, boundary signs, or destination signs.
2. Do not install direction signs for a taxiway/taxiway intersection on an entrance/exit taxiway between the holding position marking and the runway.
3. Do not “bracket” a runway exit with signs placed before and after the exit.
4. Limit runway exit signs to one arrow for the taxiway designation shown on the sign.
5. Do not install runway exit signs for taxiway exits exceeding a 125-degree turn from the runway centerline to limit risk of taxiway excursion.

1.8.2 Characteristics.

1. Direction signs have black inscriptions on a yellow background.

2. Each taxiway designation has one arrow indicating the approximate taxiway direction from the intersection except as noted in line 5.
3. Where a direction sign has more than one taxiway direction sign legend as shown in Figure 1-15, arrange the designations of the intersecting taxiways and respective arrows using a clockwise sequence starting left to right from a point facing the holding position.
4. Orient arrows to align with approximate direction of turn.
 - a. Apply arrow angle values to match taxiway direction within plus or minus five degrees.
 - b. A direction sign panel is not necessary for a straight-ahead taxiway path (e.g., less than 25-degree angle turn) unless there is a change in the taxiway designation as shown in Figure 1-14, detail a and detail c.
5. Where a taxiway intersection comprises two crossing taxiways as shown in Figure 1-14, detail a, it is acceptable to use a double arrow direction sign in place of the separate direction sign panels.
6. Where the intersection alignment changes more than 25 degrees, provide an arrow approximating the direction of the taxiway as shown in Figure 1-14, detail b.
7. If the taxiway continues straight ahead (25 degrees or less change in alignment) and the designation of the taxiway changes at the intersection, provide a direction sign with an arrow (see Figure 1-14, detail d).

1.9 **Taxiway Ending Marker.**

A taxiway ending marker sign indicates that a taxiway does not continue beyond an intersection. Install a taxiway ending marker at taxiway T-intersections where there is an elevated risk for a taxiway excursion. It is not necessary to install this sign at intersections with low risk for excursion. The sign is a frangible retroreflective barrier installed on the far side of an intersection if the normal visual cues, such as marking and lighting, are inadequate (see Figure 1-12 and Figure 1-13, detail e). See AC 150/5345-44, *Specification for Runway and Taxiway Signs*, for stripe dimensions and additional information.

1.10 **Destination Signs.**

Destination signs provide pilots general direction information to a remote location on the airport. There are two general types of destination signs: 1) outbound, and 2) inbound. Both types of destination signs supplement the standard location and direction signs.

1.10.1 Application.

The installation of destination signs is at the discretion of the airport operator with collaboration from the facility ATM when an ATCT is present. Provide destination signs only where standard location and direction signs provide inadequate taxi guidance to a remote area.

1.10.1.1 **Placement.**

Install destination signs in a location clearly visible to approaching aircraft without obscuring or displacing standard location and direction signs. Where a destination sign precedes a location/direction sign, ensure the location/direction sign is fully viewable from a position on the taxiway centerline 150 feet (45.7 m) in advance of the location/direction sign.

1. Locate destination sign in advance of taxiway/taxiway intersection prior to intended turn.
2. The optimum location for the sign is on the same side of the taxiway as the turn direction.
3. Opposite side installations are acceptable where:
 - a. Space constraints exist.
 - b. There are conflicts with location and direction signs.
 - c. There is little risk for pilot confusion of proper taxi path to destination.
4. Locate destination sign on far side of a taxiway/taxiway intersection where:
 - a. There is a “T” intersection as shown in Figure A-3 at the intersection of Taxiway A and Taxiway B.
 - b. The path to the destination is straight ahead, or
 - c. There is insufficient space to place the sign prior to the intersection.
5. Destination may reside on the backside of a location/direction sign array as shown in Figure A-1 for the INTL sign at the intersection of TWY B and TWY C.

1.10.1.2 **Limitations of Use.**

1. Do not install destination signs on runways.
2. Do not collocate destination signs with location, direction, or mandatory instruction signs.
3. Destination signs do not displace or supplant standard location and direction signs.

4. At towered airports, ensure the location and information of a destination sign does not conflict with local ATC operating procedures and practices at the airport.
5. Ensure destination signs identify a single path to the destination area to avoid pilot confusion a dual path sign may cause.
6. Limit application of destination signs to avoid visual cue overload conditions for taxiing pilots.

1.10.2 Characteristics.

- 1.10.2.1 Destination signs have a yellow background with black inscription and includes an arrow pointing in the general direction of the destination. See paragraphs 1.10.3 and 1.10.4 for criteria specific to outbound and inbound destination signs. See Figure 1-13, details b and c.
- 1.10.2.2 Refer to paragraph 1.14 for sign size location and separation distance from pavement edges.

1.10.3 Outbound Destination Sign.

Outbound destination signs identify taxiway directions to departure runways. Install outbound destination signs at locations where standard location and direction signs inadequately identify clear taxi path guidance to a takeoff runway. Typical locations include the beginning of the taxi route from an apron area and at complex taxiway intersections where pilots may become confused about the taxi path to a runway end.

1.10.3.1 **Inscription.**

The following standards apply when an airport elects to install outbound destination signs.

1. The inscription consists of the departure runway designation and an arrow indicating the direction (see Figure 1-13, detail b).
2. The inscription for a taxi route serving multiple departure runways includes a dot to separate the runway designations (see Figure 1-13, detail c).
3. For destination signs that address different taxi routes to separate runway ends, separate the runway designation panels with a vertical border (See Figure A-3, Intersection of Taxiway A and Taxiway B).

1.10.4 Inbound Destination Sign.

Inbound destination signs provide pilots supplemental route information to key destination areas on the airport where the proper path may not be clear to the pilot. While standard direction signs may provide adequate taxi guidance at many airports, at others it may be necessary to provide additional taxi route guidance to distinguish between different apron areas such as terminal apron, general aviation apron, cargo

apron, and military apron. The installation of inbound destination signs is at the discretion of the airport owner. See Figure 1-13, detail d, for a typical sign example.

1.10.4.1 **Inscription.**

The unique navigation needs of an airport determine the appropriate inbound destination sign inscription. The following standards apply when an airport elects to install inbound destination signs.

1. Use generic terms to describe inbound area; do not use commercial names.
2. Use a minimum of three letters/characters for the inscription to avoid confusion with taxiway designations.
3. Use consistent terms at the same airport versus using two similar terms (e.g., APRON versus RAMP).
4. Where multiple destination areas exist, consider providing additional descriptive signs at points closer to the specific destination area (e.g., North Cargo Apron).

1.10.4.2 **Common Destination Names.**

Sign inscriptions that are logical and easily understood benefit the situational awareness for based and transient aircraft operators. Common generic names, abbreviations, and descriptive terms for inbound destination signs include:

- **APRON** – general parking, servicing, and loading areas
 - **FBO Apron** – an apron where itinerant general aviation operators can park their aircraft and expect to have access to traditional FBO services subject to terms and conditions.
 - **GA Transient Apron** – an apron where itinerant general aviation operators can park their aircraft without FBO services and subject to terms and conditions.
 - **GA Tenant Apron** – an area designated for parking of based general aviation aircraft, i.e., tie down area.
 - **North/South/East/West Apron** – an apron designation describing relative location on the airport
- **CARGO** – areas set aside for cargo handling
- **CIVIL** – areas set aside for civil aircraft
- **FBO** – fixed-base operator
- **FUEL** – areas where aircraft receive fuel or related services
- **INTL** – areas set aside for handling international flights

- **MIL** – areas set aside for military aircraft
 - **ANG** – area reserved for air national guard
 - **USN** – area reserved for US Navy
- **PARKING** – alternative name for apron area
- **PAX** – areas set aside for passenger handling
- **RAMP** – name is synonymous with APRON
- **TERM** – gate positions at which aircraft loaded or unload passengers and cargo
 - **North/South/East/West TERM** – a terminal designation describing relative location on the airport

1.11 **Vehicle Roadway Signs.**

These signs provide vehicle operators ground navigation information when driving on VSRs within the AOA. VSR signs are solely for vehicle operators to enhance situational awareness while operating within the AOA. These signs do not provide ground navigation information to pilots.

1.11.1 Intersection of VSR with Runway.

These signs provide vehicle operators a visual guidance on where to hold on the VSR prior to entering a protected area of the runway, typically the RSA. At airports with an ATCT, provide three signs to control vehicle entry into the runway environment: 1) STOP sign, 2) DO NOT PROCEED sign, and 3) mandatory runway hold position sign. See Figure 1-16 for the standard configuration.

1.11.1.1 Locate the VSR holding position at a point clear of the RSA and where the vehicle is clear of the runway OFZ.

1. The optimal location of the vehicle holding position sign and stop line is 2 to 10 feet (0.6 m to 3m) prior to encountering the RSA boundary or point of OFZ infringement.
2. A distance further from the optimal location is acceptable provided there is little risk for vehicle operator confusion related purpose of holding position.
3. Utilize the horizontal configuration where there is inadequate vertical clearance to an aircraft wing overhanging the sign when position the aircraft wheels at the RSA boundary.
4. Refer to the applicable runway centerline to holding position separation distance and OFZ surface criteria as established within AC 150/5300-13.

- 1.11.1.2 Install the sign on the left side of the VSR as viewed by the vehicle operator when facing the runway. The standard will remain left side for the runway VSR sign. Right side installations are acceptable where space constraints exist and signs do not present a confusion risk.
1. A left-side VSR sign position optimizes the line of sight to the vehicle operator and aligns with the left-side convention that applies to mandatory airfield signs.
 2. A right-side stop sign installation is acceptable where space constraints prevent a left-side installation provided the mandatory sign remains on the left-hand side of the holding position.
 3. Existing right-side installations:
 - a. May remain in place until such time the airport plans to rehabilitate or replace the existing sign assembly.
 - b. Take action to install a left-side installation as soon as practical where there is a history of incursions.
- 1.11.1.3 Provide standard highway STOP sign (see Figure 1-18) as shown in Figure 1-16.
1. Optimum sign height is 36 inches (91 cm) above surrounding grade; maximum sign height is 60 inches (152 cm) above surrounding grade.
 2. Install signs on breakaway supports conforming to frangibility standards of AC 150/5345-44 as follows:
 - a. For VSR signs located within 50 feet (15.2 m) of the RSA boundary where the top of the sign exceeds 36 inches (91 cm) above grade
 - b. Establish frangibility point no more than 3 inches (7.6 cm) above surrounding grade.
 3. **Recommendation:** Install all VSR Stop signs, DO NOT ENTER signs, and Yield signs on breakaway supports conforming to MUTCD standards to facilitate ease of replacement when damaged.
- 1.11.1.4 At airports with an ATCT, install a DO NOT PROCEED - CONTACT ATC sign per Figure 1-19 in line with the STOP sign. Position the sign below the STOP sign or outboard of the STOP sign, as shown in Figure 1-16. Installing the sign outboard of the STOP sign lowers the overall height of the STOP sign assembly.
1. Install the DO NOT PROCEED sign within 2 to 6 inches (5.5 cm to 15.2 cm) from the STOP sign.
 2. For part-time or non-towered airports, modify the inscription of the second line to reflect vehicle operator responsibility to verify local air traffic activity before proceeding such as “Announce to CTAF”.

- 1.11.1.5 Provide a standard retroreflective runway holding position sign L-858R, Size 1, Style 4 as shown in [Figure 1-16](#). Refer to [AC 150/5345-44](#) for additional information about unlighted mandatory instruction signs.
1. Install the mandatory holding position sign separately from the STOP and DO NOT PROCEED signs.
 - a. Arrange the runway designations to indicate the direction towards the corresponding runway threshold as viewed from the holding position.
 - b. For a VSR intersecting a RSA beyond the runway end, the mandatory sign indicates the designation of the applicable runway approach end.
 2. Locate a holding position sign outboard of the STOP sign a minimum of 2 feet (0.6 m) from the outermost edge of the STOP sign.
 3. The maximum height of a holding position sign is 30 inches (0.9 m) above grade as measured from the top edge of the sign to grade.

1.11.2 Intersection of VSR with Taxiway.

These signs provide vehicle operators a visual cue indicating where to hold on the VSR prior to intersecting a taxiway, taxilane or apron area. A properly located vehicle holding position provides standard wingtip clearance between taxiing aircraft and holding vehicles. See [Figure 1-17](#) for an example configuration that uses a STOP sign, DO NOT PROCEED sign, and a taxiway direction sign.

- 1.11.2.1 Establish the vehicle holding position sign assembly at a point clear of the associated TOFA to ensure holding vehicles do not conflict with aircraft wings. Refer to [AC 150/5300-13](#) for applicable TOFA dimensional standards.
1. The optimal location of a VSR holding position sign assembly is 2 to 10 feet (0.6 m to 3m) from the TOFA boundary as indicated in [Figure 1-17](#).
 2. Distances further from the TOFA boundary are acceptable provided it is clear to a vehicle operator they are holding for a crossing taxiway.
- 1.11.2.2 Provide a standard highway STOP sign (see [Figure 1-18](#)).
1. Locate sign between 6 to 12 feet from the edge of the roadway on the right side of the holding position when facing the crossing taxiway.
 2. A left side installation is acceptable for single lane VSRs where opposing traffic does not block the sightline between the vehicle operator and the sign.
 3. Sign height for standard holding locations is 48 to 60 inches from the bottom of the sign to the elevation of nearest edge of road pavement.

4. For signs located within 2 feet of the TOFA/TLOFA, apply a horizontal configuration and limit stop sign height to 36 inches (91 cm) above elevation of nearest edge of TOFA/TLOFA grade.
5. **Recommended Practice:** Install sign on MUTCD approved breakaway supports for safety of vehicle operator and ease of replacement.

1.11.2.3 Installation of a YIELD sign in lieu of a STOP sign for VSR holding positions within the non-movement area is acceptable at locations where the risk of conflict with aircraft is low. Ensure the airport's vehicle operators training program adequately addresses yielding right-of-way to taxiing aircraft.

1.11.2.4 Where necessary to obtain ATC clearance before proceeding, collocate a DO NOT PROCEED sign with the STOP sign. Position the DO NOT PROCEED sign below or outboard of the stop sign as shown in Figure 1-17. Collaborate with the facility ATM to confirm locations such as an entry point to the movement area and entry into an RSA. Installation of these signs may involve a letter of agreement with the local facility.

1.11.2.5 At locations where deemed necessary by a safety assessment to enhance vehicle driver situational awareness, install a type L-858Y, size 1, style 4, taxiway direction sign.

1. The taxiway direction sign is a separate assembly located a minimum of 2 feet (0.6 m) outboard from the outermost edge of the STOP/DO NOT PROCEED - CONTACT ATC sign assembly.
2. Limit the sign height to be no greater than 30 inches (0.9 m) above grade (measured from the top edge of the sign to grade).

1.11.3 Intersection of VSR with ILS Critical Area.

Where VSRs enter or intersect an ILS critical area, provide a DO NOT PROCEED – CONTACT ATC sign, per Figure 1-19. For non-towered airports, modify the inscription DO NOT PROCEED – ANNOUNCE TO CTAF or similar advisory message. This sign is in addition to the red ILS CRITICAL AREA – KEEP OUT sign the FAA installs for FAA owned facilities. Where a critical area boundary resides within the limits of a RSA, install the VSR sign at a location prior to encountering the RSA boundary.

1.11.4 VSR Information Signs.

For other VSR signs the airport operator deems necessary, such as speed limit sign, conform to the current standards in the Federal Highway Administration (FHWA) publication MUTCD for Streets and Highways, available at <https://mutcd.fhwa.dot.gov>. For dual lane VSR, locate signs on the right side of roadway as viewed by the driver. For single lane VSRs, a left side location is acceptable. Ensure the sign location and

size do not create a hazard to aircraft operations, safety surfaces, or air navigational facilities.

1.11.5 General VSR Signage Guidelines.

1. Do not install VSR information signs within a taxiway or runway object free areas.
2. For a single lane VSR, locate the sign on the left side of the vehicle holding position; for a dual lane VSR, locate the sign on the right side of the holding position.
3. Locate the nearest edge of the sign 6 to 12 feet (1.8 m to 3.7 m) from the edge of the VSR pavement.
4. As necessary, make adjustment to the sign location to account for aircraft clearance requirements and the effects of jet exhaust.
5. Provide a sign support sufficient to resist forces from expected wind and jet exhaust.
6. Where necessary to enhance the vehicle operator's view of a sign legend, the airport operator may cant (angle) the sign assembly inward up to 30 degrees.

1.12 **Information Signs.**

Airfield signs other than mandatory instruction signs, taxiway direction signs, destination signs, and runway distance remaining signs. Examples of information signs include noise abatement procedures, VOR checkpoint signs, or other specialized information for pilots.

1.12.1 Characteristics of Information Sign

Information signs have a black inscription on a yellow background. Signs are typically unlighted but may be lighted based on airport operator discretion.

1. Limit sign message to appropriate aeronautical information for pilot awareness.
2. Unless otherwise specified herein, apply FHWA guidelines for character font and height as follows:
 - a. Font type: Series B 2000 or Series C 2000
 - b. Character height: minimum 7 inches (17.8 cm), maximum 9 inches (22.9 cm).
3. Furnish signs with retroreflective sheeting conforming to AC 150/5345-44, *Specification for Runway and Taxiway Signs*.
4. Install signs on frangible couplings per paragraph 1.17.
5. Ensure information signs do not take the appearance of a taxiway direction or destination sign.
6. Refer to paragraph 1.13 for general sign conventions and paragraph 1.14 for sign size and location criteria.

1.12.2 VOR Receiver Checkpoint Sign.

This sign has an overall mounting height of not less than 24 inches (61 cm) and not more than 30 inches (76.2 cm). It is located as nearly as practicable on an extension of the VOR Receiver Checkpoint Marking diameter line and faced perpendicularly to the line-of-sight of the viewer in the circle (see Figure 1-20).

1.12.2.1 The inscription on the sign shows the facility identification, channel, radial selected (published) for the check, and the plotted distance from the antenna (when applicable).

1.12.2.2 The station identification and course numerals are at least 7 inches (17.8 cm) high and the other letters and numerals at least 3 inches (7.6 cm) high.

1.12.2.3 Install signs in accordance with the height and distance standards in Table 1-1. Figure 1-20 shows an example of this sign. (See AC 150/5340-1, Standards for Airport Markings, paragraph 37, for more details about the VOR Receiver Checkpoint Markings.)

1.13 **General Signing Conventions.**

1.13.1 Unless otherwise stated, locate signs on the left side of the taxiway as seen by the pilot of the approaching aircraft (see exceptions in paragraph 1.13.2). Where installation of signs occurs on both sides of the taxiway at the same location, the sign faces are identical, except as follows:

1.13.1.1 Holding position where the taxiway location signs reside outboard of the runway holding position sign, as explained in paragraph 1.13.4.

1.13.1.2 Where an RSA/OFZ boundary sign resides on the back of a runway hold sign on the right side of an exit taxiway, a taxiway direction sign may be installed on the left side.

1.13.2 Signs may be located on the right side of the taxiway when necessary to meet clearance requirements or where it is impractical to install them on the left side because of terrain or conflicts with other objects.

1.13.3 Some signs may reside on the back side of other signs, although it may result in the sign being on the right side of the taxiway. Signs that may reside on the back side of another side include:

1.13.3.1 RSA/OFZ boundary signs (see Figure 1-11, detail a), which may be installed on the back of taxiway/runway intersection holding position sign (see Figure 1-4).

