U.S. Department
of Transportation

**Federal Aviation
Administration**

Advisory Circular

Subject: STANDARDS FOR AIRPORT SIGN SYSTEMS	**Date:** 08/16/10	**AC No:** 150/5340-18F
	Initiated by: AAS-100	**Change:**

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

2. BACKGROUND. This AC incorporates mandatory hold signs that reflect changed standards for the Precision Obstacle Free Zone (POFZ) and Category (CAT II/III) operations. These changes correspond to revisions to AC 150/5300-13, Airport Design, that change the Precision Object Free Area (POFA) to the POFZ and incorporate new separation standards for taxiways that parallel runways used for certain low visibility operations.

The Federal Aviation Administration (FAA) also has revised low visibility operation procedures; these revised procedures require that the POFZ be clear when an aircraft on a vertically guided final approach is within 2 nautical miles of the runway threshold and the reported ceiling is below 250 feet (75 m) and/or visibility less than a ¾ statute mile (runway visual range below 4,000 feet (1 km)). If the POFZ is not clear, the minimum authorized height above touchdown (HAT) and visibility are 250 feet and a ¾ statute mile respectively. The POFZ is considered clear even if the wing of the aircraft holding on a taxiway penetrates the POFZ; however, neither the fuselage nor the tail may infringe on the POFZ (see the most recent versions of AC 150/5300-13 and FAA Order 8260.3, United States Standard for Terminal Instrument Procedures).

The FAA is revising Terminal Instrument Procedures (TERPS) standards for the separation distance between a runway equipped for CAT II/III operations and the parallel taxiway that requires aircraft to hold, in certain circumstances, at a location other than the runway holding position.

Accordingly, the FAA has developed sign standards to assist airport operators in designating (1) the POFZ holding position in those instances where a taxiway, holding apron, or other movement area would result in an aircraft fuselage or tail penetrating, and (2) the alternative holding position on a taxiway during CAT II/III operations necessary to maintain adequate aircraft separation. The FAA has made a corresponding change to marking standards contained in AC 150/5340-1, Standards for Airport Markings.

Figures throughout this AC also have been revised to reflect changes made to the most recent version of AC 150/5345-44, Specification for Runway and Taxiway Signs**,** and in some cases, several sign illustrations have been combined into a single figure.

3. CANCELLATION. This AC cancels AC 150/5340-18E, Standards for Airport Sign Systems, dated September, 12, 2008.

4. PRINCIPAL CHANGES. This AC contains the following principal changes:

a. All figures are redrawn for better clarity and detail.

b. Chapter 1 title is updated to "Runway and Taxiway Guidance Signs."

c. Taxiway Ending Marker is included in the glossary.

d. Figure 3 is corrected to show a boundary sign on left side taxiway B in the runway exit direction.

e. Paragraph 5b is reworded to include additional details and to clarify holding position signs for runway/runway intersections.

f. Paragraph 6, Location Signs, is reworded for clarity.

g. Paragraph 8, Direction Signs, is updated to prohibit collocating taxiway direction signs with boundary signs.

h. Paragraph 11, Vehicle Roadway Signs, is updated to include a runway holding position roadway sign used on vehicle roadways that enter or intersect runways.

i. Paragraph 12, Information Signs, is updated to include the VOR sign. The text of this VOR sign is originally from AC 150/5340-1J.

j. A NOTE is added to paragraph 13a to clarify taxiway direction sign location when a boundary sign is present on the right side of an exit taxiway.

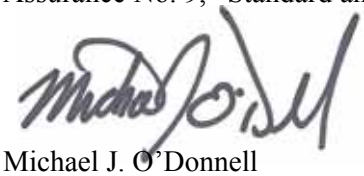
k. Paragraph 13p is updated to include angle requirements for a canted sign.

l. Figure 14 is updated to show a standard L-858R, Size 1, Style 4, holding position sign to the left of the STOP/DO NOT PROCEED signs.

m. Figure 19 mandatory instruction signs at RWY 18-36, taxiways E and F, are updated. Mandatory instruction signs at taxiways A and G are updated to RWY 9-27.

n. Table 1 is moved to paragraph 14, Sign Size and Location.

5. APPLICATION. The use of these standards is the only method of complying with requirements for signing runways and taxiways at airports certificated under Title 14 Code of Federal Regulations, Part 139, Certification of Airports. The FAA recommends the guidelines and standards in this Advisory Circular for other airports. In general, the use of this AC is not mandatory for other than Part 139 airports. However, use of this AC is mandatory for all projects funded with federal grant monies through the Airport Improvement Program (AIP) and with revenue from the Passenger Facility Charges (PFC) Program. See Grant Assurance No. 34, "Policies, Standards, and Specifications," and "PFC Assurance No. 9, "Standard and Specifications."



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GLOSSARY OF SIGN TYPES

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

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b. 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 must be set in from inner edge of the sign to yield a continuous black margin. See Figure 8a and b.

c. Boundary Signs. Boundary signs are used to identify the location of the boundary of the Runway Safety Area (RSA) /Obstacle Free Zones (OFZ) or ILS critical area for a pilot exiting the runway. The sign has a black inscription on a yellow background. See Figures 3, 9a, and 9b.

d. 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 be used to indicate a taxiway exit from a runway. See Figure 11a.

e. Taxiway Ending Marker. This marker sign indicates that a taxiway does not continue beyond an intersection. See Figure 11e.

f. Destination Signs. A destination signs has a black inscription on a yellow background and always contain an arrow. These signs indicate the general direction to a remote location. See Figure 11b through d.

g. Information Signs. These signs are installed 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**.**

h. Vehicle Roadway Signs. These are signs located on the airfield and are intended solely for vehicle operators. See Figure 14.

i. Runway Distance Remaining Signs. Runway distance remaining signs are used to provide distance remaining information to pilots during takeoff and landing operations. The sign has a white numeral inscription on a black background. See Figure 17.

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CHAPTER 1. RUNWAY AND TAXIWAY GUIDANCE SIGNS

1. GENERAL.

A properly designed and standardized taxiway guidance sign system is essential for the safe and efficient operation of aircraft and ground vehicles on the airport movement area. It should:

a. Provide the ability to easily determine the designation of any pavement on which the aircraft is located.

b. Readily identify routes toward a desired destination.

c. Indicate mandatory holding positions, including holding positions used to maintain aircraft separation during low-visibility weather operations.

d. Identify boundaries for approach areas, Instrument Landing System (ILS) critical areas, the POFZ, and RSA /OFZ.

2. PLANNING.

Users of this Advisory Circular (AC) should 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. This difference can be attributed to several factors such as ground traffic patterns, the presence of an airport traffic control tower, 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, the airport operator should work with the Federal Aviation Administration (FAA) to ensure that a runway and taxiway guidance sign system is developed and installed using the standards of this AC whenever practicable. The airport operator should consult with airport users during the development of the sign system.