1.13.3.2 ILS critical area boundary signs (see Figure 1-11, detail b), which may be installed on the back of ILS critical area holding position signs (see Figure 1-3, detail b, and Figure 1-4).

- 1.13.3.3 Taxiway location signs, which may reside on the back of direction signs when they are installed on the far side of an intersection.
- Note:** Location signs installed in this manner do not negate the need for location signs installed on the left of the runway holding position sign prior to the intersection.
- 1.13.3.4 Taxiway location signs, which may reside on the back of holding position signs (see [Figure 1-4](#), Taxiways A1 and A2).
- 1.13.3.5 Destination signs, which may reside on the back of direction signs on the far side of intersections when the destination referred to is straight ahead (see [Appendix A](#), [Figure A-1](#)).
- 1.13.4 Install taxiway location signs collocated with holding position signs for taxiway/runway intersections outboard of the holding position sign (see [Figure 1-4](#), Taxiway A).
- 1.13.5 Location signs are normally part of a direction sign array, which is located prior to the taxiway intersection. Except for intersections of only two taxiways (see paragraph [1.13.7](#)), the location sign is placed in the array so the designations for all turns to the left are located to the left of the location sign; the designations for all turns to the right or straight ahead, when required (see paragraph [1.13.6](#)), are located to the right of the location sign (see [Figure 1-14](#)).
- 1.13.6 Direction signs have arrows oriented to the approximate direction of the turn. Except as noted in paragraph [1.13.7](#), each designation appearing in an array of direction signs includes one arrow. A direction sign with an arrow indicating that a taxiway continues straight ahead (25 degrees or less change in alignment at the intersection) is not necessary. Where the intersection alignment changes more than 25 degrees, use a sign with an arrow approximating the direction of the taxiway (see [Figure 1-14](#), detail b). If the taxiway continues straight ahead (25 degrees or less change in alignment) and the designation of the taxiway changes at the intersection, then a direction sign with an arrow is used (see [Figure 1-14](#), detail d).
- 1.13.7 When a taxiway intersection comprises only two crossing taxiways, it is permissible to use a double arrow direction sign in place of separate direction sign panels (see [Figure 1-14](#), detail a). In this case, the location sign panel is on the left side of the sign array. For this type of installation, the taxiway that the pilot is on may not change designation or alignment (more than 25 degrees) on the other side of the intersection (see [Figure 1-14](#), details b and d).
- 1.13.8 Position the location sign panel on the left side of the sign array when using a double arrow sign panel, per [Figure 1-14](#), detail a. Location signs may not be a necessary element in all direction sign arrays (see [Figure 1-15](#)). Consider all information concerning the intersection when analyzing the need for a location sign. This includes:
- Complexity of the intersection layout.
 - Distance from the last location sign.

- Complexity of prior intersections.
- Traffic flow patterns through the intersection.
- Visibility conditions when the intersection is in use.

1.13.9 Limitations.

1.13.9.1 Do not collocate information signs with mandatory instruction, location, direction, or destination signs.

1.13.9.2 Do not install signs on the segment of taxiway between the taxiway location/runway holding position sign and the runway.

1.13.10 Delineate each designation and its associated arrow included in a direction or destination sign array from other designations in the array by a black vertical border. When appropriate, a location sign may provide this delineation (see [Figure 1-15](#)).

1.13.11 On a sign face, a dot means “and.” It is used on signs where one arrow is common to two designations. For example, if the routes to two different runway ends involve the same taxiways, the runway numbers appearing on an outbound destination sign would be separated by a dot; the directional arrow on the sign face would be applicable to both runway ends. See [Figure 1-13](#), detail c.

1.13.12 Use of a dash only applies to mandatory instruction signs. Apply a dash to separate the designations for opposite runway ends (for example: 18-36) or to separate the runway designation from the abbreviation “APCH” or “DEP”. See [Figure 1-3](#), detail c.

1.13.13 When replacing sign panels due to damage or changing message elements, replace the entire message element. This will avoid panel-to-panel color changes that may be distracting to pilots. See [AC 150/5345-44](#) for additional information about replacement sign panels.

1.13.14 It is acceptable to cant (angle) a sign towards the pilot’s line of vision when necessary to improve the visibility of the sign legend. This situation is illustrated in [Figure 1-7](#), detail b where a pilot would have difficulty seeing the sign on the left due to its proximity to the edge of the parallel taxiway. The back of a canted sign is not available for use because it may not be visible to pilots.

1.13.15 When using two separate signs in an array, do not separate message elements between the two signs. For example, do not locate the arrow for a sign panel on a separate sign in the array. Extension of an existing sign (i.e., physically increase its length by adding modules to it) requires all of the following criteria be met:

- The existing sign meets the applicable standards in [AC 150/5345-44](#).
- The length of the sign (existing plus extension) cannot exceed the maximum overall length limitations per [AC 150/5345-44](#).

- Unless the extension involves the addition of only a location sign, the sign face (existing plus extension) meets the standards for legend, borders, arrows, spacing, and color per AC 150/5345-44.
- The extension meets the electrical and frangibility standards of AC 150/5345-44.
- The separation between individual sign housings meets the requirements in AC 150/5345-44.

1.14 **Sign Size and Locations.**

Refer to AC 150/5345-44 for sign specifications addressing manufacture, font type, character heights, and installation criteria.

1.14.1 Sign Size.

Three sizes of signs, based on height, are available for taxiway guidance signs: Size 1, Size 2, and Size 3. Refer to Table 1-1 for sign standards.

1.14.2 Selecting a Sign Size.

When selecting a sign size, consider sign clearance, visual effectiveness, space constraints, and operational factors. Apply the same panel size for all signs within the same sign array. To the extent practical, apply uniform sign size for same sign types (e.g. mandatory instruction signs, direction signs, location signs, etc.). This does not preclude installation of a different sign size where taxiway geometry creates space constraints preventing uniformity.

1.14.2.1 **Jet Blast.**

Consider the effects jet blast may have when selecting a sign size. Larger sign faces encounter larger wind forces than smaller sign faces. Typical areas of concern include taxiway turns, where aircraft commonly use breakaway jet thrust, and operations of large four-engine aircraft.

1.14.2.2 **Snow and Ice Removal Operations.**

At locations with routine heavy snow and ice events, consider local snow removal operations when selecting a sign size. While larger sign faces remain visible with snow depths, they also experience greater forces from snow displacement activities.

1.14.3 Sign Clearance.

Provide a minimum 12 inches (30 cm) of clearance between the top of the sign and any part of the most critical aircraft using the airport, as measured when the aircraft's wheels are at the defined pavement edge (e.g., physical or marked taxiway edge). As necessary to provide clearance, move a sign farther from pavement edge within the distance tolerance of Table 1-1. Evaluate reducing the sign size if the maximum sign distance does not provide the standard clearance.

1.14.4 Visual Effectiveness of a Sign.

The ability of the pilot to acquire and recognize the message on a sign during reduced visibility conditions is a key indicator of sign visual conspicuity. Multiple factors influence the visual conspicuity of a sign.

1.14.4.1 **Size of Sign.**

Large sign sizes allow the pilot to read the sign message from a greater distance than smaller signs. Consider the viewing distance from taxiway centerline when selecting a suitable sign size.

1.14.4.2 **Orientation of Sign Face.**

The orientation of the sign face relative to the pilot's or vehicle operator's position can affect readability. For locations where the angle of the holding position may adversely affect a pilot's or vehicle operator's view of the sign face, assess if canting the sign face inward will improve the readability of the sign message. Consider signs angles up to 30 degrees from a pivot point on the sign housing edge closest to the pavement edge. See [Figure 1-7](#) and [Figure 1-16](#) for examples.

1.14.4.3 **Sign Distance from Taxiway Centerline.**

Installation of signs closer to the taxiway centerline associates the sign with the holding position and benefits pilot recognition of the sign message. A lighted sign provides improved readability of the sign legend over a retroreflective sign. Retroreflective signs require reflection of the light beam spread back to the pilot's eyes. An excessive sign offset may not reflect sufficient light back to the pilot to recognize the sign legend.

1.14.5 Lateral Location of Sign.

1.14.5.1 Locate the nearest edge of the sign from the edge of the usable pavement, including fillet pavement, based on the distance tolerances established in [Table 1-1](#). The values represent a perpendicular distance from the defined usable pavement edge, which may be the physical edge or a marked edge. The distance values in [Table 1-1](#) assume standard taxiway widths.

1.14.5.2 For taxiways exceeding the applicable standard taxiway width, the additional width increases the viewing distance to the sign for the pilot on holding on the taxiway centerline. Excessive distances have potential to diminish the pilots visually recognition of the sign message and sign association with the holding position, especially during low visibility conditions. Apply the following maximum separation distances between the taxiway centerline and the middle of the sign array, excluding any outboard blank sign panels if present. The inability to fit a sign within the minimum edge distance and the maximum taxiway centerline distance is an indicator of non-standard pavement geometry.

Lighted Signs

1. 150 feet (45.7 m) for taxiway location/direction sign arrays.
2. 125 feet (38 m) for mandatory runway holding position signs.

Unlighted Signs

60 feet (18.3 m) for taxiway location/direction sign arrays and mandatory runway holding position signs.

- 1.14.5.3 For substandard taxiway widths, locate the sign using standard offset tolerances measured from the theoretical standard taxiway edge.

1.14.6 Runway Holding Positions.

Locate the holding position per the applicable “Runway centerline to holding position separation distance” as established within AC 150/5300-13. Use the value for the applicable critical airplane design group of the runway.

- 1.14.6.1 Collocate mandatory holding position signs with the Pattern A holding position marking of AC 150/5340-1.
- 1.14.6.2 Align front face of holding position sign abeam the pattern A hold line between a point on the outermost parallel line and a point 10 feet (3 m) further from the protected surface boundary (e.g. RSA or OFZ). Refer to AC 150/5340-1 for the hold line reference point.
- 1.14.6.3 For taxiways entering a holding position at an angle, locate holding position line so that no part of the holding aircraft infringes upon the protected surface. Because the holding aircraft represents the hazard versus the sign itself, it is acceptable for a sign to reside in the limits of the safety surface provided the sign is frangible. See Figure B-2 for an example of this scenario and Figure B-3 for a substandard approach requiring mitigating controls to be in place.
- 1.14.6.4 It is acceptable to horizontally cant (angle) the runway holding position sign inward to improve the pilot’s view of the sign and to keep the sign out of the RSA.

1.14.7 Taxiway Sign Locations.

- 1.14.7.1 Locate taxiway location/direction signs prior to a taxiway-taxiway intersection per the applicable “Taxiway Centerline to Fixed or Movable Object” distances established within AC 150/5300-13. Use the value for the applicable critical airplane design group of the crossing taxiway. This provides a visual aid indicating where to hold in order to remain clear of taxiing aircraft. It is acceptable to increase the distance if aircraft with larger wingspans than the critical aircraft use the crossing taxiway.

- 1.14.7.2 For taxiway-taxiway intersections where taxiing aircraft frequently encounter another aircraft crossing the intersection, collocate a Pattern C hold line marking per AC 150/5340-1. The sign may reside up to 10 feet (3 m) prior to the hold line marking.
- 1.14.7.3 For consecutive sign installations located on the same taxiway (e.g., outbound destination sign prior to a runway holding position sign), provide sufficient sign spacing to permit a pilot to view the second sign in time to properly react, assuming normal taxi speeds. Apply the greatest value of the following:
1. 50 feet (15.2) between signs, or
 2. A sign spacing value that allows a pilot to view the second sign from a point on the taxiway centerline 150 feet (45.7 m) prior to a point on the taxiway centerline abeam the second sign.

Table 1-1. Sign Heights and Location Distances for Taxiway Guidance Signs

Sign Size	Legend Height [inches (cm)]	Legend Panel Height [inches (cm)]	Installed (max.) [*] [inches (cm)]	Offset distance from usable pavement edge to near side of sign [feet (m)]
1	12 (30)	18 (46)	30 (76)	10-20 (3-6)
2	15 (38)	24 (61)	36 (91)	20-35 (6-10.5)
3	18 (46)	30 (76)	42 (107)	35-60 (10.5-18)

Note 1: Distance from the top of the sign to grade, as measured at the side of the sign that is nearest to the applicable runway, taxiway, or apron usable pavement.

Note 2: Refer to paragraph 1.14.5.3 for substandard taxiway widths.

Note 3: Refer to paragraph 1.14.5.2 for maximum lateral offset criteria.

1.15 Sign Operation.

For airports with lighted airfield signs, install a power source that ensures consistent illumination when activating each runway/taxiway edge light brightness step. Refer to AC 150/5345-44 for additional information about power sources for illuminating signs.

- 1.15.1 Design airfield electrical circuits to illuminate the following signs when runway edge lights illuminate:
1. Mandatory signs and taxiway location signs for runway holding positions
 2. ILS critical areas (as applicable)
 3. CAT II/III mandatory signs (as applicable)
 4. Approach/Departure signs (as applicable)
 5. Runway exit signs

1.15.2 Design airfield electrical circuits to illuminate the following signs when taxiway edge lights illuminate:

1. Taxiway location and direction signs.
2. Taxiway destination signs.

1.15.3 The simultaneous operation of signs with edge lights in paragraphs 1.15.1 and 1.15.2 does not establish a requirement for signs and edge lights to be on the same circuit. Consider the advantages and disadvantages of a dedicated sign circuit that enables operation of runway signage when placing taxiway edge lighting systems out of service for repair, maintenance, or construction.

1.16 Painted Signs on Pavement.

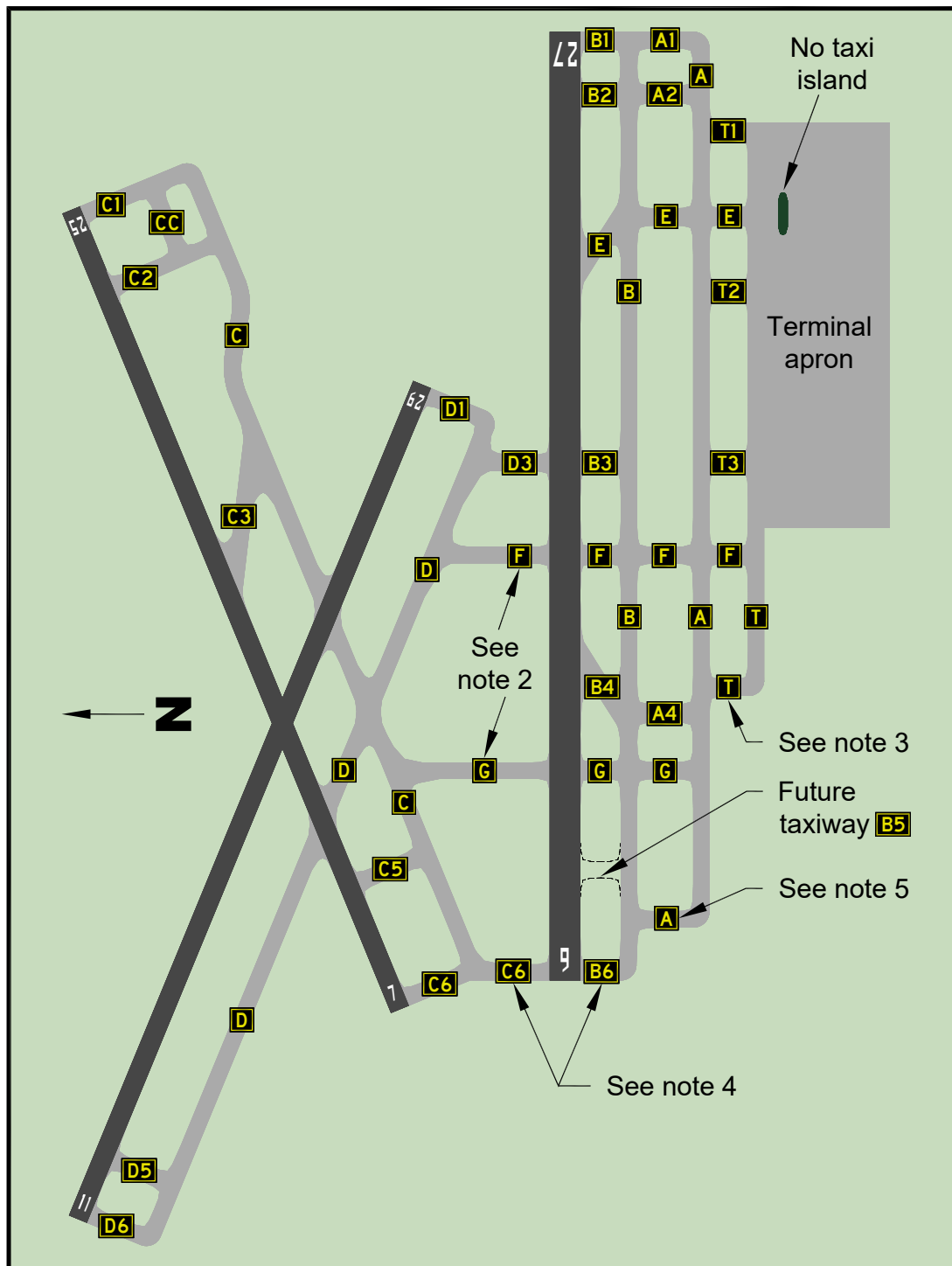
Surface painted signs may supplement elevated signs where taxiway geometries establish a risk for pilot confusion. Surface painted signs do not supplant or serve as an alternative option to elevated mandatory hold position signs or direction signs. See AC 150/5340-1 for standards addressing surface painted signs.

1.17 Installation.

Orient signs so that the face is perpendicular to the taxiway or runway centerline taxiway or runway or canted inward per paragraph 1.11.5.

1. Mount signs on stable supports so the top of the sign is level. Suitable foundations include concrete slabs, concrete pile, angle iron stakes, and helical pipe pile. Design the foundation such that the top remains less than 1 inch (25 mm) above the surrounding grade and slopes to promote drainage off the foundation top. Provide sign supports that are frangible no higher than 3 inches (7.6 cm) above surrounding grade.
2. Provide power to the signs through breakaway cable connectors installed within the frangible coupling portion of the sign's mounting legs. Install auxiliary equipment, such as isolation transformers or series circuit power adapter units, below ground level in an L-867 light base. See AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*, for installation details.

Figure 1-1. Example of Taxiway Designations.



Note 1: In this example, the order of the taxiway designation is south to north and then east to west.

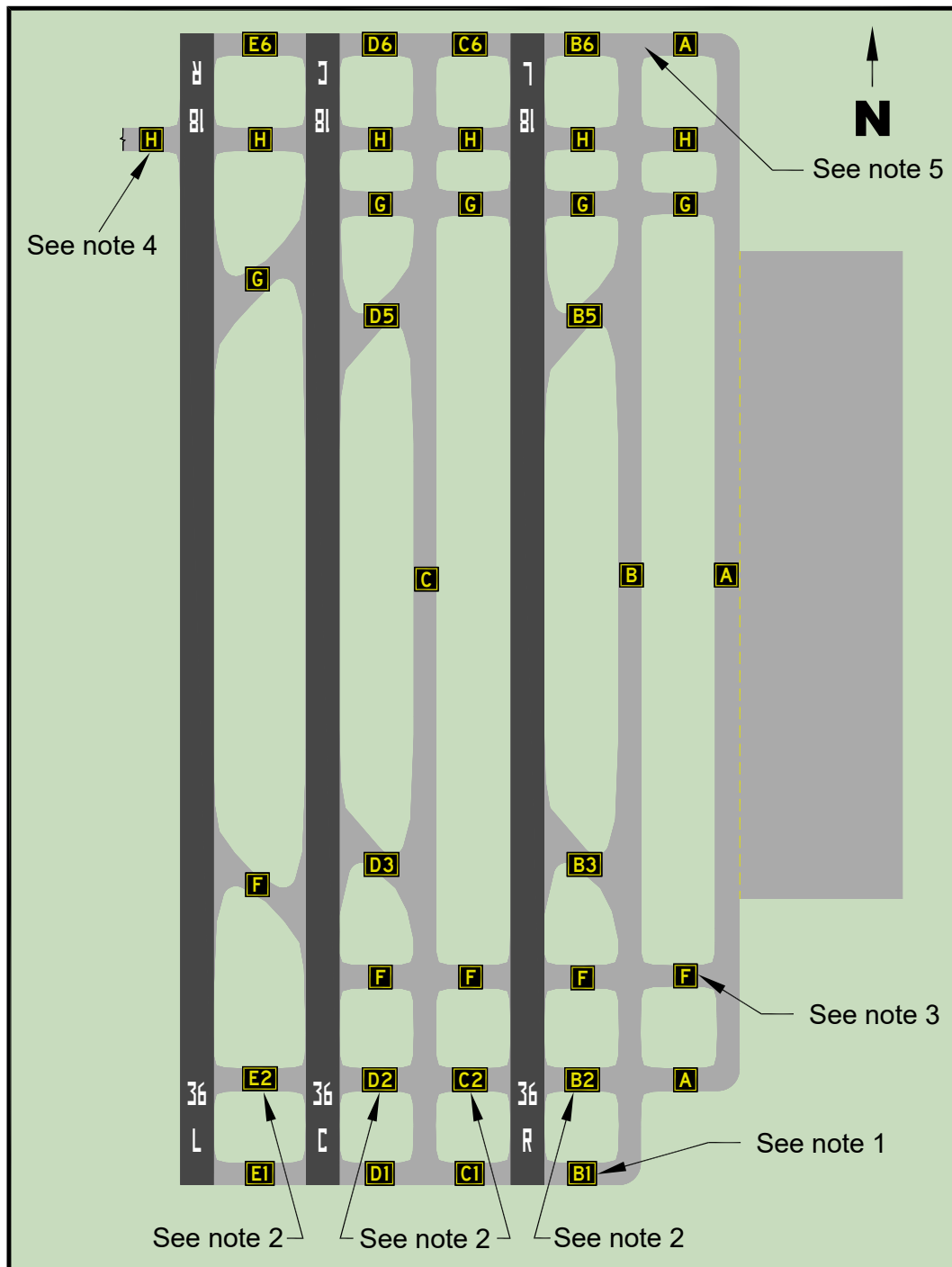
Note 2: Taxiways F and G are primary taxiways predominantly used to taxi aircraft across Runway 9-27.

Note 3: Taxiway T maintains designation after turn into Taxiway A, per paragraph 1.4.4.3.

Note 4: Taxiways B6 and C6 are runway end entrances and thus have alphanumeric designations, per paragraph 1.4.5.2.

Note 5: The short connector taxiway between Taxiway A and Taxiway B near Runway 9 may be a continuation of Taxiway A.

Figure 1-2. Taxiway Designations for Parallel Runways.




Note 1: Entrance taxiways at runway ends are secondary taxiways with alphanumeric designations.

Note 2: Alphanumeric designation of secondary taxiways with predominant use as entrance taxiways establishes distance location identification.

Note 3: TWY F and TWY G are primary taxiways due to predominant use as exit taxiways path to the terminal area.

Note 4: TWY H is a primary taxiway due to predominant use as runway crossing taxiway.


Note 5: TWY A terminates at TWY B to establish alphanumeric designation B2 and B6 for runway entrances to RWY 18L/36R.

Figure 1-3. Examples of Mandatory Instruction Signs.

(a) Holding Position Sign



(b) Holding Position Sign for ILS and POFZ



(c) Holding Position Sign for Approach/Departure Areas



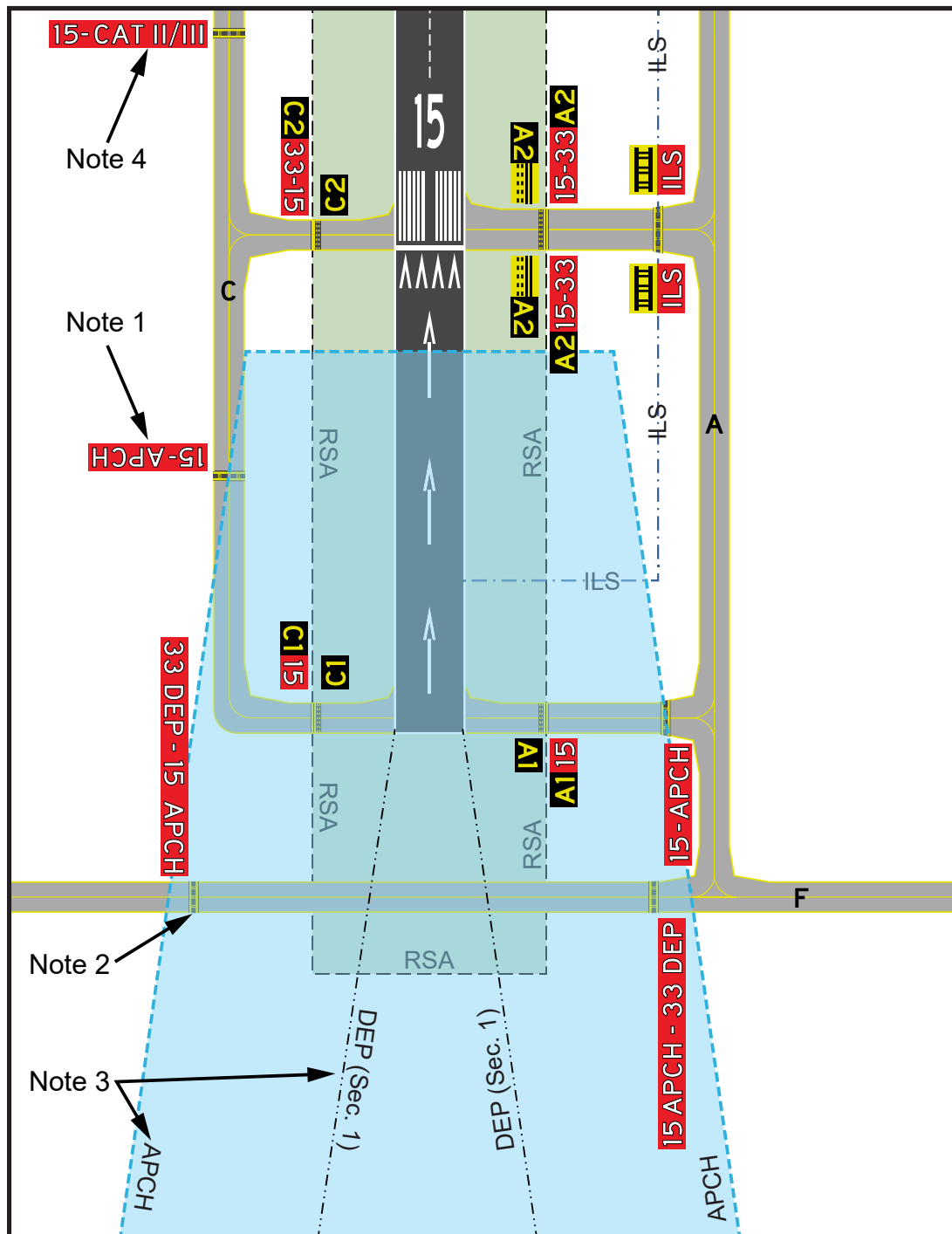
(d) Holding Position Sign for CAT II/III Operations



(e) No Entry Sign



(f) LAHSO Signs for Runway or Taxiway Intersections

Figure 1-4. Application Examples for Holding Position Signs.

Note 1: Taxiway C does not underlie the Runway 33 departure area. Therefore, this sign does not include the “33 DEP” legend. See paragraph 1.5.7.8.

Note 2: The location of a holding position is relative to the point on the aircraft that infringes the surface. For inclining surfaces, such as an approach surface, the location of the holdline position will likely differ from the location of the infringement point. See Figure 1-5, detail C.

Note 3: APCH is the approach protection surface and DEP (Sec.1) is section 1 of the two-section departure protection surface.

Note 4: Provide CAT II/III holding position where needed, per paragraph 1.5.8.

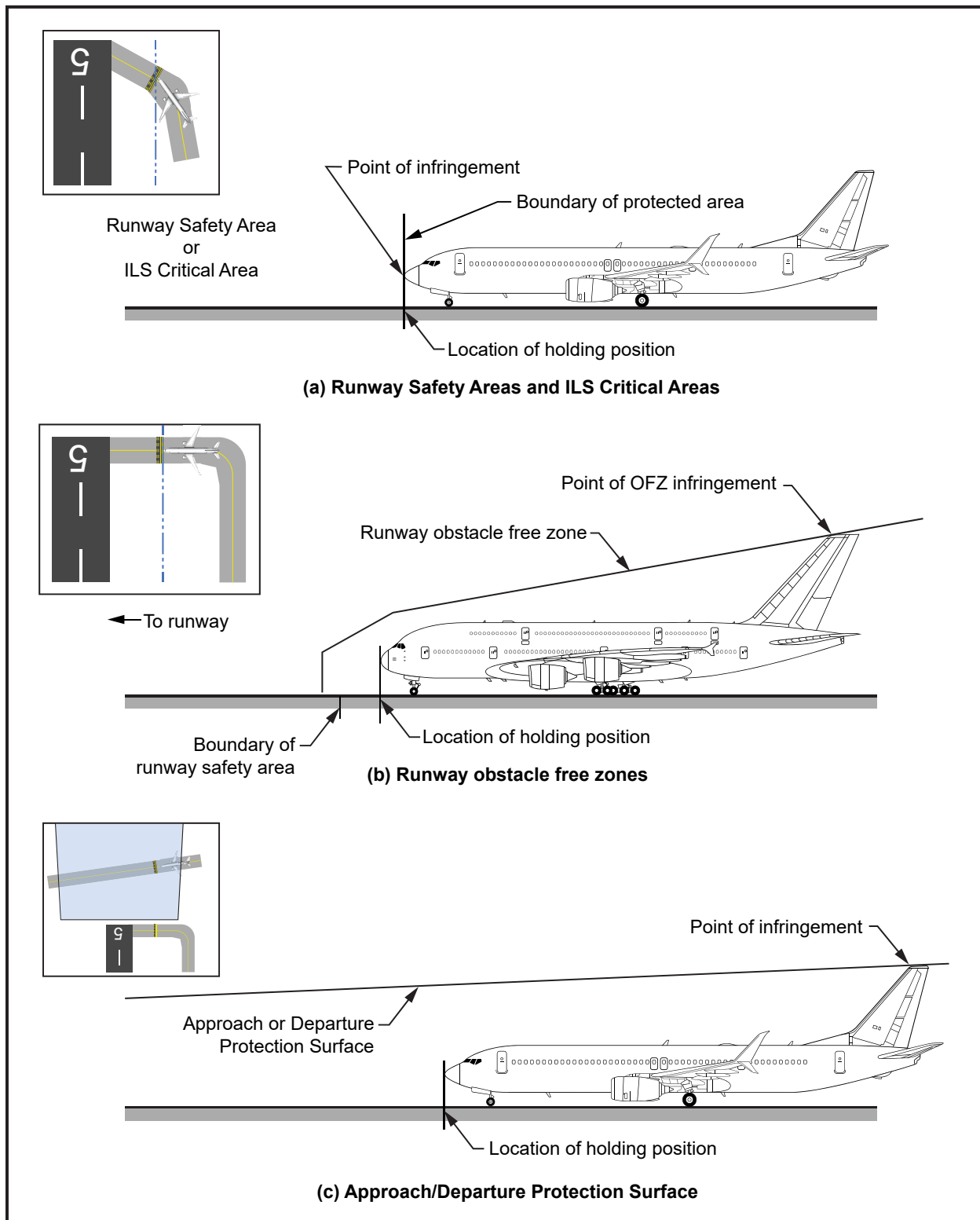
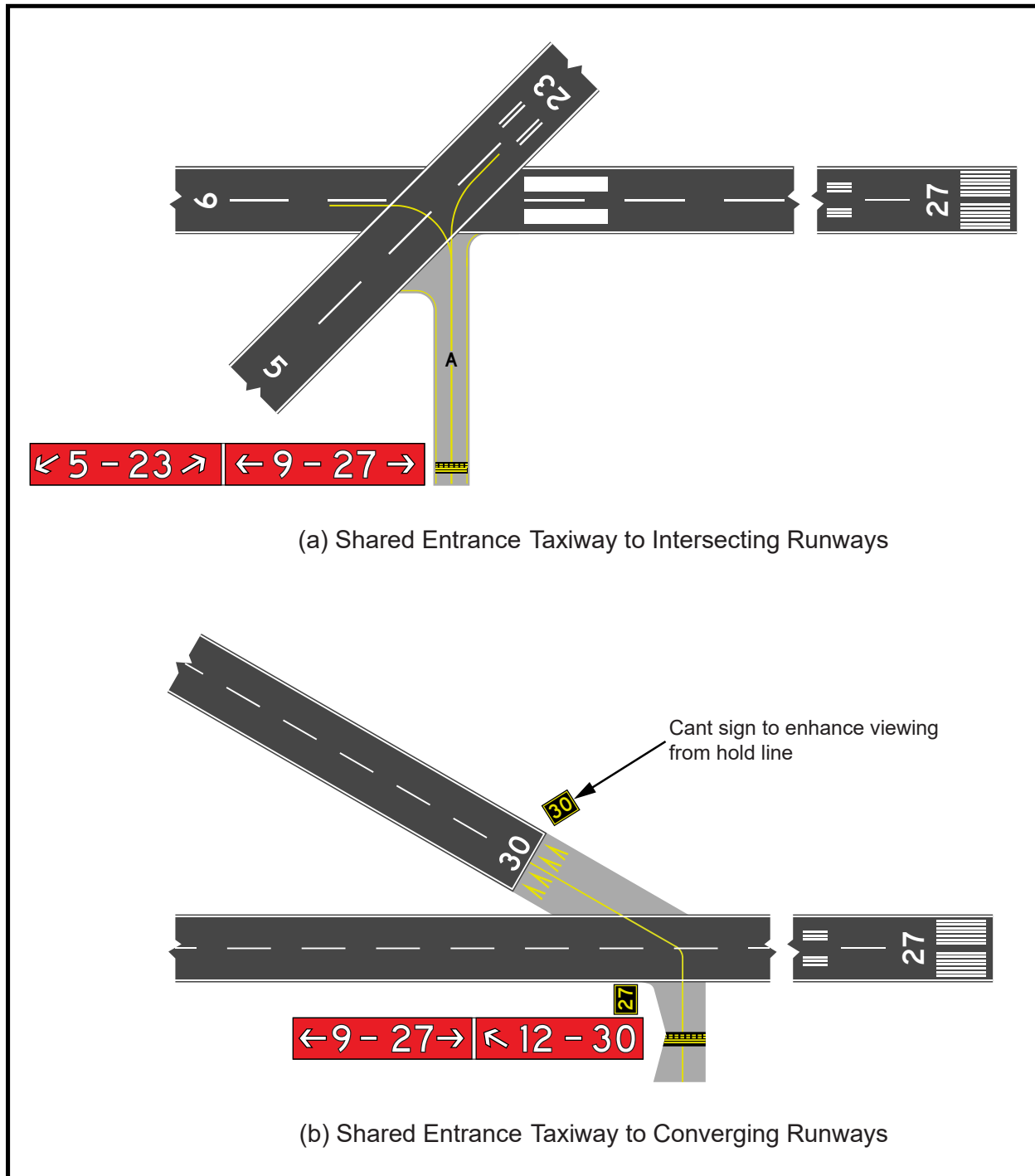
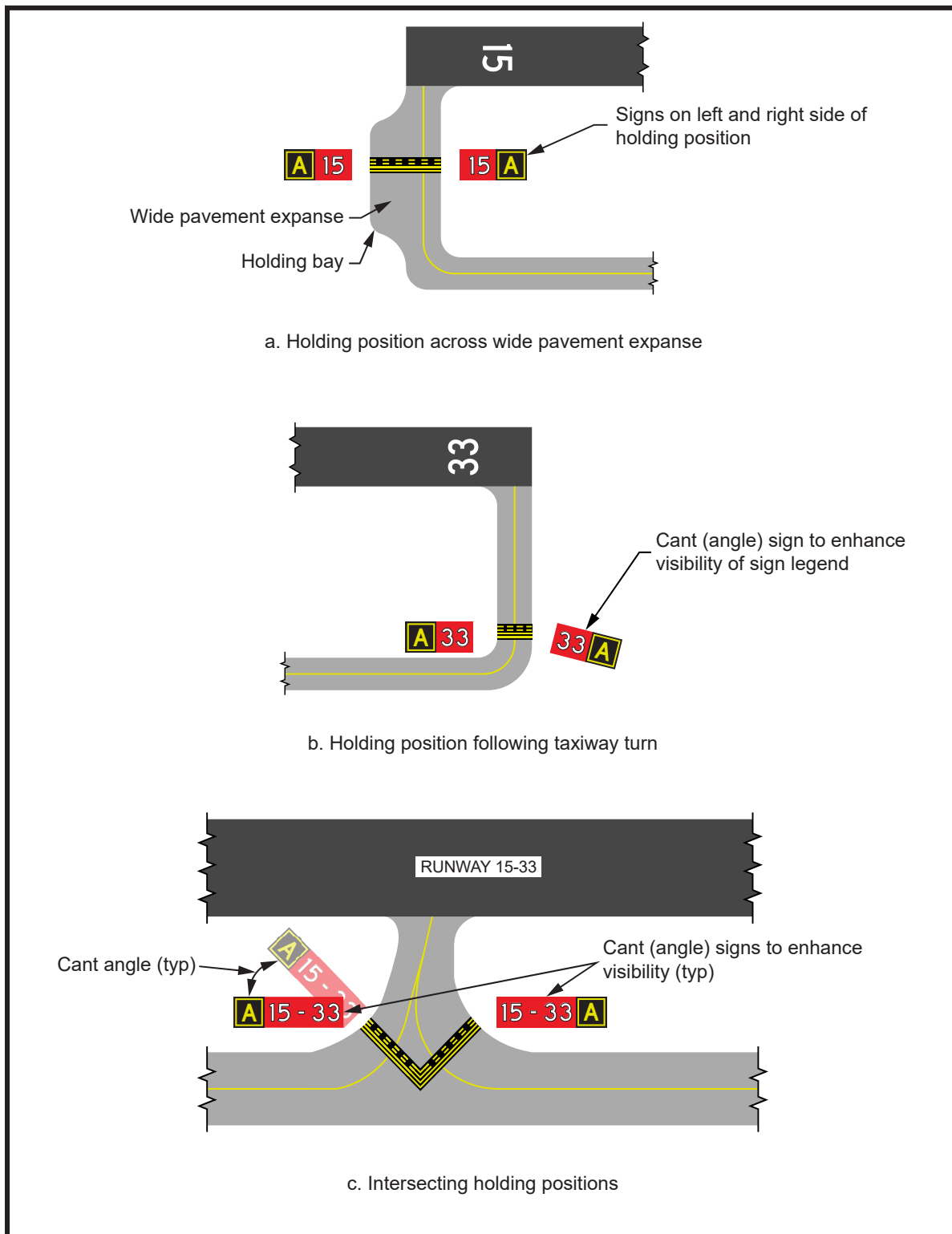
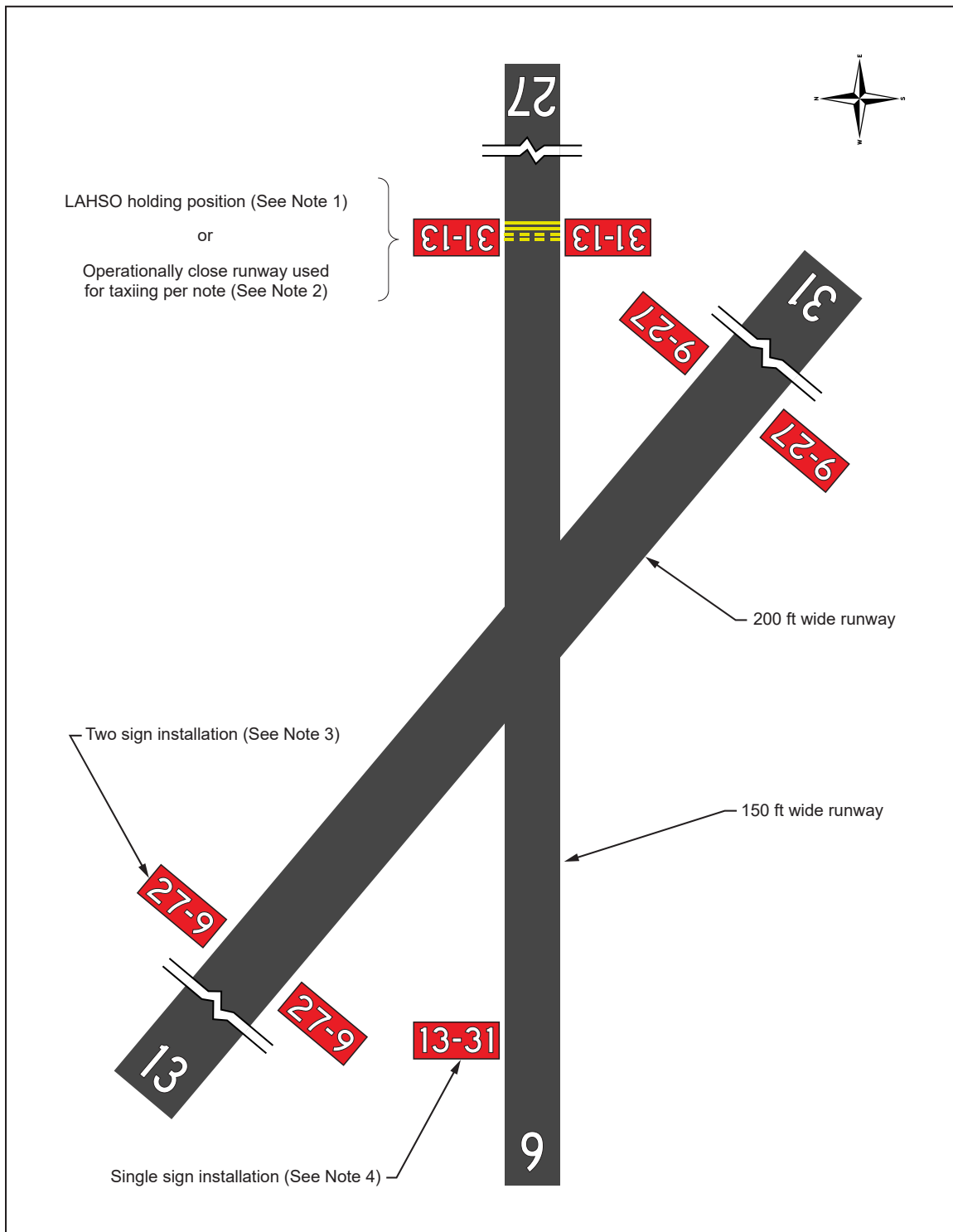
Figure 1-5. Holding Position Location Relation to Protected Surface.