3. COMPONENTS OF A SIGN SYSTEM.

Overall safety is enhanced by a standardized system of signs at all airports. Paragraphs 5, 6, 7, 8, and 10 contain standards for different types of taxiway guidance signs and along with Paragraphs 13, 14, 15, and 17, provide information on their installation. Figures included in this chapter, as well as Appendix A show graphic depictions of these signs and common applications. The location and types of signs that should be 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 2. To decide where signs should be installed as part of this system at a particular airport, the following guidelines apply:

a. Install a holding position sign and taxiway location sign at the holding position on any taxiway that provides access to a runway.

b. 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 area and, as appropriate, at the CAT II/III operations holding position.

c. Install a holding position sign on any runway that intersects with another runway.

d. Install a sign array consisting of taxiway direction signs prior to each taxiway/taxiway intersection if an aircraft would normally be expected to turn or to hold short of the intersection. The direction signs in the array should include a sign panel (taxiway designation and an arrow) for each taxiway where an aircraft would be expected to turn or hold short. A taxiway location sign should be included as part of the sign array unless it is determined to be unnecessary. If an aircraft normally would not be expected to turn or to hold short of the intersection, the sign array is not needed unless the absence of guidance would cause confusion.

e. Install a runway exit sign along each runway for each normally used runway exit.

f. At uncontrolled airports (i.e., airports without an operating air traffic control tower), consider whether it is preferable to substitute destination signs for the signs described in Paragraphs 3d and 3e.

g. Install standard highway stop or yield signs on vehicle roadways at the intersection of each roadway with a runway or taxiway. See Section 11 for additional details about the signs and their locations.

h. 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 air traffic control regularly requests pilots to report clear of the runway or where an aircraft is regularly required to stop after clearing the runway, it may be beneficial to install a 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 that the correct turn has been made.

4. DEVELOPING TAXIWAY DESIGNATIONS.

The first step in designing a taxiway guidance sign system is to develop a simple and logical method for designating taxiways. The following general guidelines should be followed:

a. Keep it simple and logical.

b. Use letters of the alphabet for designating taxiways. Optimally, designation of the taxiways should start at one end of the airport and continue to the opposite end, e.g., east to west or north to south (see Figure 1).

c. Where there are more taxiways than letters of the alphabet, double letters such as "AA" may be used. However, this nomenclature can be confusing when used in pilot/controller communications. Consider using alphanumeric designations such as “A2.”

(1) An exception is permitted for a major taxiway having numerous stub exits, such as a taxiway parallel to a runway or a taxiway adjacent to a ramp area. In such instances, the short taxiways could be designated "Al," "A2," "A3," etc.

(2) Numbers alone and the letters "I" and "O" are not used because they could be mistaken for a runway number.

(3) The letter "X" is not used because a sign with an "X" could be misconstrued as indicating a closed taxiway.

(4) Number and letter combinations should not result in confusion that might allow a taxiway designation to be mistaken for that of a runway. For example, if an airport has a runway "4L," a taxiway designation of "L4" should not be used.

d. Designate all separate, distinct taxiway segments.

e. Ensure no separate, distinct taxiway has the same designation as any other taxiway.

f. Do not change taxiway designations if there is no significant change in direction of the taxiing route. However, when the overall system design indicates a need, such a change can be made and appropriately signed; such changes should be made only at intersections. See Figure 12c and d.

g. Do not designate taxiways by reference to a direction of travel or to a physical object. This includes the use of terms such as "inner," "outer," "parallel," and "bridges." Such informal nicknames or abbreviations are not used on taxiway guidance signs.

h. In a Notice to Airmen (NOTAM) regarding taxiways, refer to the formal designation that appears on the taxiway guidance sign.

5. MANDATORY INSTRUCTION SIGNS.

Mandatory instruction signs have white inscription with a black outline on a red background. They denote taxiway/runway intersections, runway/runway intersections, Instrument Landing System (ILS) critical areas, POFZ boundaries, runway approach areas, CAT II/III operations areas, military landing zones, and no entry areas. At controlled airports (i.e., airports with an operating air traffic control tower), vehicles and aircraft are required to hold at these signs unless cleared by air traffic control. At uncontrolled airports, vehicles and aircraft may proceed beyond these signs only after appropriate precautions are taken. Arrows are not used on these signs except as discussed in Paragraph 5a.

a. Holding Position Sign for Taxiway/Runway Intersections. The inscription on a holding position sign at a taxiway/runway intersection is the runway number(s), such as "15-33", per Figure 2a. The runway numbers are separated by a dash, and their arrangement indicates the direction to the corresponding runway threshold. For example, "15-33" indicates that the threshold for runway "15" is to the left and the threshold for runway "33" is to the right. The sign at each runway end contains the inscription only for the takeoff runway, while all other signs contain both runway designation numbers. However, both runway designation numbers should be used on signs at runway ends where there is an operational need, such as where a taxiway crosses the runway at the runway end. Application examples for holding position signs are shown in Figure 3. Holding position signs are installed in-line with the holding position marking painted on the taxiway pavement. Arrows are used on holding position signs only if necessary to clarify the orientation of runways at the intersection of a taxiway with more than one runway (see Figure 4). Note that in Figure 4b, the holding position signs have both runway numbers to avoid confusion about the runway direction. In some geometrical configurations of runways and taxiways, it is necessary to install holding position signs on both sides of the taxiway. These configurations include:

(1) Taxiways that are 150 feet or greater in width (see Figure 3).

(2) Taxiways where the painted holding position markings extend across an adjacent holding bay as shown in Figure 5a.

(3) Taxiways where the painted holding position markings do not extend straight across the taxiway, as shown in Figure 5c.

(4) Taxiways where the painted holding position markings are located a short distance from an intersection with another taxiway. In this situation, the pilot turning onto the taxiway would have difficulty seeing the holding position sign on the left. This commonly occurs when the separation distance between the runway and the parallel taxiway is less than standard and the holding position markings are located near the edge of the parallel taxiway (see Figure 5b). Because of cockpit visibility limitations, pilots of some aircraft making a left turn from the parallel taxiway onto the connecting taxiway would have difficulty seeing a sign on the left. In this situation, it may be necessary to install the sign on an angle (canted) in accordance with paragraph 13p.

b. Holding Position Sign for Runway/Runway Intersections. Holding position signs are used to identify runway/runway intersections and are identical to the signs used for taxiway/runway intersections.

(1) For runways that are 150 feet (45 meters) or less in width, only one sign is required on the left side of the runway to identify a runway/runway intersection. The sign must be installed per the locations in AC 150/5300-13, Airport Design, Tables 2-1 and 2-2. (Use the "Runway Centerline to Holdline" Item in the table to determine the holding position sign location.)

(2) For runways that are more than 150 feet (45 meters) in width, the holding position signs must be used on both sides of the runway to identify an intersecting runway. The sign location is the same as that required in paragraph 5b(1).

(3) For runways of any width that are used for land and hold short operations (LAHSO), signs on both sides of the runway and associated painted marking are required (see Figure 6). The sign location is the same as that required in paragraph 5b(1).

(4) If a runway is normally used as taxiway, whether or not aircraft go through a runway/runway intersection, then both holding position signs and associated painted marking are required (see Figure 6).

c. Holding Position Sign for ILS Critical Areas/POFZ Boundary. The inscription on a sign to indicate either the holding position for the ILS Critical Area or the POFZ boundary is the same — the abbreviation "ILS" (see Figure 2b). If a microwave landing system (MLS) is available and has a more demanding critical area boundary than the ILS or POFZ, the inscription on the sign is MLS. Holding position signs are installed in-line with the associated painted marking.

(1) Where the distance between the runway holding position marking and the holding position marking for an ILS critical area is 50 feet or less, one holding position sign and marking may be installed, provided it will not affect capacity. In such cases, the airport operator may use the runway holding position sign and marking to delineate both the boundary of the RSA and the ILS critical area. In this instance, the runway holding position sign and marking is located at the boundary that is the farthest from the runway edge (see Figure 7).

(2) If a runway, taxiway, holding apron, or any movement area would result in an aircraft fuselage or tail penetrating the POFZ, install one holding position sign and marking to delineate the ILS critical area and the POFZ. This holding position sign and marking is located at the more conservative boundary of these two areas (see Figure 3). In this instance, the ILS critical area/POFZ boundary holding position sign and marking cannot be replaced with, or used in lieu of, a runway holding position sign or marking.