Figure 1-6. Runway Location Signs and Arrows on Holding Position Signs.

Note: This figure illustrates signage examples for non-standard runway geometries.

Figure 1-7. Examples: Irregular Holding Position Scenarios.

Note: The optimum solution to address irregular holding positions is to improve the taxiway geometry. Refer to [AC 150/5300-13](#) for additional guidance.

Figure 1-8. Examples of Holding Position Signs at Runway/Runway Intersections.

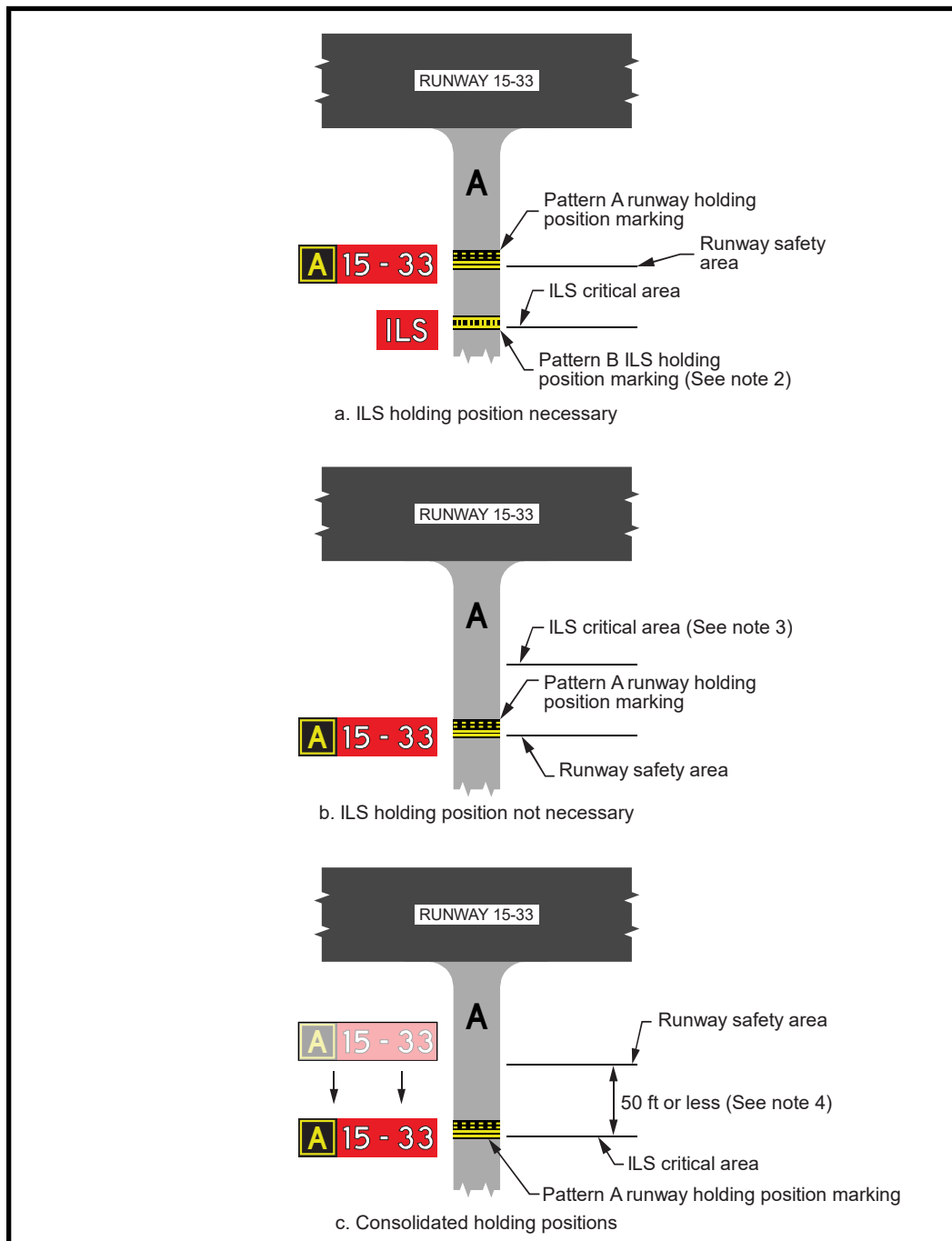
Note 1: See paragraph 1.5.5 for LAHSO applications.

Note 2: See paragraph 1.5.4.5 for application when the airport operationally closes the runway for temporary continual taxiing operations on a runway.

Note 3: See paragraph 1.5.4.4 for runway widths exceeding 150 feet (45.7 m).

Note 4: See paragraph 1.5.4.3 for runway widths of 150 feet (45.7 m) or less.

Note 5: Values in the figure are rounded to the nearest foot. 1 foot = 0.305 meters.

Figure 1-9. Sign Applications for ILS Critical Areas.

Note 1: Refer to [AC 150/5340-1](#) for marking standards.

Note 2: A pattern B marking is necessary due to the ILS critical area boundary extending beyond the runway safety area.

Note 3: There is no need for a pattern B marking because the runway holding position already protects the ILS critical area.

Note 4: When the ILS critical area boundary is within 50 feet (15.2 m) of the runway holding position, consolidate the holding position lines by moving the runway holding position sign and pattern A marking back to the ILS critical area boundary.

Figure 1-10. Examples of Location Signs.

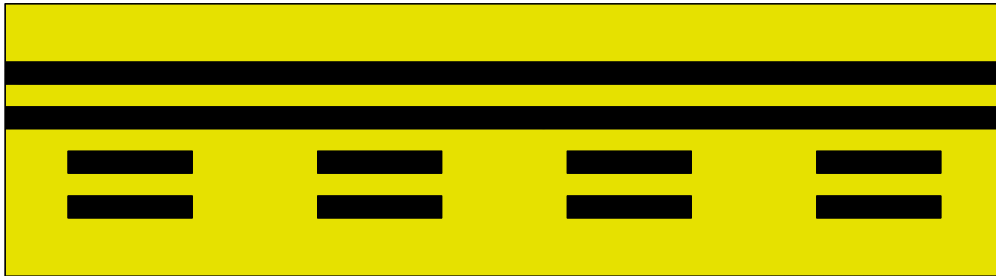


(a) Taxiway Location Sign

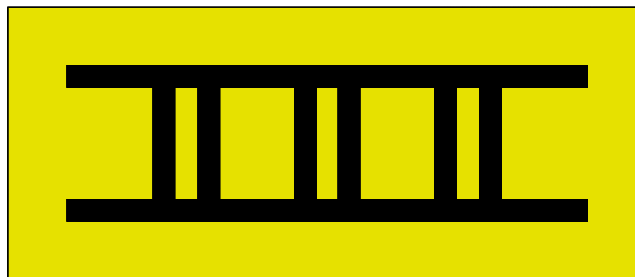


(b) Runway Location Sign

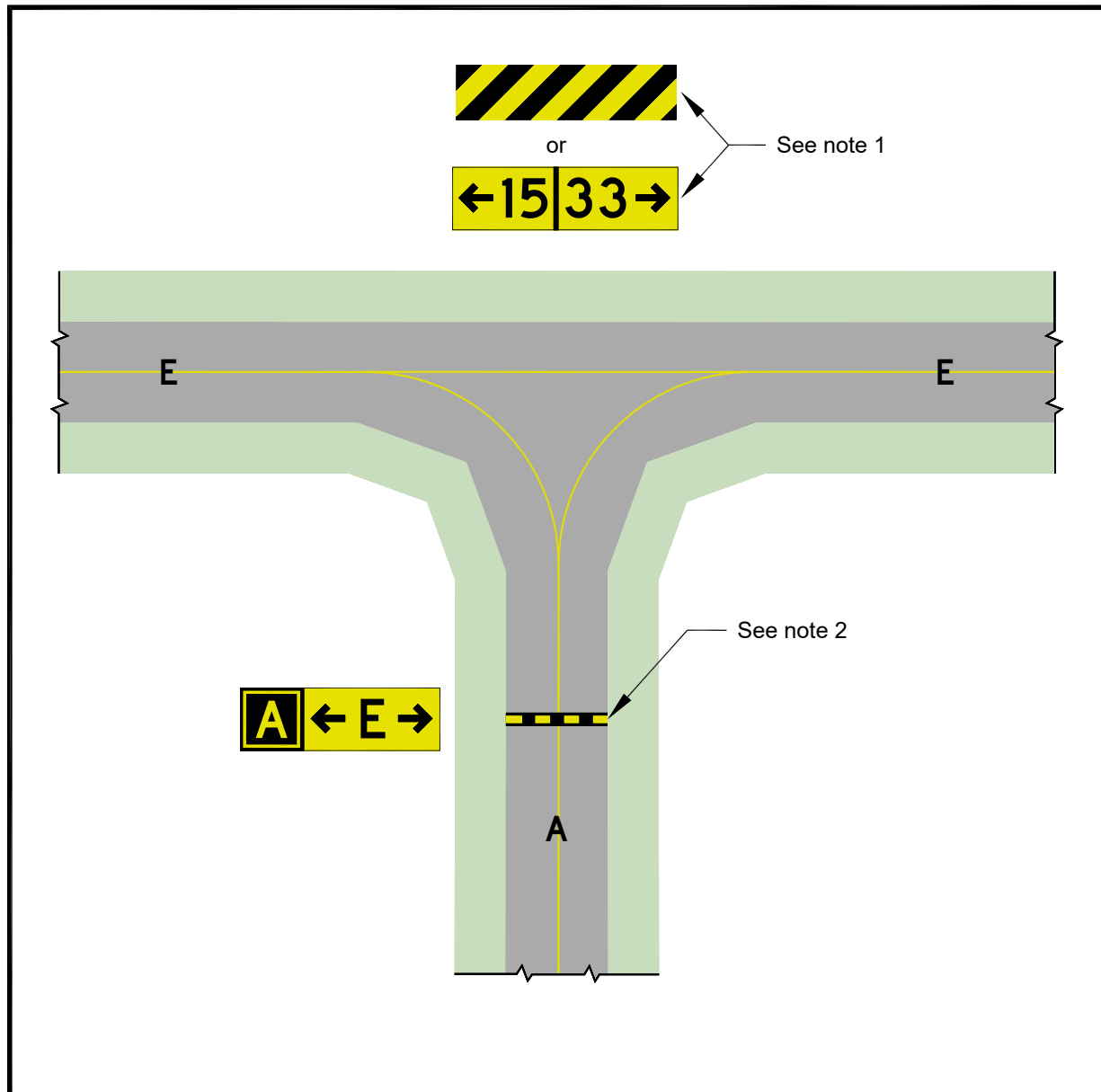
Figure 1-11. Examples of Boundary Signs.



(a) Boundary sign for RSA/OFZ



(b) ILS Critical Area/POFZ Boundary / CAT II/III Operations
and Runway Approach / Departure Area

Figure 1-12. Example Signage for an Ending Taxiway Intersection.

Note 1: Outbound destination signs benefit pilot understanding of taxi path to departure runway. See paragraph 1.10.3. Taxiway ending markers provide enhanced visual cues for pilots at T-intersections where there is elevated risk of taxiway excursion. See paragraph 1.9.

Note 2: Intermediate holding position for taxiway/taxiway intersection. See AC 150/5340-1.

Figure 1-13. Examples of Direction Signs, Destination Signs, and Taxiway Ending Marker.



(a) Direction/Runway Exit Sign



(b) Typical Outbound Destination Sign



(c) Outbound Destination Sign to Different Runways



(d) Inbound Destination Sign



(e) Taxiway Ending Marker

Figure 1-14. Examples of Signs at a Taxiway/Taxiway Intersection.

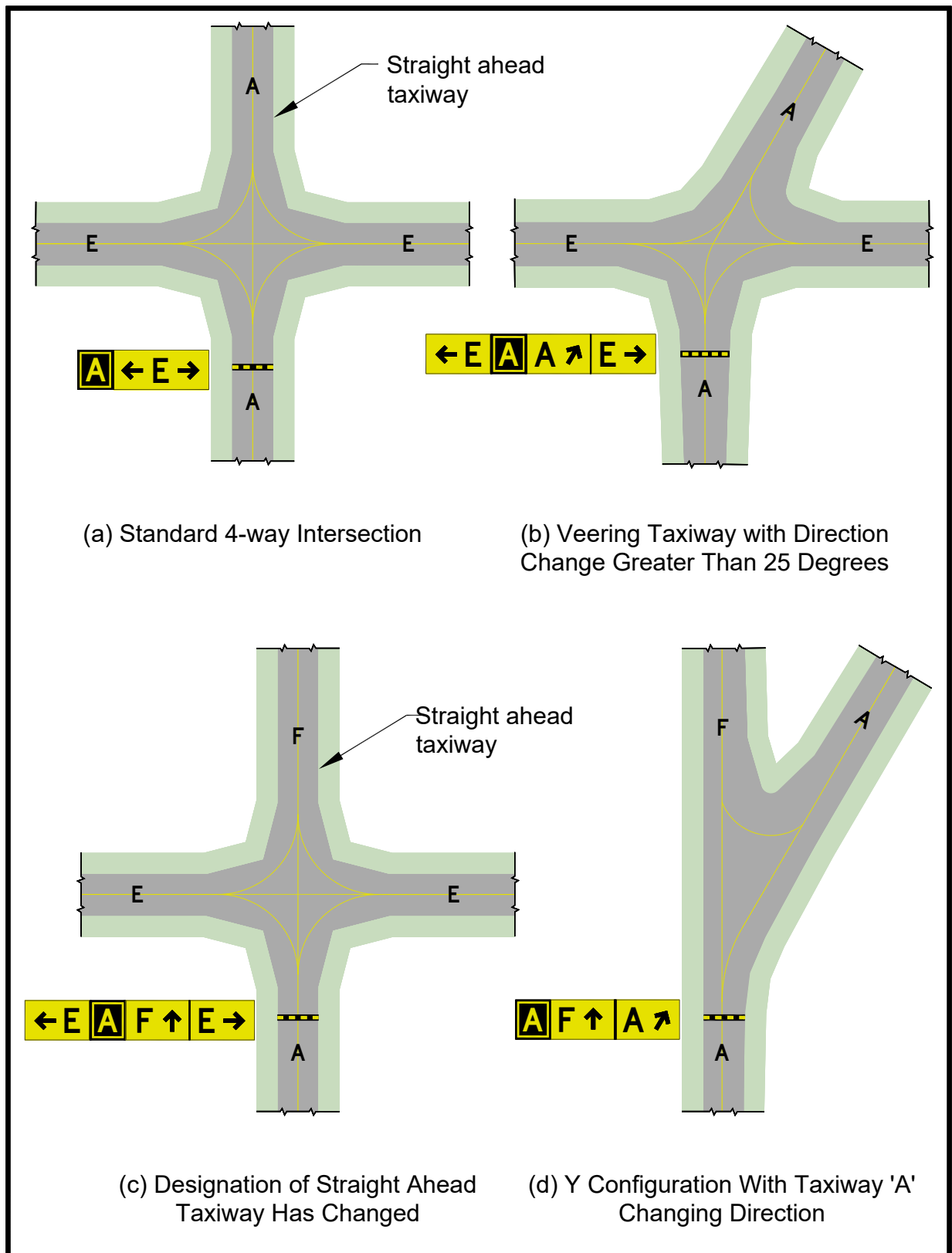
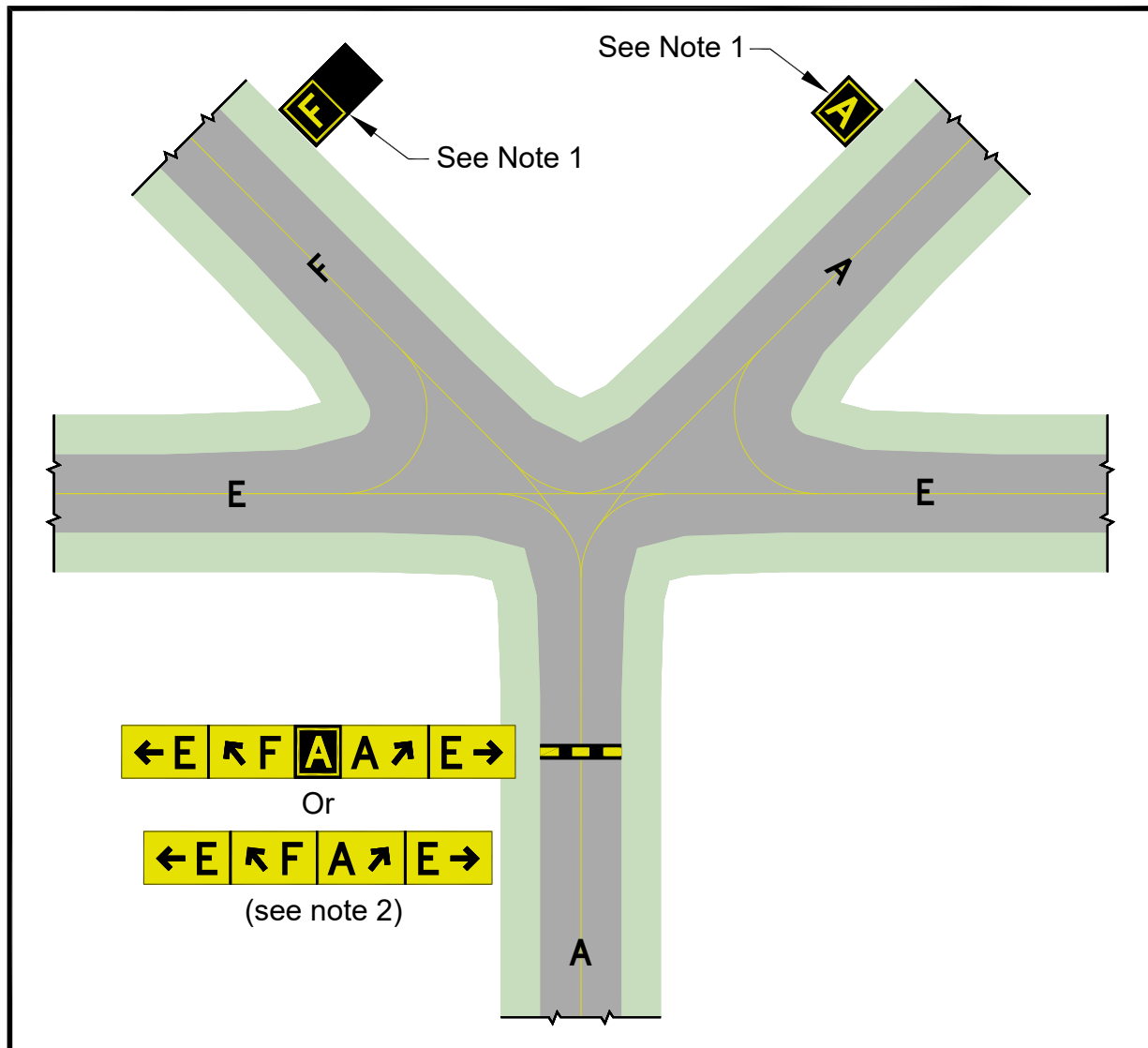
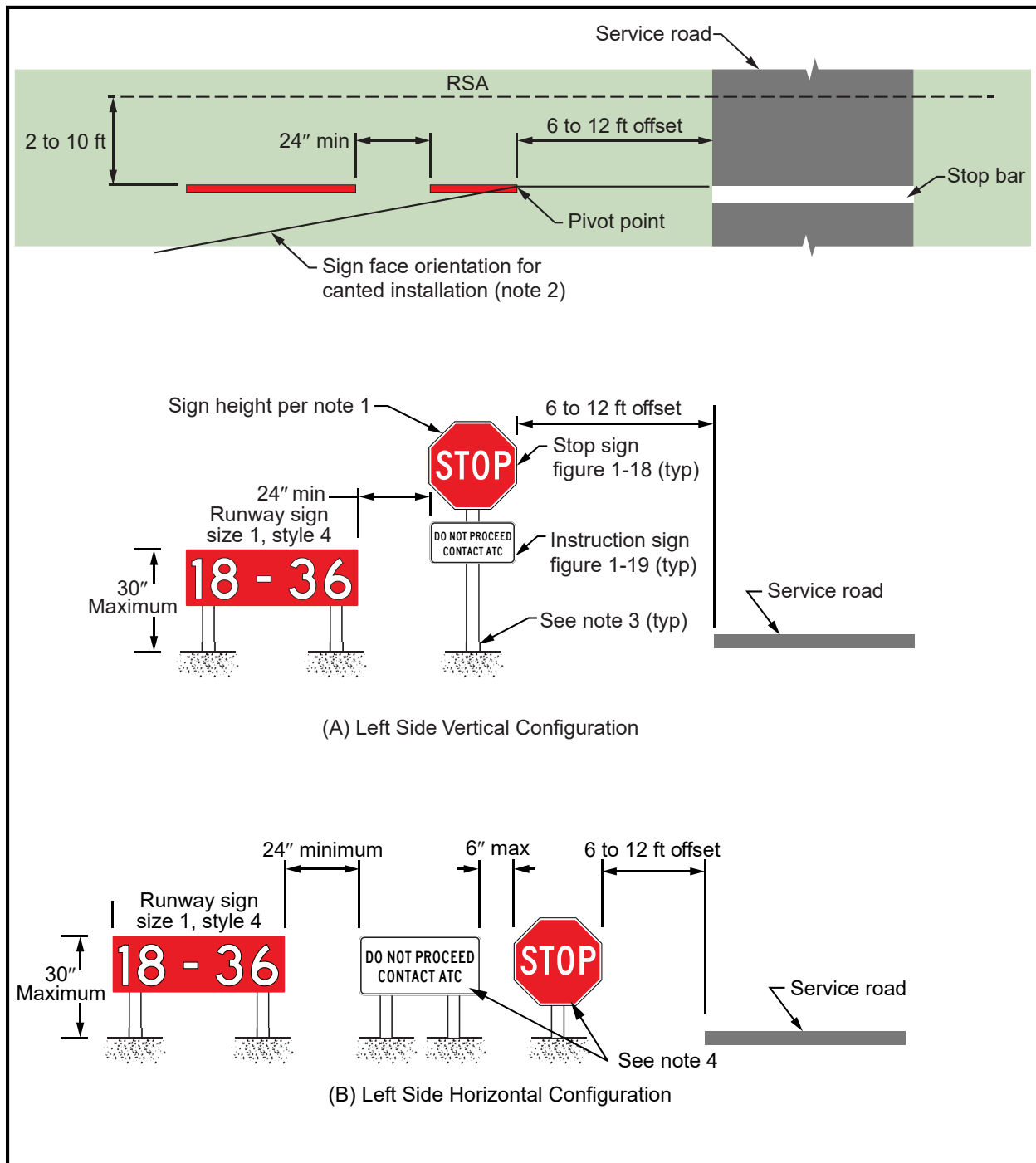


Figure 1-15. Examples of Signs at an Existing Complex Taxiway/Taxiway Intersection.



- Note 1:** Example of location sign shown on far side of intersection. Sign may reside on left side (conventional location) or the right side (on backside of direction sign).
- Note 2:** Alternate array of signs shown to illustrate sign orientation when location sign not installed. See paragraph 1.13.8.
- Note 3:** Orient signs from left to right in a clockwise manner, per paragraph 1.8.2.
- Note 4:** This figure illustrates signage for a non-standard geometric condition. Refer to AC 150/5300-13 to plan and develop strategies for correcting a complex four path intersection.

Figure 1-16. Service Road Intersecting Runway Safety Area.

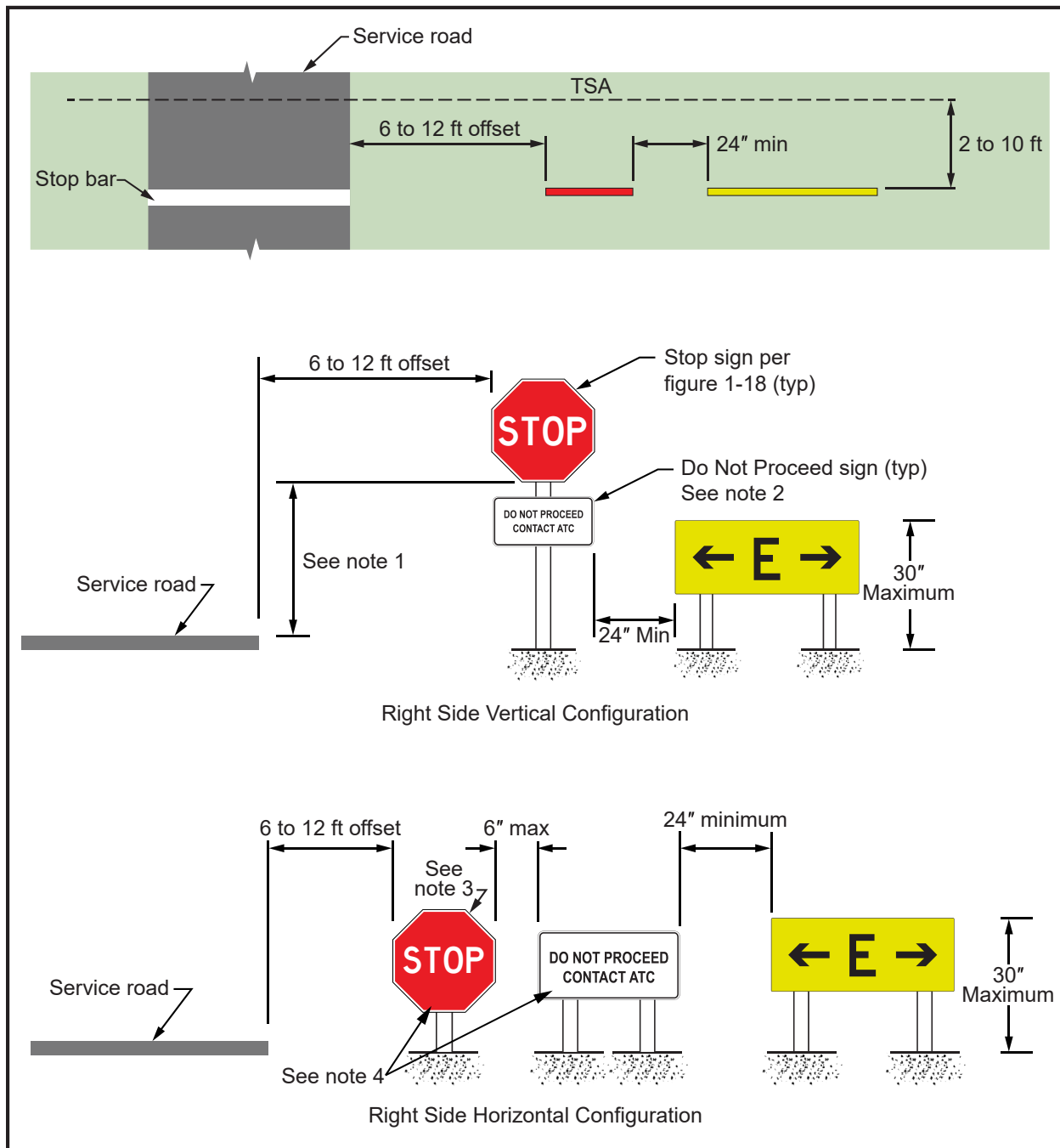
Note 1: Refer to paragraph 1.11.1.1 for sign location and installation criteria.

Note 2: Cant (angle) sign up to 30 degrees where necessary to improve visibility for vehicle operator.

Note 3: Make sign supports frangible if sign height exceeds 36 inches (91 cm).

Note 4: For the horizontal configuration, it is acceptable to combine the instruction sign legend and STOP sign stop legend onto one sign panel as shown in Figure 1-18.

Note 5: Values in the figure are rounded to the nearest inch or foot. 1 inch = 25.4 mm. 1 foot = 0.305 meters.

Figure 1-17. Service Road Intersecting Taxiway.

Note 1: Refer to paragraph 1.11.2.2 for sign height dimension.

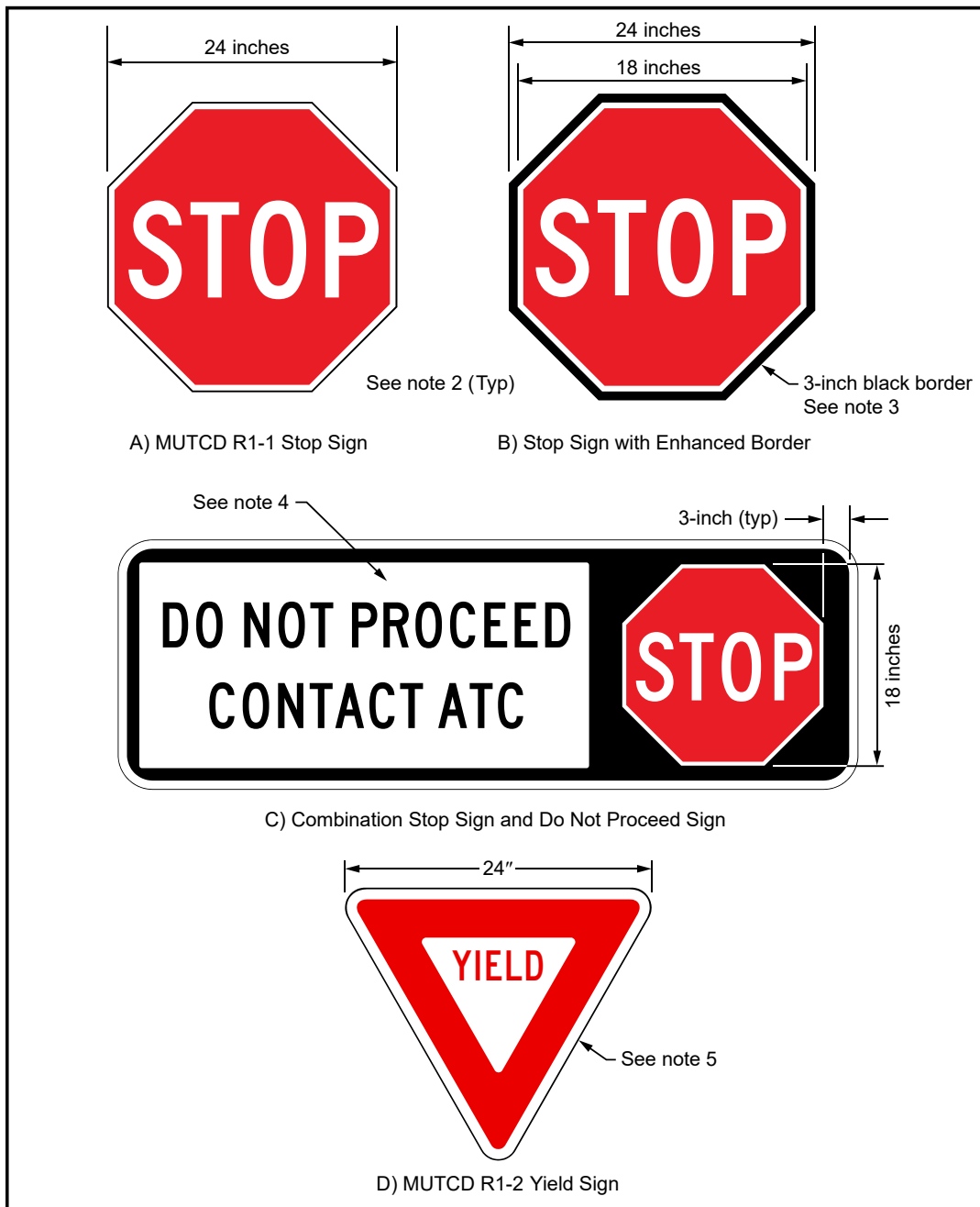
Note 2: Refer to Figure 1-19 for DO NOT PROCEED sign details and alternate sign message for airports without a tower.

Note 3: Limit the elevation of the top of the STOP sign for the horizontal configuration to 36 inches above the elevation of the nearest point of the TOFA.

Note 4: For the horizontal configuration, it is acceptable to combine the instruction legend and stop legend onto one sign panel, as shown in Figure 1-18.

Note 5: See paragraph 1.11.2.3 for application of yield signs in lieu of a STOP sign.

Note 6: Values in the figure are rounded to the nearest inch or foot. 1 inch = 25.4 mm. 1 foot = 0.305 meters.

Figure 1-18. STOP and YIELD Signs.

Note 1: Refer to FHWA publication Standard Highway Signs for dimensional details for stop and yield sign.

Note 2: Stop Sign Colors

- (a) Legend - White (Retroreflective)
- (b) Background - Red (Retroreflective)

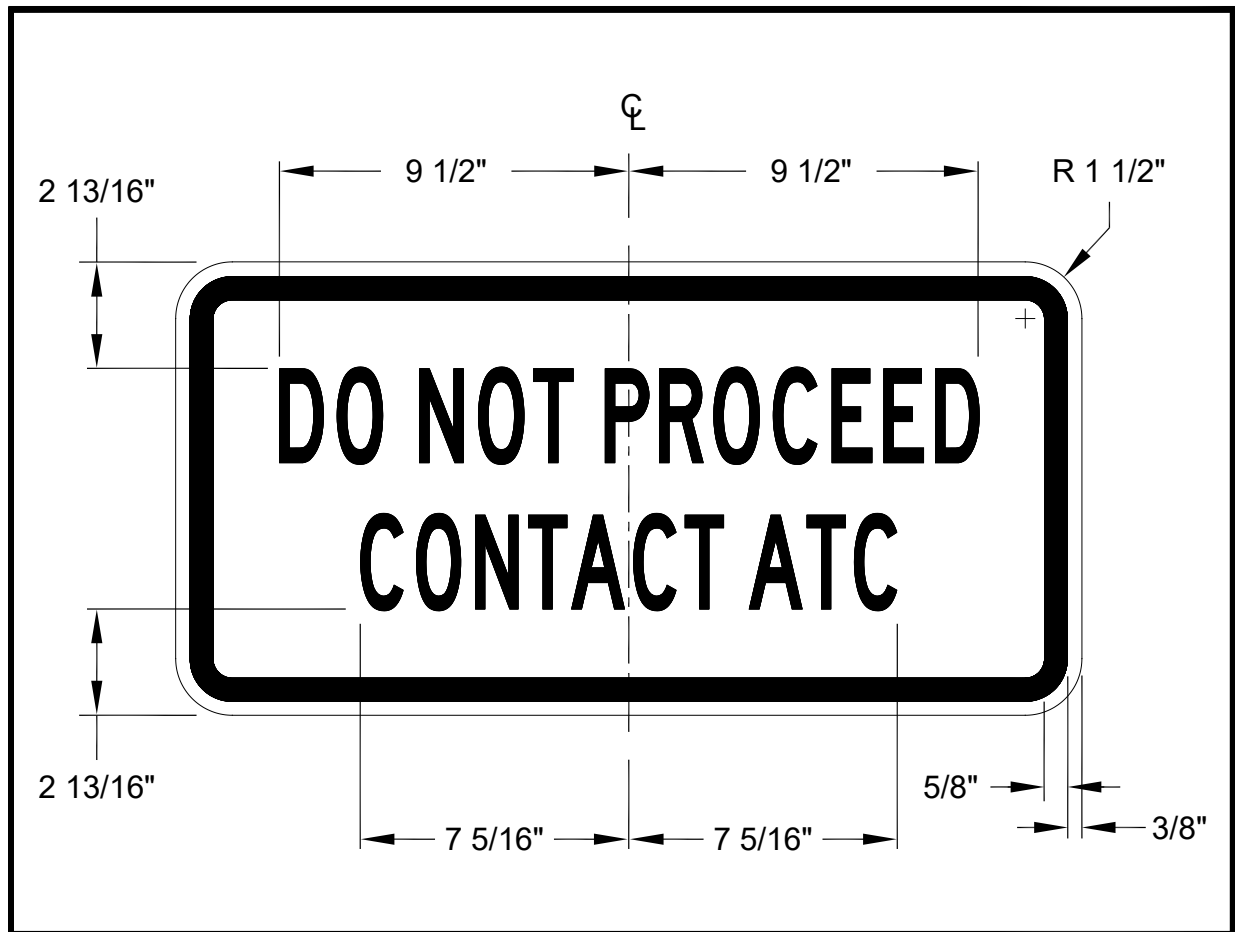
Note 3: Application of optional black border enhances sign conspicuity at elevated risk locations.