(3) The responsible FAA Airports office will designate the ILS (or MLS) critical area and POFZ boundaries for the airport operator. The holding position sign for the ILS critical area or POFZ boundary is located on both sides of the taxiway when the holding position marking for the ILS critical area or POFZ boundary is located in the geometrical configurations described in Paragraphs 5a(l) through 5a(4).

d. Holding Position Sign for Runway Approach Areas. The inscription on a sign for a runway approach area is the associated runway designation followed by a dash and the abbreviation "APCH" (see Figures 2c and 3 for examples). The sign is installed on taxiways located in approach areas where an aircraft on a taxiway would either cross through the RSA or penetrate the airspace required for the approach or departure runway (including clearway). Holding position signs are installed in-line with the associated painted marking. This sign is not installed on runways.

e. Holding Position Sign for CAT II/III Operations. The inscription on a holding position sign for CAT II/III operations is the associated runway designation followed by a dash and the abbreviation "CAT II/III" for Category II/III operations (see Figure 2d). The sign is installed on a taxiway that is parallel to a runway used during CAT II/III operations to indicate where aircraft are to hold during CAT II/III operations to ensure proper aircraft separation. The regional FAA Airports office will determine the holding position location for CAT II/III operations for the airport operator. The holding position sign for CAT II/III operations is located on both sides of the taxiway when the holding position marking for CAT II/III operations is located in the geometrical configurations described in Paragraphs 5a(l) through 5a(4).

f. Holding Position Sign for Military Landing Zones. The inscription on a holding position sign located at the intersection of a taxiway or designated runway and a military landing zone/assault strip that does not have a runway designation is: "MIL LZ". The sign should be collocated with a taxiway location sign and runway holding position markings. See AC 150/5300-13, paragraph 213, Table 2-1 and 2-2 for the location of the sign. The MIL LZ sign has been coordinated with the Department of Defense FAA Liaison Detachment and Air Traffic Control Flight Procedures.

g. No Entry Sign. This sign indicates that entry into a particular area is prohibited to aircraft and is installed on the left side as seen by the pilot approaching the prohibited area. In some pavement configurations, it may be necessary to install the sign on both the left and right sides. The sign should be located adjacent to the pavement where entry is prohibited rather than prior to the intersection. The sign inscription is shown in Figure 2e.

NOTE: *For a taxiway that is used only as an exit from a runway, it is permissible to install a No Entry Sign. However, this sign may never be installed in lieu of the runway/taxiway holding position sign. The sign should be installed on the taxiway prior to the holding position sign.*

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 must be 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:

a. Taxiway Location Sign. This sign identifies the taxiway on which an aircraft is located. A typical sign is shown in Figure 8a.

b. Runway Location Sign. This sign is installed on runways where the proximity of two runways could create confusion, as shown in Figure 4b. This sign also is installed on runways at runway/taxiway intersections used for intersection takeoffs. A typical sign is shown in Figure 8b. This sign is located to clearly identify the runways for pilots and only contains the runway designation for the one runway end.

7. BOUNDARY SIGNS.

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

a. RSA/OFZ and Runway Approach Boundary Sign. This sign identifies the boundary of the RSA/OFZ or the runway approach 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 9a. The sign is typically used only at controlled airports at the request of the airport traffic control tower 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 3 for examples. The pilot can use the sign as a guide in deciding when to report back to the controller. Consequently, the sign would not normally be installed at every runway exit or on taxiways having green/yellow color-coded centerline lights. However, this sign may be useful in areas where the centerline lights could be obscured by snow or ice.

b. 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 9b. This sign is used 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 installed 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. This sign is installed only on the reverse side of an ILS, POFZ, or CAT II/III operations holding position sign (see Figure 3 for examples).

8. DIRECTION SIGNS.

These signs indicate directions of other taxiways leading out of an intersection. The signs have black inscriptions on a yellow background and always contain arrows. The arrows should be oriented to approximate the direction of turn. Generally, orienting the arrows in increments of 22.5 degrees (0, 22.5, 45, 67.5, and 90 degrees) should be sufficient for most signs. Direction signs are not to be collocated with holding position signs or boundary signs or installed between the holding position marking and the runway. Signs used to indicate the direction of taxiways on the opposite side of a runway are located on the opposite side of the runway.

a. Taxiway Direction Sign. A typical taxiway direction sign is shown in Figure 11a. Application examples are shown in Figures 12, 13, and Appendix A, Figures 18, 19, and 20.

b. Runway Exit Sign. A typical runway exit sign is shown in Figure 11a, and application examples are shown in Appendix A, Figures 18, 19, and 20. Signs for runway exits are located prior to the runway/taxiway intersection on the side and in the direction to which the aircraft is expected to exit. "Bracketing" a runway exit sign (where a sign is placed before and after the exit) is not permitted. A runway exit sign should never have more than one arrow for each taxiway designation shown on the sign.

(1) If a taxiway crosses a runway and an aircraft can be expected to exit on either side, then exit signs are located on both sides of the runway.

(2) For taxiways that are intended only to be used as exits from the runway in one direction, such as taxiways located near the end of the runway or intersecting the runway at an acute angle, the signs should be installed only for the runway direction in which they are intended to be used (see Appendix A).

(3) When two acute-angle taxiways (i.e., high speed exits) are intended to be used in opposite directions and intersect the runway at a common point, the exit signs are located prior to each runway exit rather than in the area between the two exits (see Appendix A, Figure 18, Taxiways D and E).

9. TAXIWAY ENDING MARKER.

A taxiway ending marker sign indicates that a taxiway does not continue beyond an intersection. 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 Figures 10 and 11e). See AC 150/5345-44, Specification for Runway and Taxiway Signs, for stripe dimensions and additional information.

10. DESTINATION SIGNS.

A destination sign has a black inscription on a yellow background and always contains an arrow. This sign indicates the general direction to a remote location. At many larger airports, taxiway routing is a dynamic process, dependent on many variables, including airfield construction and runway use. In such cases, destination signs may provide information that conflicts with air traffic control direction. Therefore, use destination signs at such airports only in cases of remote locations and/or where taxiway location signs and direction signs alone would not adequately guide a pilot to the desired destination. Destination signs are more beneficial at uncontrolled airports. Signs indicating two different directions to the same destination should not be installed so they are visible from the same point because the conflicting routing information can create confusion.

a. Outbound Destination Sign. Outbound destination signs identify directions to takeoff runways. These routes usually begin at the entrance to a taxiway from an apron area. The inscription is the runway number plus an arrow indicating the direction (see Figure 11b). More than one runway number, separated by a dot, may be shown where the taxiing route is common to both runways (see Figure 11c). The outbound destination sign should always direct the pilot to the beginning of a takeoff runway.

b. Inbound Destination Sign. Major destination areas are usually shown on inbound destination signs. For example, at many airports, signs indicating the route to the apron may be adequate; whereas at other airports, it may be necessary to make a distinction between passenger aprons, cargo aprons, and military aprons or between aprons in different locations on the airport, such as the north apron, east apron, etc. Sign inscriptions should be consistent; do not use two different inscriptions for the same area (e.g. RAMP and APRON). At points closer to the major destination areas, more detailed destination signs should be provided to indicate specific areas that are designated for parking service, passenger handling, military aircraft, etc. (see Figure 11d for a typical sign). The inscription on destination signs should contain a minimum of three letters, selected so that there is no confusion with other taxiway guidance signs. Common names and abbreviations used for inbound destinations are:

- **APRON -** general parking, servicing, and loading areas
- **RAMP -** synonymous with APRON
- **FUEL -** areas where aircraft are fueled or serviced
- **TERM -** gate positions at which aircraft are loaded or unloaded
- **CIVIL** - areas set aside for civil aircraft
- **MIL -** areas set aside for military aircraft

- **PAX -** areas set aside for passenger handling
- **CARGO -** areas set aside for cargo handling
- **INTL -** areas set aside for handling international flights
- **FBO -** fixed-base operator

11. VEHICLE ROADWAY SIGNS.

a. Install standard highway stop signs (see Figure 14a) on vehicle roadways at the intersection of each roadway with a runway or taxiway. At controlled airports, unless there is a letter of agreement with the air traffic control allowing drivers to cross taxiways without clearance, install "DO NOT PROCEED CONTACT ATC" signs (see Figure 14c) on vehicle roadways instructing the driver not to proceed without clearance from air traffic control.

b. For an airport with more than one runway, where vehicle service roads enter or intersect a runway, a standard retroreflective runway holding position sign L-858R, Size 1, Style 4, (see AC 150/5345-44 for additional information about unlighted mandatory instruction signs) should be installed to help vehicle operators maintain their situational awareness when approaching runways and provide a visual reference to aid in identifying them. The holding position sign can either be installed separately or attached to the same mounting pole as the STOP and DO NOT PROCEED signs. For the holding position sign, the runway designations must be arranged to indicate the direction to the corresponding runway threshold. See Figure 14 for an example of a typical installation of stop, holding position, and information signs.

(1) The holding position sign should be installed as a separate assembly located a minimum of 2 feet (0.6 m) outboard from the outermost edge of the STOP sign.

(2) The holding position sign long dimension must be level.

(3) The holding position sign must use a minimum of two support legs (additional support legs may be necessary for signs using wide characters) to provide adequate stability in windy conditions.

(4) The holding position sign maximum height must not exceed 30 inches (0.9 meter) above grade (measured from the top edge of the sign to grade).

c. All signs installed on the roadway near a runway must be installed outside the runway safety area (RSA) and not intrude into the obstacle free zone (OFZ) surfaces. See Table 3-1, 3-2, 3-3 of AC 150/5300-13 for RSA and OFZ surfaces and dimensions.

d. All signs located in the taxiway area must be installed outside the taxiway object free area (TOFA). See AC 150/5300-13, Table 4-1, for TOFA dimensional standards.

(1) To increase vehicle driver situational awareness, a type L-858L, size 1, style 4, taxiway location sign may be installed with the STOP/DO NOT PROCEED CONTACT ATC sign at locations where a vehicle service road intersects a taxiway.

(2) The taxiway location sign should be installed as a separate assembly located a minimum of 2 feet (0.6 m) outboard from the outermost edge of the STOP sign. The sign height must be no greater than

30 inches (0.9 meter) above grade (measured from the top edge of the sign to grade). Two support legs must be used at all installations to provide adequate sign stability in windy conditions.

e. Where a vehicle could enter a POFZ using a perimeter or access road, the holding position sign for ILS Critical Areas/POFZ Boundary should be installed.

f. Aircraft clearance requirements and jet blast may preclude the use of the signs shown in Figure 14 on roadways that are located on the apron or other parts of the air operations area.

g. Where possible, signs located on the airfield that are intended solely for vehicle operators should conform to the standards in the Federal Highway Administration (FHWA) publication Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways. The manual is available at mutcd.fhwa.dot.gov. The sign location, size, and installation criteria may have to be varied from the manual so that they do not conflict with the airfield environment (e.g., wing tip clearances). See Figures 14, 14a, 14b, and 14c for vehicle roadway sign dimensions.

12. INFORMATION SIGNS.

Information signs are signs that are installed on the airside of an airport, other than mandatory instruction signs, taxiway guidance signs (as described in this chapter) and runway distance remaining signs (described in Chapter 2, Paragraph 21). An information sign has a black inscription on a yellow background, and provide adequate clearance to aircraft. Examples of information signs are: noise abatement procedures, crossing vehicle roadways, or other specialized information. These signs need not be lighted, and the size and message of the inscription is at the discretion of the airport operator; however, they should be retro-reflective and mounted on frangible couplings per Paragraph 17). In addition, care should be taken to ensure that information signs do not take on the appearance of a taxiway direction or destination sign.

a. 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.

b. 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).

c. 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.

d. The sign is installed in accordance with the height and distance standards in Table 1. An example of this sign is shown in Figure 21. (See AC 150/5340-1, paragraph 37, for more details about the VOR Receiver Checkpoint Markings.)

13. GENERAL SIGNING CONVENTIONS.

a. Unless otherwise stated, signs are always placed on the left side of the taxiway as seen by the pilot of the approaching aircraft (see exceptions in paragraph 13b). If signs are installed on both sides of the taxiway at the same location, the sign faces are identical (an exception is for holding position signs, as explained in Paragraph 13d and NOTE below). Signs are not installed between the taxiway/runway holding position sign and the runway.

NOTE: *When a boundary sign is located on the right side of the exit taxiway and if a taxiway direction sign is needed at that same location, then it must be installed on the left.*

b. 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.

c. Some signs may be installed 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 be installed in this manner include:

(1) RSA/OFZ and runway approach area boundary signs (see Figure 9a), which may be installed on the back of taxiway/runway intersection holding position sign and runway approach area holding position sign (see Figure 3).

(2) ILS critical area boundary signs (see Figure 9b), which may be installed on the back of ILS critical area holding position signs (see Figures 2b and 3).

(3) Taxiway location signs, which may be installed 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.*

(4) Taxiway location signs, which may be installed on the back of holding position signs (see Figure 3, Taxiways A and B).

(5) Destination signs, which may be installed on the back of direction signs on the far side of intersections when the destination referred to is straight ahead (see Appendix A, Figure 18).

NOTE: *A destination sign may be located on the right side of a taxiway on the back of a holding position sign provided that: the destination is straight ahead; a taxiway direction sign is not located on the left side of the holding position; and it is determined that the RSA/OFZ boundary sign is not needed.*

d. Taxiway location signs installed in conjunction with holding position signs for taxiway/runway intersections are installed outboard of the holding position sign (see Figure 3, Taxiway B).

e. Location signs are normally included as part of a direction sign array, which is located prior to the taxiway intersection. Except for intersections of only two taxiways (see Paragraph 13h), 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 13g), are located to the right of the location sign (see Figure 12).

f. When more than one taxiway direction sign is installed at the same location, the designations of the intersecting taxiways and their respective arrows are arranged left to right in a clockwise manner, starting from the taxiway or runway on which the aircraft is located (see Figure 12).

g. All direction signs have arrows. Arrows on signs are oriented to the approximate direction of the turn. Except as noted in Paragraph 13h; each designation appearing in an array of direction signs is accompanied by only 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 normally needed. Where the intersection alignment changes more than 25 degrees, a sign with an arrow approximating the

direction of the taxiway is used (see Figure 12b). 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 12d).

h. When a taxiway intersection comprises only two crossing taxiways, it is permissible to place the location sign to the left of the sign array. In this case, two arrows will accompany the designation for the intersecting taxiway on the direction sign. 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 12a).

i. In some cases, location signs may not be needed in conjunction with direction signs (see Figure 13). In analyzing the need for a location sign, all information concerning the intersection must be considered. This would include but is not limited to:

(1) Complexity of the intersection layout.

(2) Distance from the last location sign.

(3) Complexity of prior intersections.

(4) Traffic flow patterns through the intersection.

(5) Visibility conditions under which the intersection is used.

j. Destination signs are installed in advance of intersections but are not normally collocated with other signs. They may also be installed on the far side of an intersection when the taxiway does not continue and direction signs are provided prior to the intersection.

k. Information signs are not collocated with mandatory instruction, location, direction, or destination signs.

l. Each designation and its associated arrow included in an array of direction signs or destination signs are delineated from the other designations in the array by a black vertical border. When it is appropriate, a location sign may be used to provide this delineation (see Figure 13).

m. 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 11c.

n. A dash is used only with mandatory instruction signs. On these signs, a dash is used to separate the designations for opposite ends of the same runway (for example: 18-36) or to separate the runway designation from the abbreviation “APCH” on holding position signs for runway approach areas. See Figure 2.

o. When replacing sign panels due to damage or changing message elements, the entire message element should be replaced. 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.

p. A sign may be “canted” or angled towards the pilot’s line of vision when necessary to improve its visibility. This situation is illustrated in Figure 5b where a pilot would have difficulty seeing the sign on

the left due to its proximity to the edge of the parallel taxiway. The face of a canted sign should be oriented so that it is perpendicular to the aircraft fuselage of the airplane with the longest wheelbase. The back of a canted sign is not available for use because it may not be visible to pilots.

q. 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. To extend an existing sign (i.e., physically increase its length by adding modules to it) all of the following requirements must be met:

(1) The existing sign must meet the all the requirements in AC 150/5345-44.

(2) The length of the sign (existing plus extension) cannot exceed the maximum overall length limitations per AC 150/5345-44.

(3) Unless the extension involves the addition of only a location sign, the sign face (existing plus extension) must be per AC 150/5345-44 for legend, borders, arrows, spacing, and color.

(4) The extension must meet the electrical and frangibility requirements in AC 150/5345-44.

(5) The separation between individual sign housings meets the requirements in AC 150/5345-44.

14. SIGN SIZE AND LOCATION.

Signs are to be manufactured and installed in accordance with the current version of AC 150/5345-44.

a. Sign Size. Three sizes (heights) of signs are available (see Table 1).

b. Choosing a Sign Size. The choice of a particular size must take into account several factors, such as effectiveness, aircraft clearance, jet blast, and snow removal operations. 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, while effectiveness requires larger signs when located at further distances. Also, the effects of snow removal operations on the signs should be considered in the choice of sign size and location.

c. Sign Clearances. The sign used must 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's wheels are at the defined pavement edge. All signs in an array, e.g., a runway/taxiway holding position sign array consisting of a runway holding position sign and a taxiway location sign, are the same size and same height.

d. Runway Holding Position Sign Locations. The distances shown in AC 150/5300-13, paragraph 213, Runway Holding Position (hold line), and Tables 2-1 and 2-2, are used in determining the location of runway holding position signs. Holding position signs are located in-line with the holding position markings; a tolerance of up to 10 feet (3m) farther away from runway centerline than the holding position marking is allowed. Also, use Table 1 below to determine the distance of runway signs from the pavement edge.

e. Taxiway Sign Locations. The distances used in determining the sign locations at intersecting taxiways are shown in Table 2-3, Item "Taxiway Centerline to Fixed or Movable Object," of AC 150/5300-13. Use the values for the largest airplane design group serving the airport. For signs installed at holding positions, the signs are in-line with the holding position markings; a tolerance of up to 10 feet

(3 m) farther away from runway centerline than the holding position marking is allowed. Where there is no operational need for taxiway holding position markings (at taxiway/taxiway intersections), the signs may be installed in the area from the taxiway point of tangency to the location where holding position markings would be installed (see AC 150/5300-13, Table 2-3, for additional marking location information). However, locating the signs where the holding position marking would be installed avoids the need to relocate the signs if the operational need for a taxiway holding position develops in the future. Also, use Table 1 below to determine the distance of taxiway signs from the taxiway edge.

Table 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)]	Perpendicular distance from defined 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)

* 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, taxiway, or apron. In accordance with Paragraph 14, this height should be reduced, if necessary, to provide the required 12-inch clearance between the top of the sign and the critical aircraft.

15. SIGN OPERATION.

Holding position signs for runways, ILS critical areas, approach areas, and their associated taxiway location signs are illuminated when the associated runway lights are illuminated. Runway exit signs are illuminated when the associated runway lights are illuminated. Other taxiway guidance signs are illuminated when the associated taxiway lights are illuminated. Lighted signs are installed with a power source that will ensure consistent illumination and eliminate varying illumination when runway/taxiway lights are activated at all brightness steps. For additional information about power sources required to illuminate signs, see AC 150/5345-44, Specification for Runway and Taxiway Signs.

16. PAINTED SIGNS ON PAVEMENT.

Where signs cannot be installed and/or there is a need for additional guidance, directional guidance or location information may be painted on the pavement. See AC 150/5340-1, Standards for Airport Markings, for additional information and requirements for adding painted signs on pavement.

17. INSTALLATION.

The signs are mounted on a concrete slab, concrete pedestals, or angle iron stakes so the top of the sign is level. The concrete edges or stakes may not protrude above grade. Signs are oriented so that the face is perpendicular to the centerline of the taxiway or runway. For special situations where visibility would be improved, single-sided signs may be canted. Power to the signs is provided through breakaway cable connectors installed within the frangible coupling portion of the sign's mounting legs. Auxiliary

equipment, such as isolation transformers or series circuit power adapter units, is installed below ground level in an L-867 light base.

18. – 19. RESERVED.

CHAPTER 2. RUNWAY DISTANCE REMAINING SIGNS

20. GENERAL.

Runway distance remaining signs are used to provide distance remaining information to pilots during takeoff and landing operations. Declared distances do not affect the location of runway distance remaining signs.

21. DESCRIPTION.

a. 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 15 to indicate the runway distance remaining in increments of 1,000 feet.

b. One-Half Distance Remaining Sign. The sign inscription is a white 1/2 numeral on a black background per Figure 16. The one-half distance remaining sign is only used 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. The one-half distance remaining sign must not be used in combination with runway distance remaining signs.

22. CONFIGURATION.

a. The runway distance remaining signs may be configured by any of three different methods, as shown in Figure 17 and as described below. Displaced threshold areas that are used for takeoffs and/or rollout are treated as part of the runway for purposes of locating the signs. The method chosen should be based 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, one-half of the excess distance is added 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/-0 feet is allowed for that sign. The sign should be omitted if it cannot be installed within this tolerance.

(1) **Preferred Method.** The most economical installation consists of double-faced signs located on only one side of the runway. Where this method is used, the signs should be placed 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) **Alternate Method #1.** This method uses single-faced signs installed on both sides of the runway. The advantage of this method is that the runway distance remaining can be more accurately reflected in cases where the runway length is not an exact multiple of 1,000 feet.

(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 sign on one side of the runway is removed because of clearance conflict, the information will still be displayed on the other side of the runway.

b. The one-half runway distance remaining sign is installed on the left side of the most used runway direction for takeoff operations only. The location of the sign must mark the midpoint of the runway total

length. The sign is located from 10 to 15 feet (3 to 4.6 m) from the runway edge and ± 30 feet (9.1 m) from the runway midpoint.

23. SIGN OPERATION.

The sign system is designed so signs are illuminated at all times when the runway edge lights are illuminated.

24. SIZE AND LOCATION.

Signs are to be manufactured in accordance with the provisions of AC 150/5345-44. There are 2 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). The choice of a size should take into account several factors such as effectiveness, aircraft clearance, and jet blast. 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, the effects of snow removal operations on the signs should be considered in the choice of sign size and location. The sign must provide 12 inches 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.