Note 4: See Figure 1-19 for variations to Do Not Proceed sign legend.

Note 5: Yield Sign Colors

- (a) Legend - Red (Retroreflective)
- (b) Inner background - White (Retroreflective)
- (c) Outer background - Red (Retroreflective)

Note 6: Values in the figure are rounded to the nearest inch. 1 inch = 25.4 mm.

Figure 1-19. DO NOT PROCEED Sign Detail.

Note 1: MUTCD horizontal rectangle, 24" × 12" blank standard

Note 2: Colors:

Legend – black

Background - white (retroreflective)

Note 3: Text:

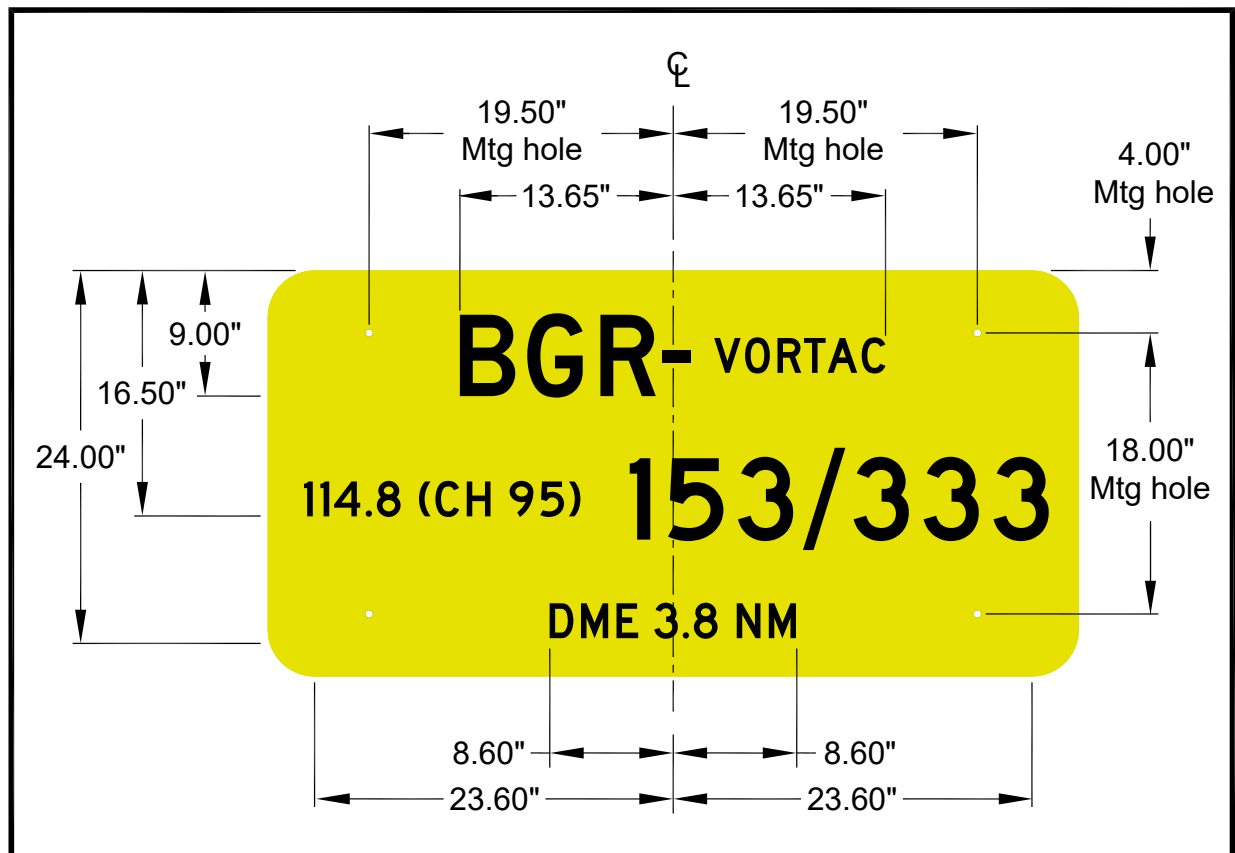
Font: MUTCD Series B 2000

Height: 2 1/2"; stroke: 5/16"

Note 4: Reference: MUTCD Standard Highway Signs 2009 with revisions 1 and 2 (English) edition

Note 5: If there is no ATC at the airport, replace "CONTACT ATC" with "ANNOUNCE TO CTAF" or "ANNOUNCE TO UNICOM." It is acceptable to replace "CTAF" and "UNICOM" with the applicable frequency.

Note 6: Values in the figure are in inches. 1 inch = 25.4 mm.

Figure 1-20. VOR Receiver Checkpoint Sign.

Note 1: Horizontal rectangle, 52" × 26" blank

Note 2: Colors:

Legend – black

Background – yellow (retroreflective)

Note 3: Text:

Modified gothic style

Height 3" and 7"; stroke 0.30"

Note 4: Values in the figure are in inches. 1 inch = 25.4 mm.

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CHAPTER 2. RUNWAY DISTANCE REMAINING SIGNS

2.1 General.

Runway distance remaining signs provide distance remaining information to pilots during takeoff and landing operations. Declared distances do not affect the location of runway distance remaining signs. Install runway distance remaining signs on runways with frequent turbojet aircraft operations.

2.2 Description.

2.2.1 Runway Distance Remaining Sign.

The signs are located along the side(s) of the runway, and the inscription is a white numeral on a black background, as shown in Figure 2-1 to indicate the runway distance remaining in increments of 1,000 feet.

2.2.2 One-Half Distance Remaining Sign.

The sign inscription is a white 1/2 numeral on a black background per Figure 2-2. Apply the one-half distance remaining sign only in the take-off direction on unpaved runways less than 3000 feet in length where both ends of the runway are not readily visible. The sign identifies the point on the runway where one-half the takeoff distance remains. Do not use the one-half distance remaining sign in combination with runway distance remaining signs.

2.3 Configuration.

2.3.1 Configure the runway distance remaining signs by any of three different methods, as shown in Figure 2-3 and as described below. Treat displaced threshold areas used for takeoffs and/or rollout as part of the runway for purposes of locating the signs. Base the chosen method on cost considerations and adaptability to the specific airport configuration. When using the preferred method or alternate method #2 for runway lengths that are not an exact multiple of 1,000 feet (305 m), add one-half of the excess distance to the distance of each sign from each runway end. For example, for a runway length of 6,500 feet, the excess distance is 500 feet and the location of the last sign on each runway end is 1,000 feet plus 1/2(500) or 1,250 feet. If a sign cannot be installed at its standard location, a tolerance of ± 50 feet (1,200 ft to 1,300 ft, for the example in Figure 2-3) is allowed for that sign, although no sign may be located closer than 1000ft from the runway end. Omit the sign if tolerances cannot be met.

2.3.1.1 Preferred Method.

The most economical installation consists of double-faced signs located on only one side of the runway. When using this method, place the signs on the left side of the runway as viewed from the most often used direction. However, the signs may all be placed on the right side of the runway

where necessary because of runway/taxiway separation distances or conflicts between intersecting runways or taxiways.

2.3.1.2 Alternate Method #1.

This method uses single-faced signs installed on both sides of the runway. The advantage of this method is that it more accurately reflects the runway distance remaining in cases where the runway length is not an exact multiple of 1,000 feet (305 m).

2.3.1.3 Alternate Method #2.

This method uses double-faced signs installed on both sides of the runway. The advantage of this method is that if a clearance conflict results in a sign on one side of the runway, the sign on the other side will still display the distance remaining information.

- 2.3.2** Install the one-half runway distance remaining sign on the left side of the most used runway direction for takeoff operations only. Locate the sign to mark the midpoint of the runway total length. Position the sign 10 to 15 feet (3 to 4.6 m) from the runway edge and ± 30 feet (9.1 m) from the runway midpoint.

2.4 Sign Operation.

Design the sign system to illuminate runway distance remaining signs whenever the runway edge lights illuminate.

2.5 Size and Location.

Manufacture signs in accordance with the provisions of AC 150/5345-44. There are two types of runway distance remaining sign, size 4 signs (48-inch sign face with a 40-inch legend) or size 5 (30-inch sign face with a 25-inch legend). All signs on one runway are the same size. There is only one size available for the one-half distance remaining sign: size 5 (30-inch sign face with a 25-inch legend). Consider several factors such as, aircraft clearance and jet blast when selecting a sign size. Normally, the larger the sign and the closer it is located to the runway or taxiway edge, the more effective it is. However, aircraft clearance requirements and jet blast effects require smaller signs when located near the pavement edges. Also, consider the effects of snow removal operations on the signs when selecting a sign size and location. Provide 12 inches (30 cm) of clearance between the top of the sign and any part of the most critical aircraft using, or expected to use, the airport when the aircraft wheels are at the pavement edge.

2.6 Installation.

Locate signs with respect to the runway, as indicated in Table 2-1. Install signs according to paragraph 1.17.

Table 2-1. Sign Heights and Location Distances for Runway Distance Remaining Signs

Sign Size	Legend Height [inches (cm)]	Legend Panel Height [inches (cm)]	Installed (max.)¹ [inches (cm)]	Perpendicular Distance from defined runway pavement edge to the near side of the sign [feet (m)]
4	40 (100)	48 (120)	60 (152)	50-75 (15-22.5)
5	25 (64)	30 (76)	42 (107)	20-35 (6-10.5) ²

Note 1: The height referred to in this column is the distance from top of the sign to grade measured at the side of the sign that is nearest to the applicable runway. In accordance with paragraph 1.14, reduce this height, if necessary, to provide the required 12-inch clearance between the top of the sign and the critical aircraft.

Note 2: This dimension does not apply to one-half distance remaining signs (see paragraph 2.3.2).

Figure 2-1. Runway Distance Remaining Sign.



Figure 2-2. One-Half Distance Remaining Sign.

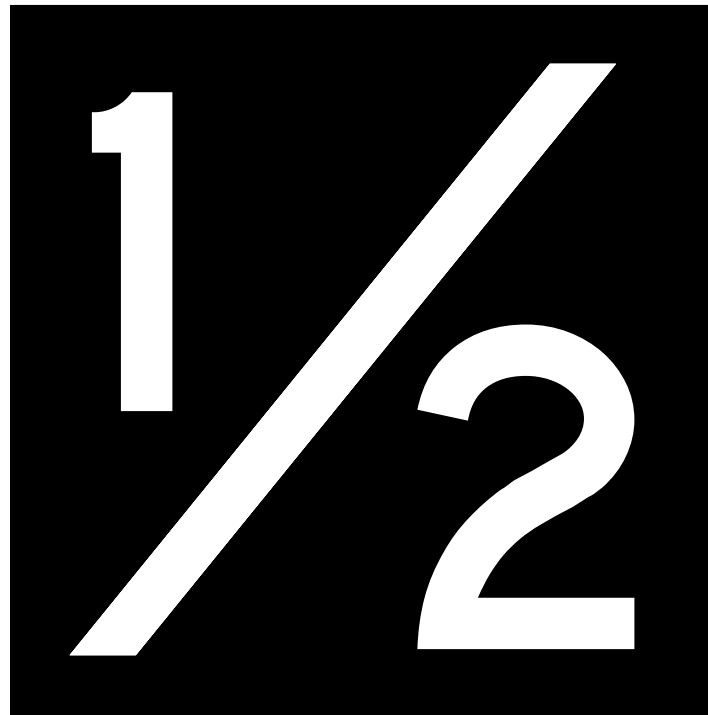
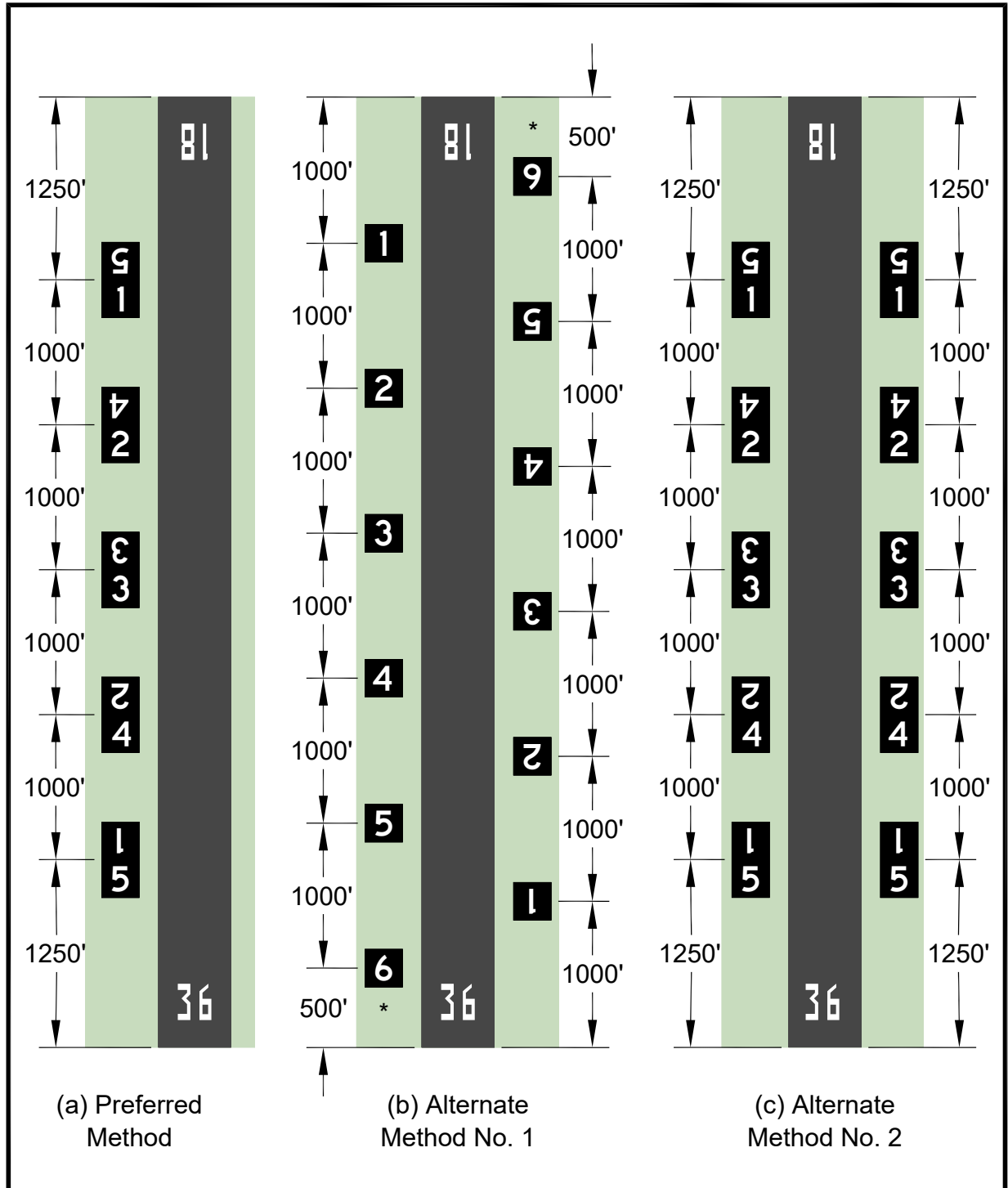


Figure 2-3. Runway Distance Remaining Sign Configurations.

Note 1: Examples are based on a 6,500-foot (1,981 m) runway.

Note 2: Airport may omit signs less than 1,000 feet (305 m) from takeoff end, as indicated by asterisks (*) in Alternate Method No. 1.

Note 3: Values in the figure are rounded to the nearest foot. 1 foot = 0.305 meters.

Appendix A. AIRPORT SIGNING EXAMPLES

A.1 General.

This appendix depicts examples of sign installations for various airport configurations. It is important to understand the functional layout of an airport to understand how and when signs apply. This section provides a brief description of various airport configurations with each example including a brief rationale on sign applications. These examples illustrate that the design of airfield sign system involves evaluations and determinations made by the airport operator in consultation with the users and the FAA.

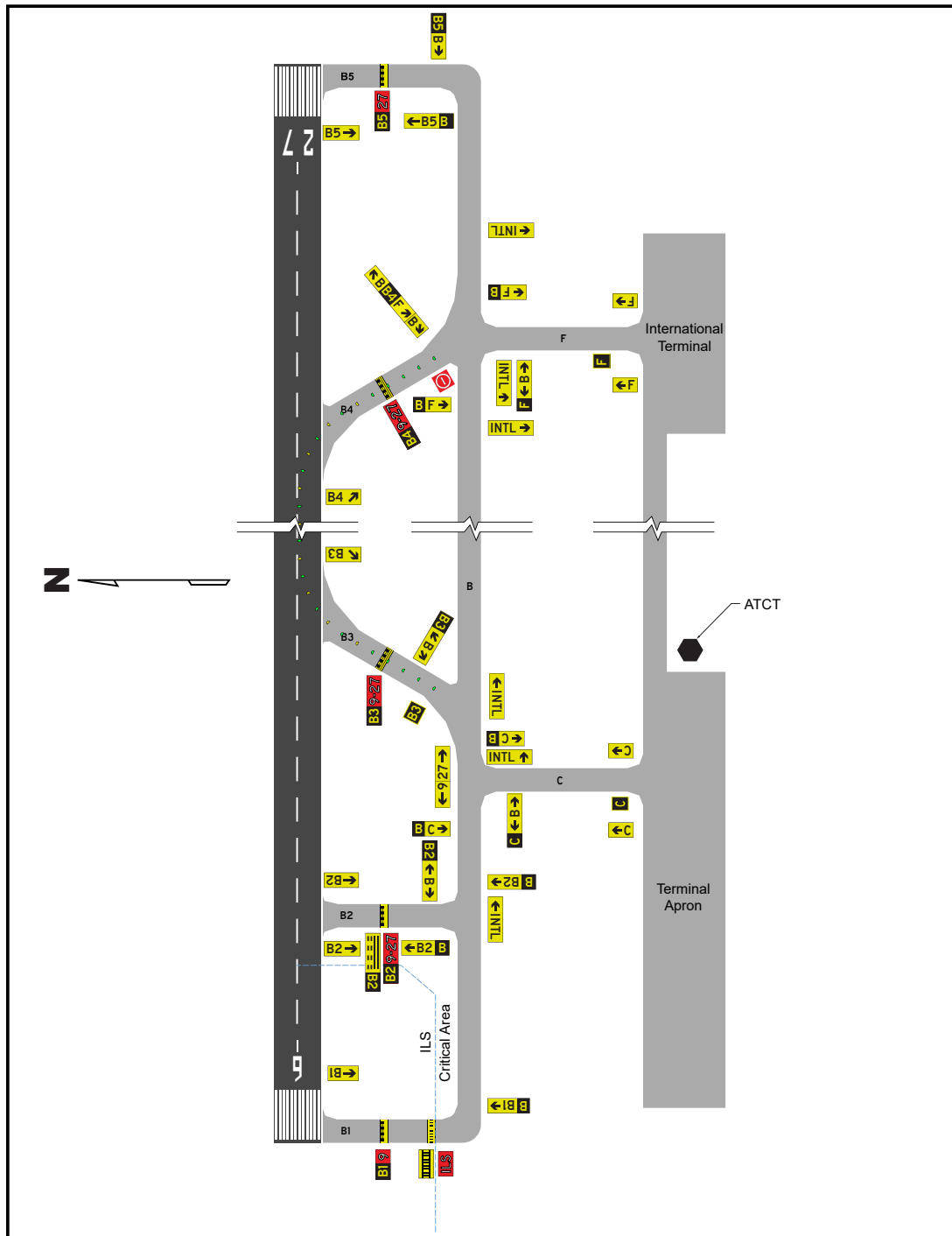
A.2 Example 1 – Typical Airport Signage.