25. INSTALLATION.

The signs are located with respect to the runway as shown in Table 2 and installed in accordance with Paragraph 17.

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

Sign size	Legend Height [inches (cm)]	Legend Panel Height [inches (cm)]	Installed (max.) * [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)

* 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 14, this height should be reduced, if necessary, to provide the required 12-inch clearance between the top of the sign and the critical aircraft.

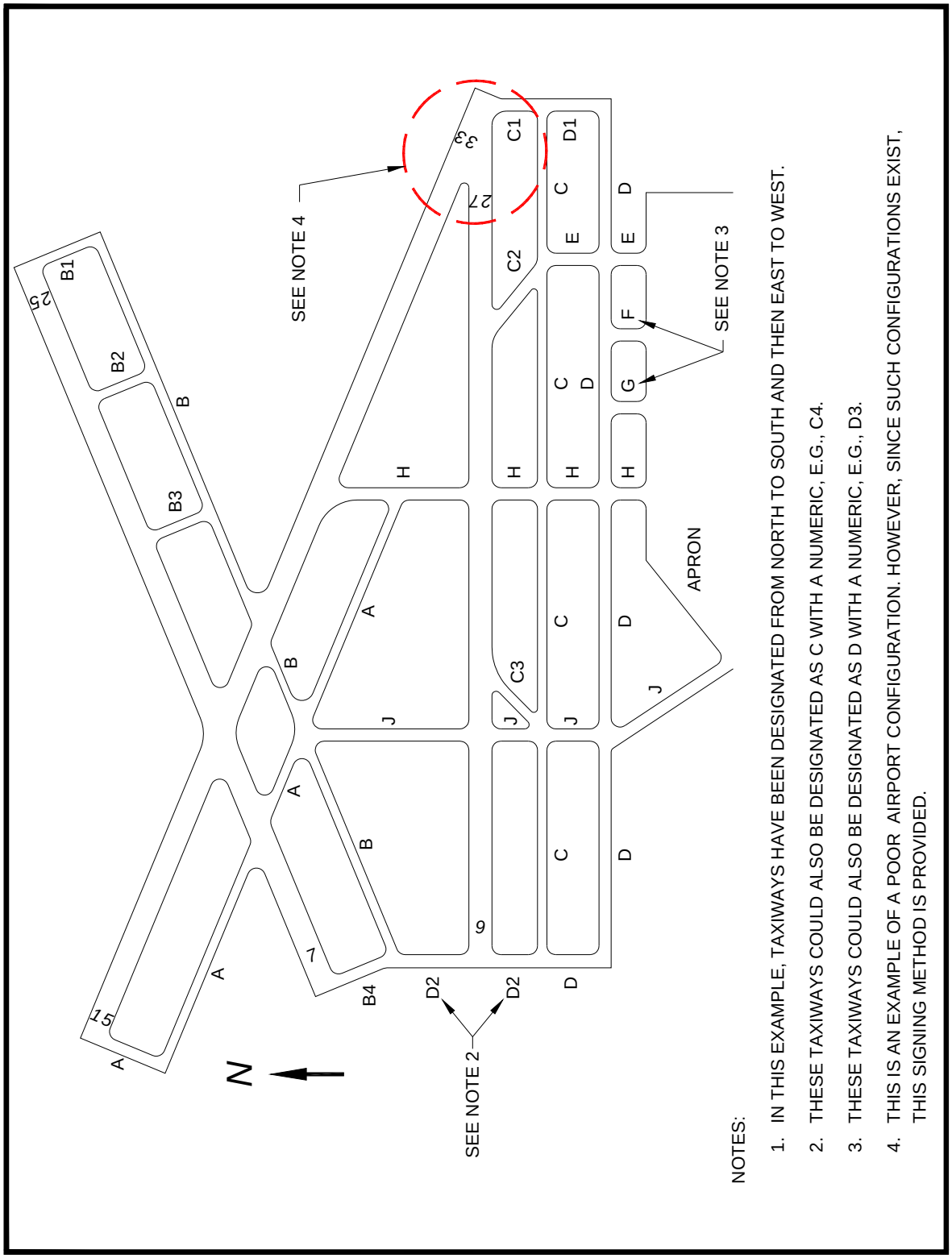


Figure 1. Example of Taxiway Designations.

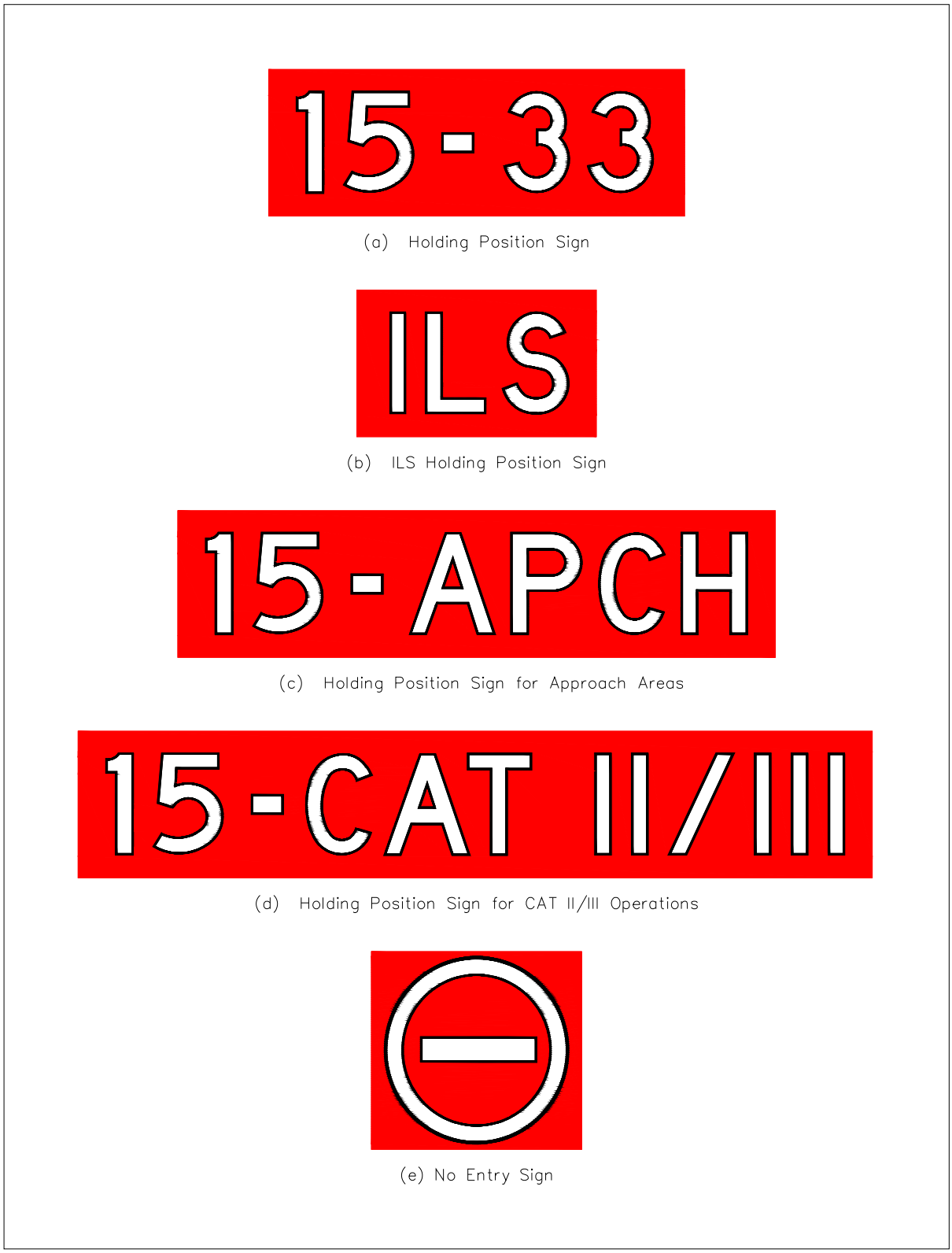


Figure 2. Examples of Mandatory Instruction Signs.