Figure A-1 depicts a taxiway sign system for a portion of an airport with a control tower. The airport serves both domestic and international air carriers and includes general aviation operations. The air carrier apron is separate from the international apron. The sign system includes the following:

- A.2.1 Provide mandatory holding position signs and location signs for all taxiways intersecting the runway. Collocate the sign array with a Pattern A hold line marking, per AC 150/5340-1.
- A.2.2 Taxiway B1 passes through the ILS critical area. Because the mandatory holding position resides within the ILS critical area, a separate ILS holding position sign is necessary to protect the electronic signal. If the distance between the runway holding position and the ILS holding position is 50 feet (15.2 m) or less, move the runway holding position sign and marking back to the ILS critical area boundary and omit the ILS sign.
- A.2.3 For Runway 9 operations, provide exit signs for Taxiways B2, B4, and B5. For Runway 27, provide exit signs for Taxiways B1, B2, and B3. There is no need to install exit signs for taxiways not intended for use as an exit taxiway or that represents a hazardous turn. Where an ATCT exists, coordinate runway exit operations with the local ATM.
- A.2.4 Pilots that use Taxiway B2 as an exit need to report to ATC when they are clear of the runway. To assist these pilots in judging when their aircraft is clear of the runway, provide an RSA/OFZ boundary sign on the back of the holding position sign on Taxiway B2.
- A.2.5 Taxiways B3 and B4 are both high-speed exits equipped with centerline lights. Since the lights on these taxiways are color-coded (green/yellow), RSA/OFZ boundary signs are not necessary. However, the boundary signs may be beneficial if local ATC commonly asks pilots to report when they are clear of the runway, especially during instrument meteorological conditions.

- A.2.6 Pilots exiting the runway on Taxiway B1 during instrument meteorological conditions may need to report when they are clear of the ILS critical area. If the taxiway does not have color-coded (green/yellow) centerline lights, provide an ILS critical area boundary sign on the back of the ILS holding position sign to identify the perimeter of the critical area.

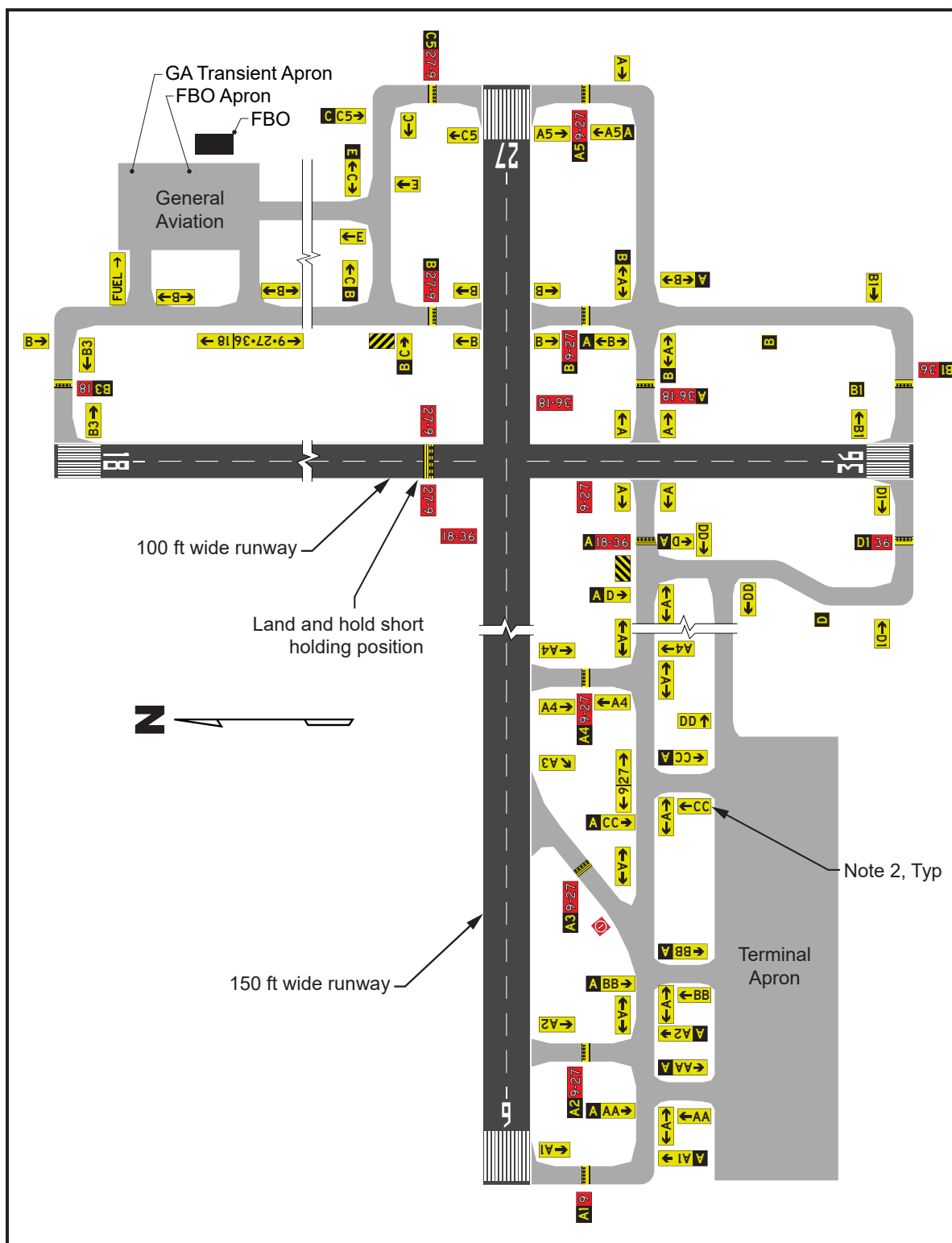
Figure A-1. Example 1 – Typical Airport Signage.



- A.2.7 As illustrated at the intersections of the high-speed exit taxiway with Taxiway B, it is not necessary to install direction signs on Taxiway B to the high-speed taxiways given these taxiways are not an entrance to the runway. Reverse acute angle turns represent an irregular turn with elevated risk. It is acceptable to install a location sign or “No Entry” sign on the high-speed exits near Taxiway B to indicate the taxiway designation and the one-direction flow. The “no entry” sign at the intersection of Taxiways B and F is a safeguard against pilots taxiing from the international apron directly to the runway.
- A.2.7.1 On Taxiway B at the intersection of Taxiway F, direction signs apply only for Taxiway F because aircraft use of Taxiway B4 to enter the runway is an irregular taxi path with risk.
- A.2.7.2 On Taxiway B4 at the intersection with Taxiways B and F, direction signs apply for both Taxiways B and F to indicate intended taxi paths to both intersecting taxiways.
- A.2.7.3 On Taxiway F at the intersection with Taxiway B, a direction sign applies only for Taxiway B because aircraft use of Taxiway B4 to access the runway represents an irregular taxi path with risk.
- A.2.8 Aircraft departing the apron on Taxiways C and F arrive at these taxiways from various directions depending upon their gate positions. Some aircraft approach these taxiways by taxiing along the edge of the apron, while others approach these taxiways straight on. The example shows direction signs placed on the edge of the apron for the former case with location signs installed on these taxiways for the latter case.
- A.2.9 The intersection of Taxiways C and B shows an outbound destination sign on the opposite side of the intersection. The complexity of an airport layout and frequency of pilot confusion determine whether an outbound destination sign is necessary. This sign could also reside prior to the direction sign on Taxiway C, provided the placement does not interfere with a pilot’s ability to view the direction sign.
- A.2.10 Typically, the standard taxiway location and direction signs provide sufficient visual information for pilots to properly navigate the taxiway system at the airport. The complexity of an airport’s geometry may create confusion for pilots not familiar with the airport, such as international pilots. The local ATCT may have a preferred taxi route for such pilots. To facilitate ground navigation to the international terminal, provide inbound destination signs indicating the direction to the international terminal at key points based on the ATC’s preferred route.
- A.2.10.1 The inbound destination signs do not replace or interfere with the standard taxiway direction signs. Inbound destination signs may reside on the backside of a direction side as shown near the intersection of Taxiways B and C.

- A.2.10.2 The optimal location is prior to the intersection on the side of the taxiway where the turn occurs. An opposite side installation is acceptable where space constraints exist and where there is low risk for pilot confusion.
- A.2.10.2 For exit taxiways to a parallel taxiway, consider installing the destination sign on the left side of the exit taxiway prior to the direction sign for the parallel taxiway.
- A.2.10.3 If a left side location conflicts with the standard taxiway direction sign, install the destination sign on the opposite side of the intersection as shown for Taxiways B2 and B3.
- A.2.11 Taxiway ending markers are in place at the intersection of Taxiway C with Taxiway B as well as at the intersection of Taxiway D with Taxiway A. In both locations, the length of the ending taxiway into the intersection establishes a risk for taxiway excursion.
- A.3 **Example 2—Airport with Intersecting Runways.**

Figure A-2 shows an airport with two intersecting runways. Runway 9-27 is the primary runway while Runway 18-36 is a secondary runway, for general aviation (GA) operations. Air carriers use only Runway 9-27, while the commuters and general aviation use both runways. The air carrier and commuter terminal are on the southwest side of the airport. General aviation facilities are located on the northeast side. The airport has an ATCT. When aircraft are landing on Runway 18, ATC may ask the pilot to land and hold short of Runway 9-27 for a departure from Runway 9-27. The following are key aspects for a proper sign system.
- A.3.1 All taxiways intersecting with a runway include mandatory holding position signs collocated with taxiway location signs. Entrance and exit taxiway designations are alphanumeric. Primary Taxiways A and B are predominantly crossover taxiways and thus retain the same designation on both sides of a runway. The taxiway connectors to the Runway 27 end are entrance taxiways with different designations, Taxiway A5 and Taxiway C5, to establish positive location identification.
- A.3.2 The taxiway connectors to the ends of Runways 9, 36 and 18 are not common runway crossing taxiways thus the legend on the mandatory holding position sign only includes the runway end designations (e.g., 9, 18 and 36). The taxiway's connectors at the Runway 27 end have operational use as taxi crossing and thus have both runway designations displayed on the sign (e.g., 9 and 27).
- A.3.3 At the intersection of the two runways, each runway has a left-side mandatory holding position sign at the boundary of the respective runway safety area. Because Runway 9 has a published "land and hold short" operation, there is an additional sign shown on the right side of the holding position as well as a collocated Pattern A holding position surface marking.

Figure A-2. Example 2: Airport with Intersecting Runways.

Note 1: Some location signs not shown due to figure space constraints.

Note 2: Provide a location sign if the apron has a designated apron taxiway.

- A.3.4 Exit taxiways have taxiway direction signs prior to the exit. Taxiways used for exits for one direction but not the other direction do not require taxiway direction signs for the irregular. For example, Taxiway A3 is a high-speed exit taxiway for landing operations on Runway 27 but not for Runway 9. Aircraft attempting to exit Runway 9 onto taxiway A3 are at risk for a taxiway excursion due to the sharp turn. Omit the exit sign and leadoff centerline marking from Runway 09 to Taxiway A3.
- A.3.5 Taxiway A3 is a high-speed taxiway that leads to Taxiway BB. Because this is a direct path to the terminal, the airport operator in consultation with the local ATCT may consider a single letter taxiway designation (e.g., Taxiway F) for both taxiway segments to simplify taxi instructions for inbound pilots.
- A.3.6 Taxiway A3 includes a DO NOT ENTER sign when viewing from Taxiway A to Runway 9-27. While installation of this sign is not standard, application of this sign along with omission of direction signs from Taxiway A to Taxiway A3 represent effective measures to address elevated risk of aircraft taxiing the wrong way on high-speed taxiway.
- A.3.7 While most direction signs and all holding position signs include a collocated taxiway location sign, it is acceptable to install single location signs where it aids pilot awareness of their position on the airport. Taxiways D and Taxiways B have standalone location signs on the taxiway segments from the Runway 36 end enhance pilot location awareness.
- A.3.8 Outbound-destination signs enhance pilot location awareness where there is risk for pilot navigation confusion. Application of these signs is appropriate for instances where standard taxiway signs may not be sufficient for ground navigation by transient pilots unfamiliar with the airport. For this example, an outbound destination sign indicates the direction to Runway 9-27 ends as a pilot exits the terminal apron on Taxiway CC. The outbound destination sign from the GA apron identifies the relative direction to all runway ends.

A.4 **Example 3—Airport with a Single Runway.**

Figure A-3 involves a general aviation airport with a single runway and parallel taxiway. The runway is 4,500 feet (1,372 m) in length. The airport is uncontrolled. The apron serves both general aviation and the scheduled commuter.

The sign system includes the following:

- A.4.1 Provide mandatory holding position signs and location signs for all taxiways intersecting the runway.
- A.4.2 All taxiways connecting to the runway are exit taxiways. Provide exit taxiway direction signs for the two end Taxiways A1 and A4 and intermediate Taxiways A2 and A3.

- A.4.3 All taxiways connecting to the runway have alphanumeric designations. If future development provides for another connecting taxiway, the taxiway designation may skip a number.
- A.4.4 Provide direction signs for all taxiway/taxiway intersections.
- A.4.5 Collocate location sign with holding positions to the runway. The simplicity of the airfield geometry allows flexibility with the location sign.
 - A.4.5.1 The end taxiways show the location signs collocated with the direction signs. For the intermediate taxiways, the location sign resides on the backside of the hold sign. Even though this airport has a simple airfield layout, use of alphanumeric designation establishes uniformity in the NAS allowing pilots operating at different airports to quickly understand their airfield location.
 - A.4.5.2 Location signs on Taxiway A may apply if the airport receives a lot of transient or student traffic. The location signs provides location affirmation to the pilot.
- A.4.6 An outbound destination sign for the runway ends is beneficial when the airport experiences a high percentage of transient traffic. Placing the outbound destination sign on the opposite side of the Taxiway A and B intersection gives pilots leaving the apron visual confirmation on the proper taxi direction. The sign includes a vertical bar to indicate the runway ends are in different directions.