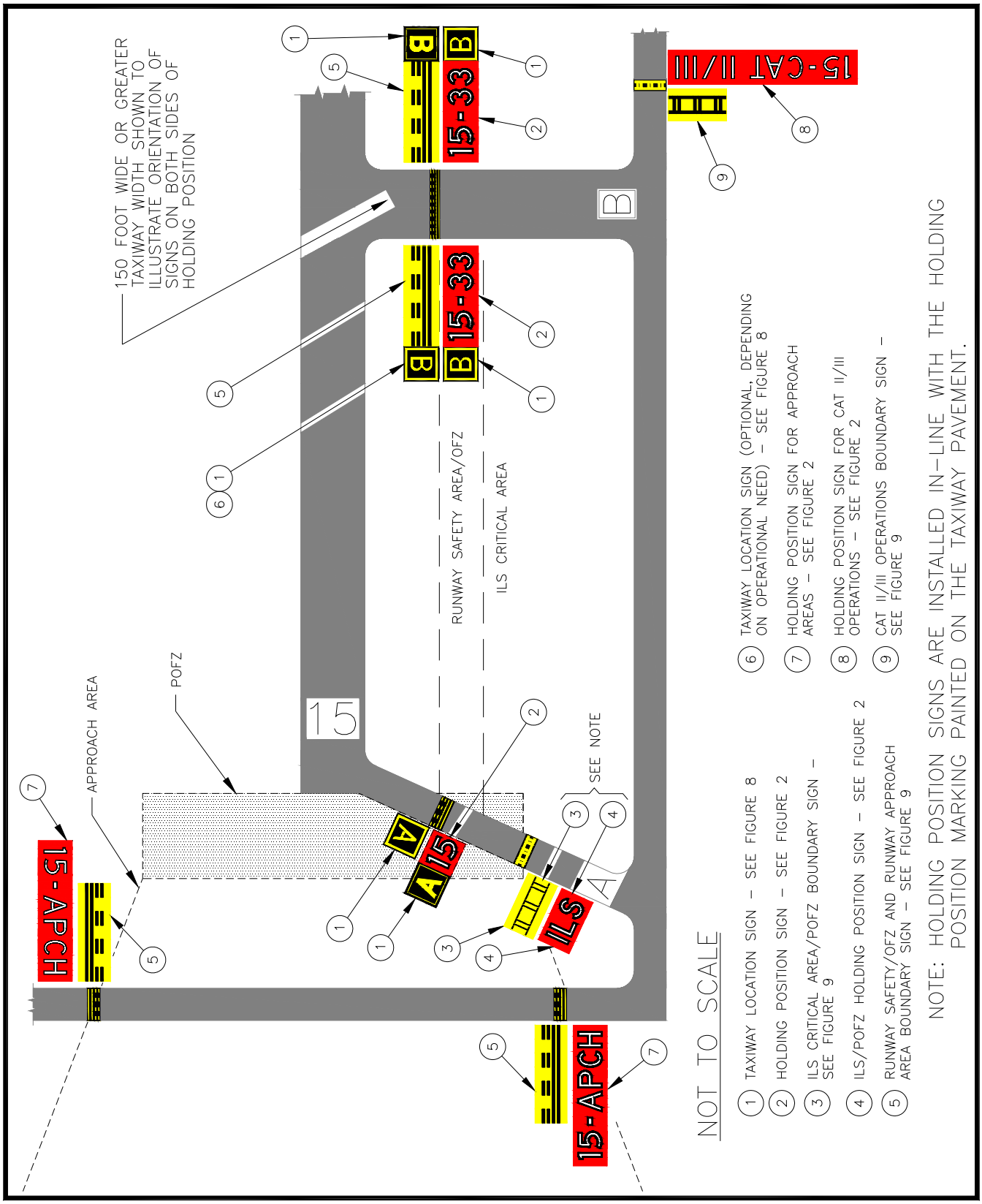


Figure 3. Application Examples for Holding Position Signs.

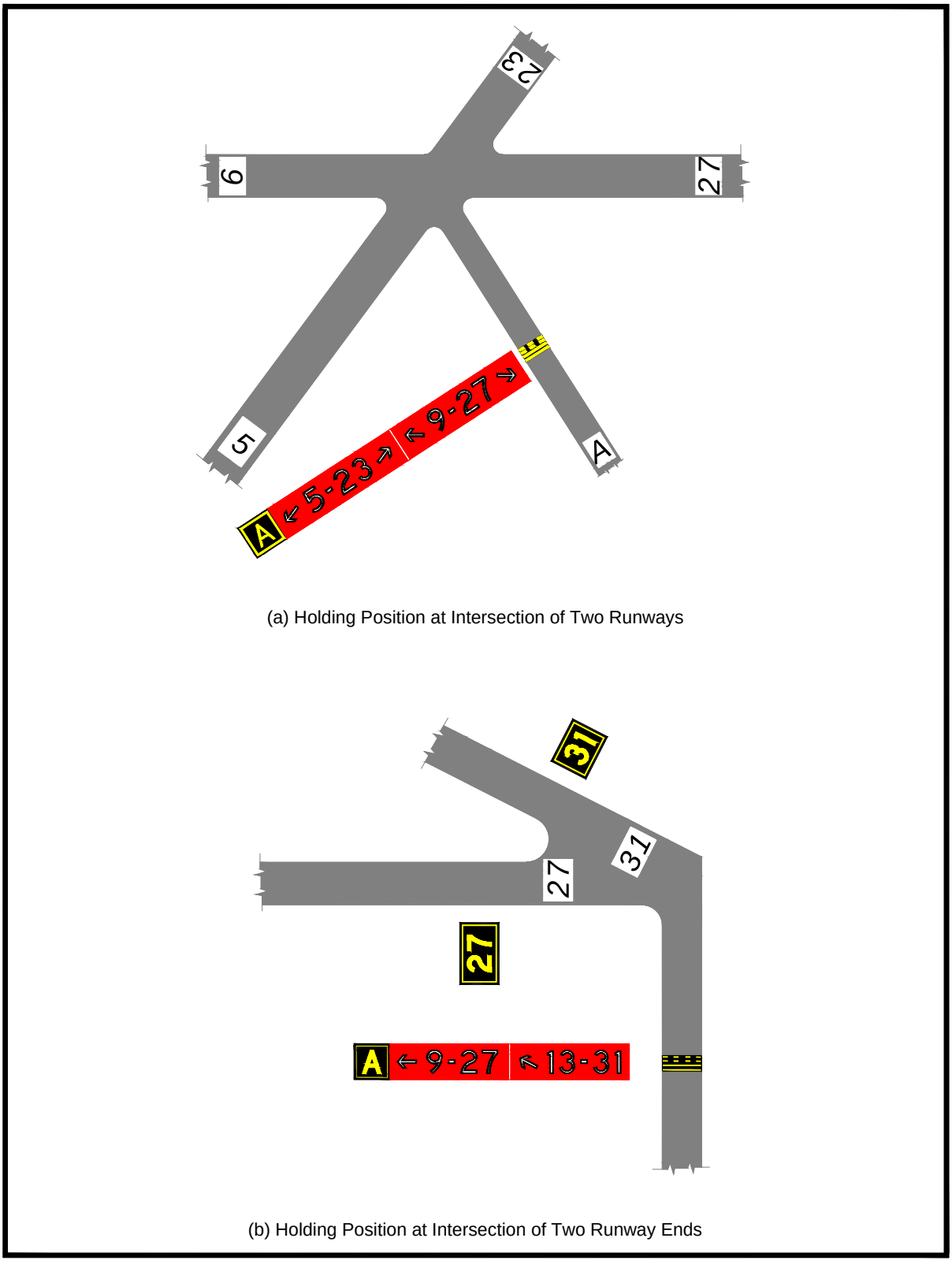
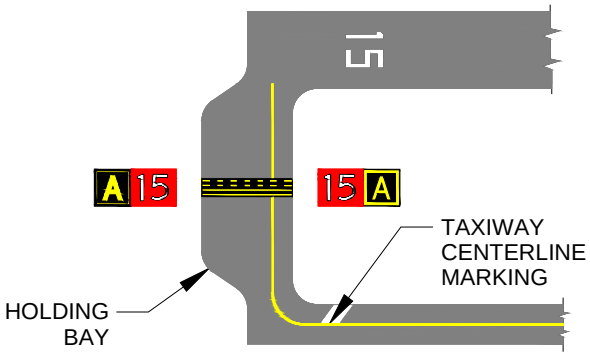
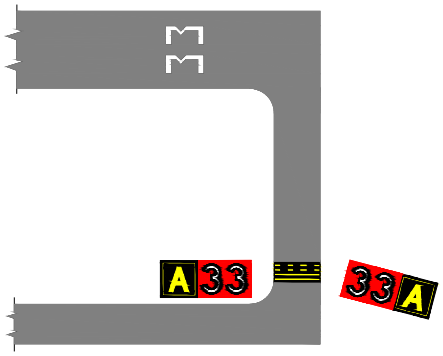