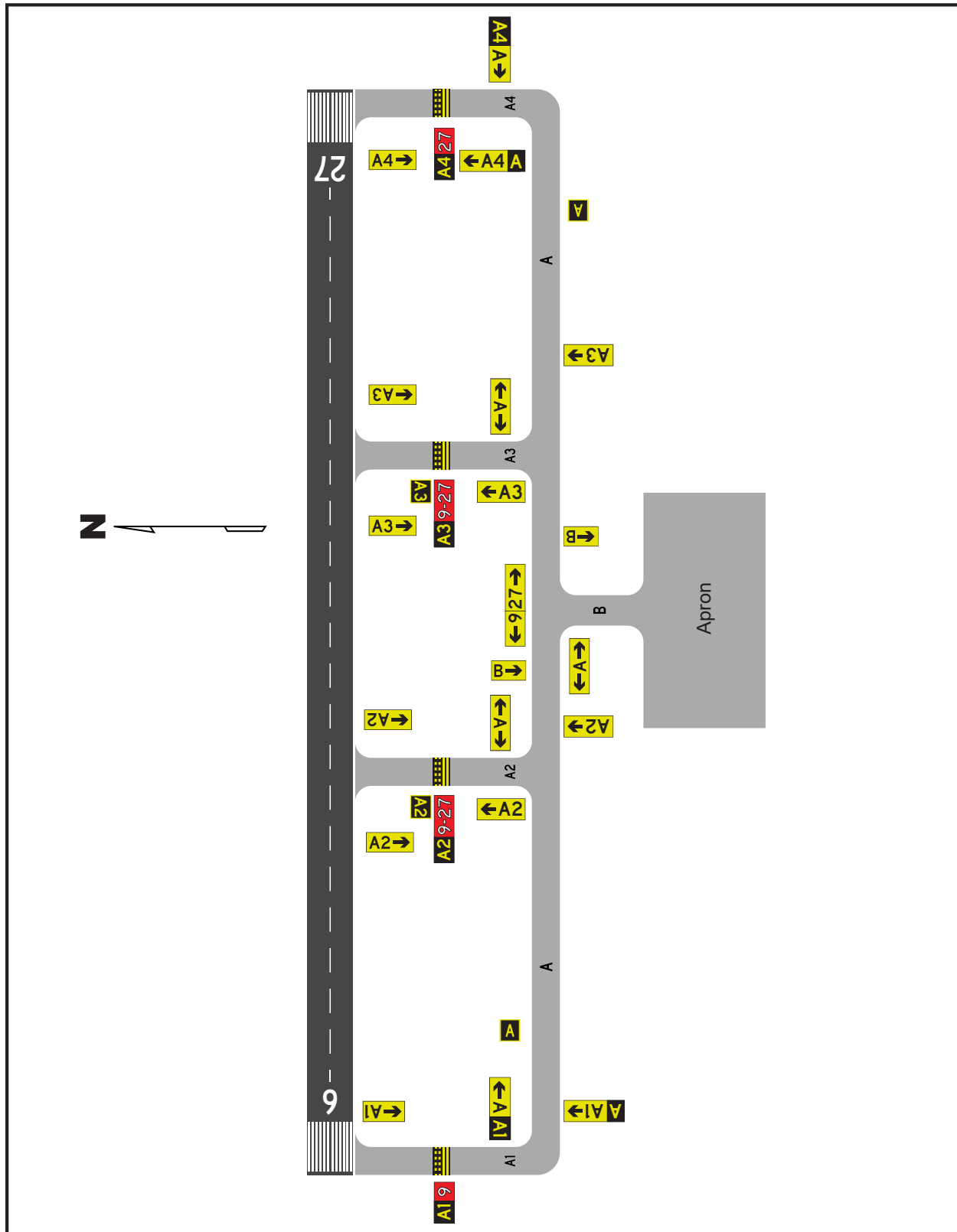
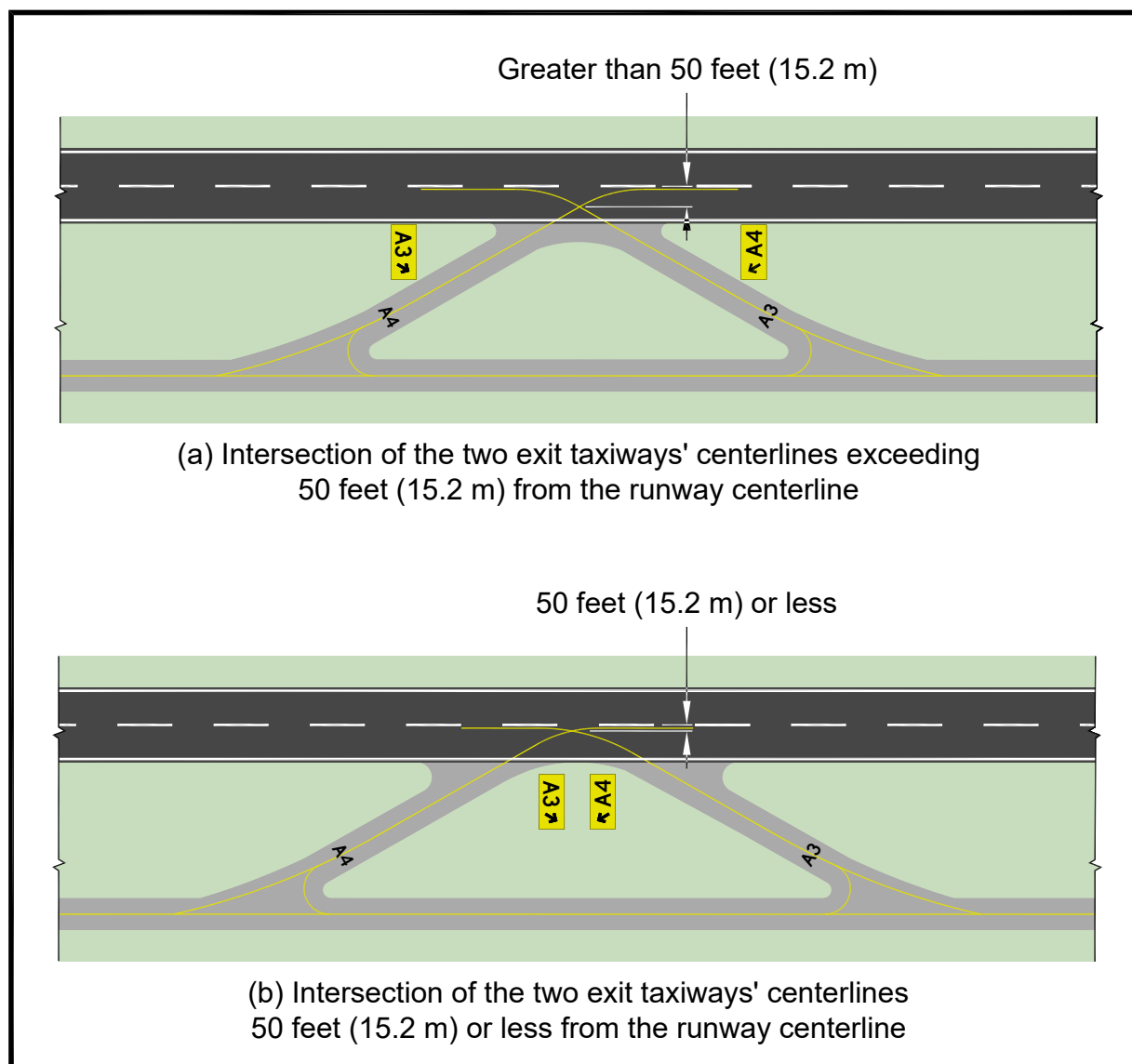
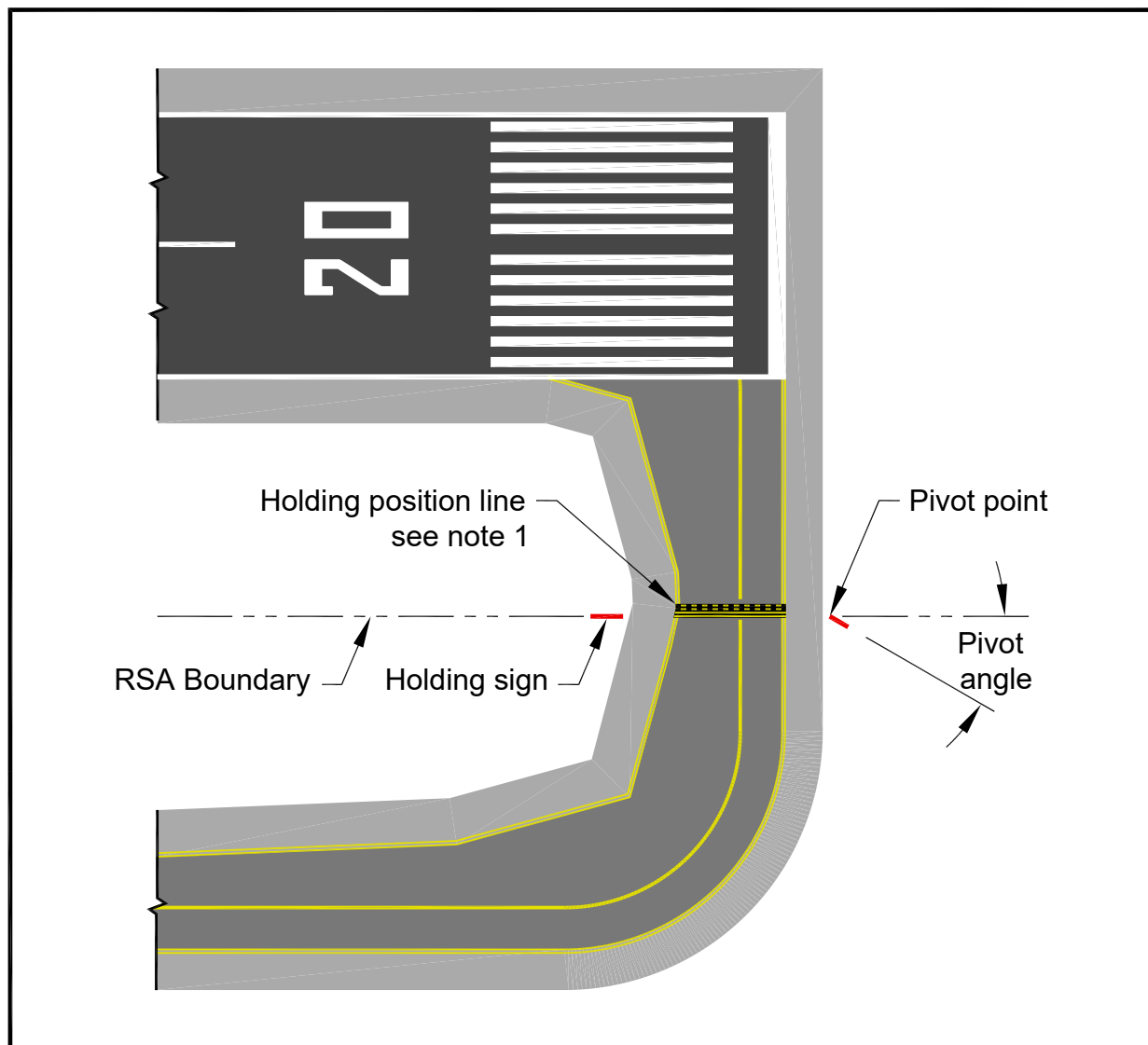
Figure A-3. Example 3: Airport with a Single Runway.

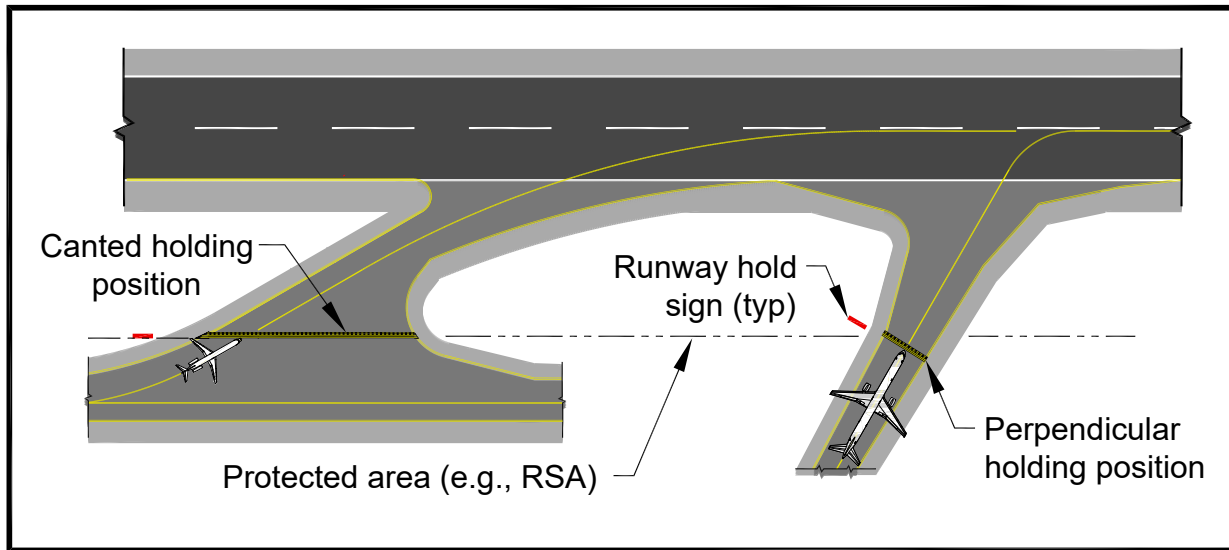
Figure A-4. Examples: Runway Exit Signs at Opposing Acute Angle Taxiways.

Note: The proximity of opposing high-speed exits to each other shown in detail (a) represents a non-standard configuration due to the resulting wide expanse of pavement adjacent to the runway. Refer to [AC 150/5300-13](#) for high-speed exit design factors.

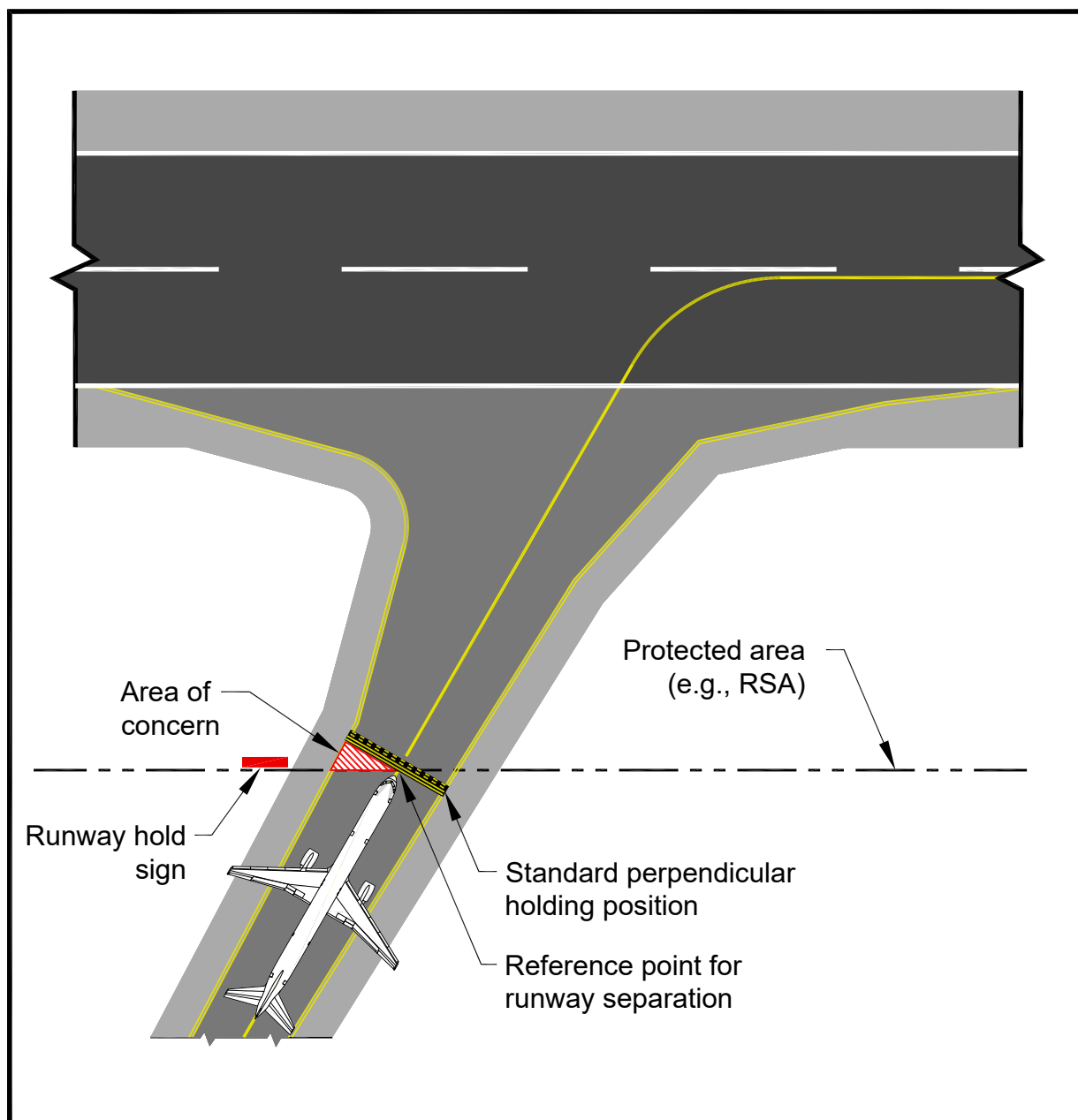
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Appendix B. SPECIFIC SIGNING SCENARIOS AND DETAILS**Figure B-1. Canting Runway Holding Position Sign.**

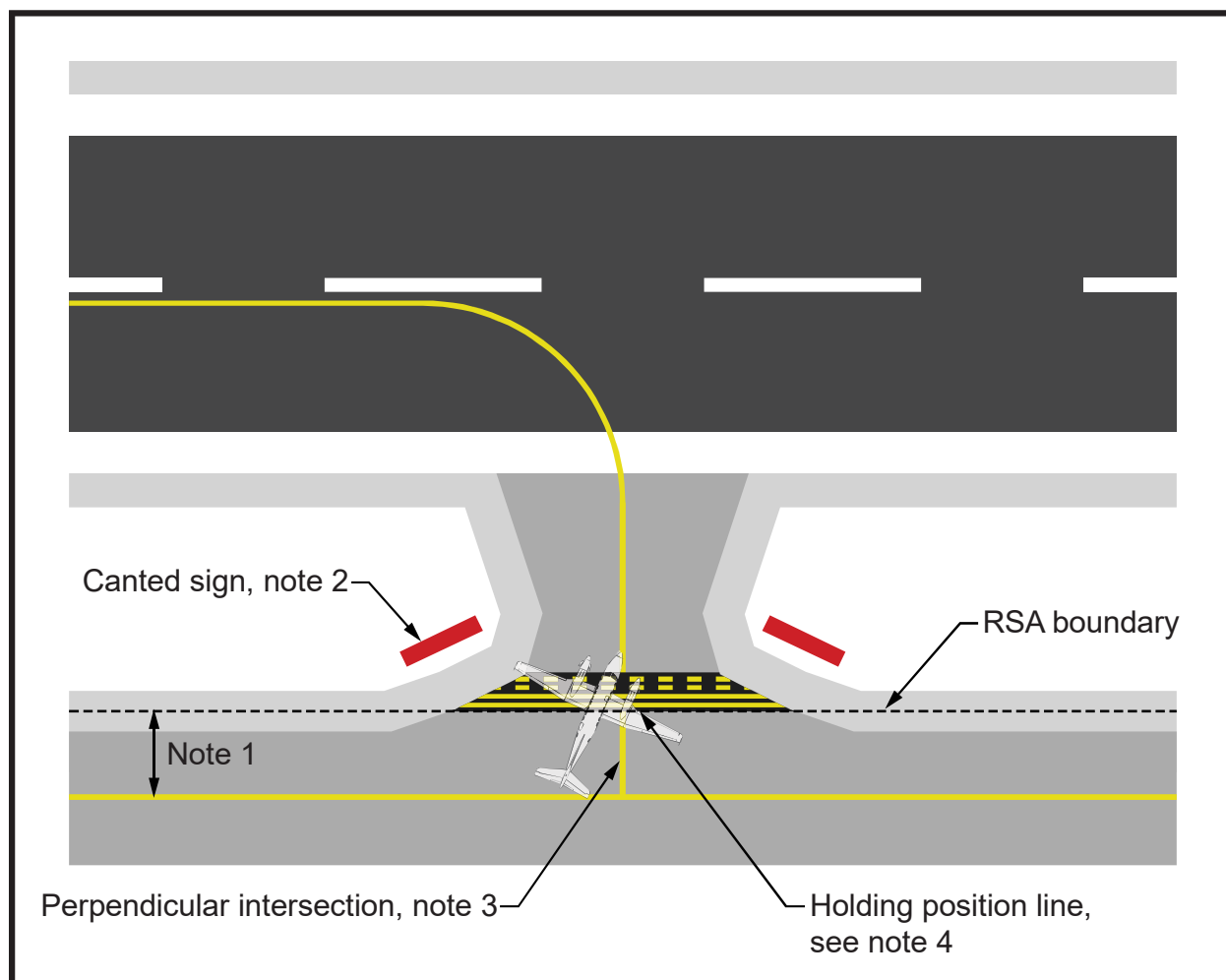
Note 1: Locate outermost solid line of pattern A marking at a point on the safety surface boundary or 10 feet (3 m) further from the runway.

Figure B-2. Angled Runway Holding Positions.

Note: Locate the reference point for the perpendicular holding line at a point where the taxiway edge intersects the boundary of the applicable safety surface, and the outer solid yellow line remains clear of the protected surface.

Figure B-3. Substandard Runway Holding Position.

Note: Local ground vehicle protocols may be necessary to prevent vehicles from holding within the protected area such as holding on the right side of the taxiway.

Figure B-4. Insufficient Holdline-Taxiway Separation.

- Note 1:** Insufficient distance between a runway holding line and a parallel taxiway may make it impractical to meet siting standards for the mandatory hold sign. This represents a nonstandard condition necessitating mitigating controls. The associated is an aircraft aligning with the sign instead of the hold line thus creating an incursion when the nose of the aircraft holds beyond the line.
- Note 2:** Locate the signs sufficiently within the protected surface to remain 12 inches clear of conflict with aircraft wings or engines. Cant (angle) the signs inward to facilitate pilot view of sign legend.
- Note 3:** Furnish a perpendicular taxiway centerline intersection per Figure D-14 of [AC 150/5340-1](#). This provides better alignment of the aircraft fuselage to the hold line than does a radius turn centerline.
- Note 4:** Extend hold line marking onto shoulder pavement if holding pilot is unable to see surface marking taxiway extents.
- Note 5:** Publish a chart supplement note advising the pilots the hold sign resides beyond the hold line marking and to ensure all parts of the aircraft remain behind the surface painted line when holding.

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(Briefly describe what you want added.)

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