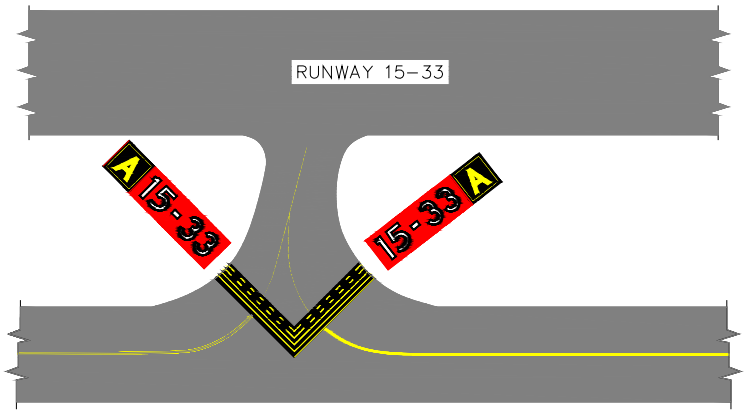
Figure 4. Runway Location Signs and Arrows on Holding Position Signs.



(a) Example of Holding Position Markings Extending Across Holding Bay



(b) Example of a Holding Position Sign on the Left Side of the Taxiway that Would be Difficult for the Pilot to See Due to Holding Position. Note the Addition of a Canted Sign on the Right Side of Taxiway to Improve Visibility



(c) Example Where Painted Holding Position Markings do not Extend Straight Across the Taxiway

Figure 5. Examples of Siting Holding Position Signs for Non-typical Conditions.

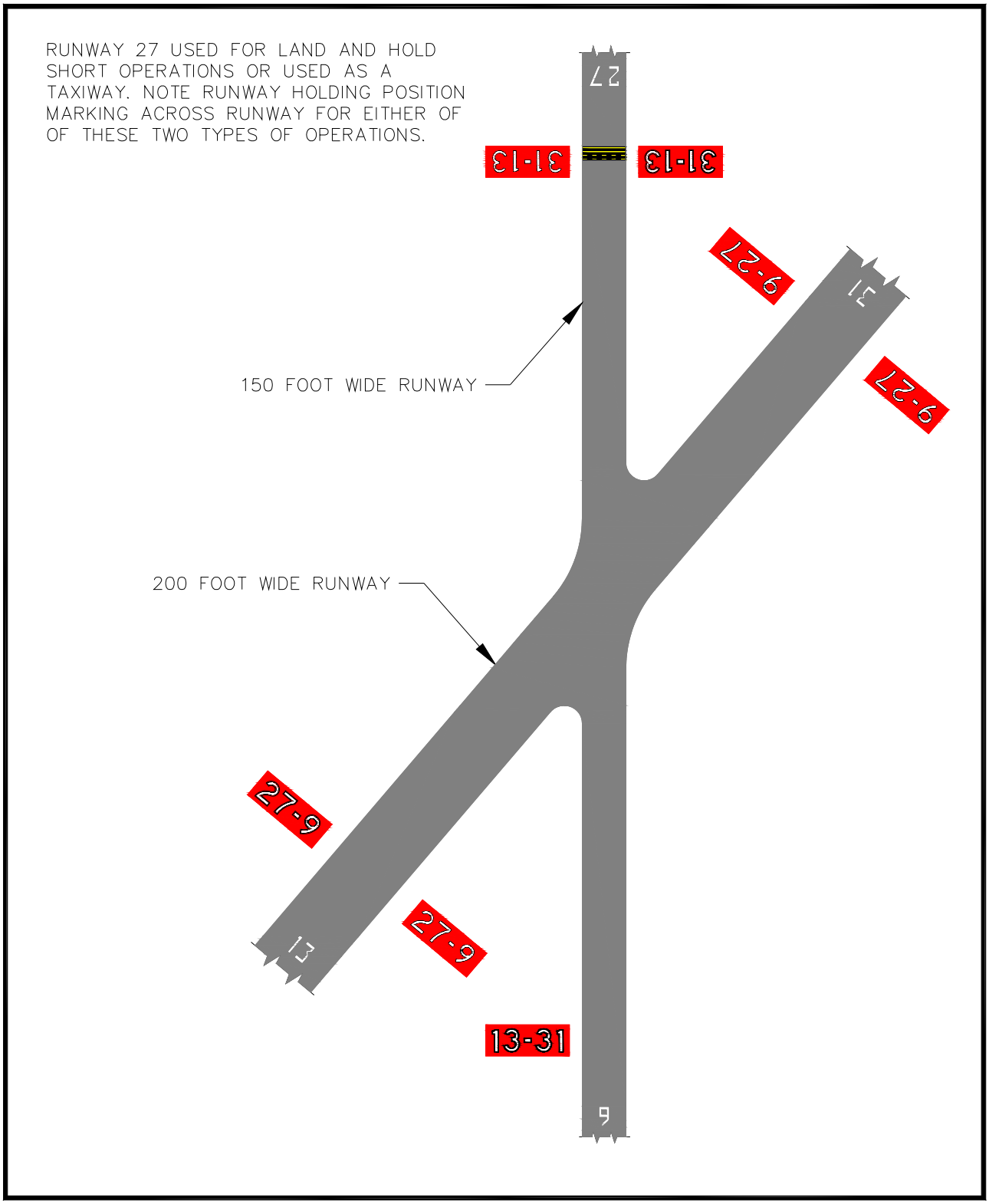


Figure 6. Examples of Holding Position Signs at Runway/Runway Intersections.

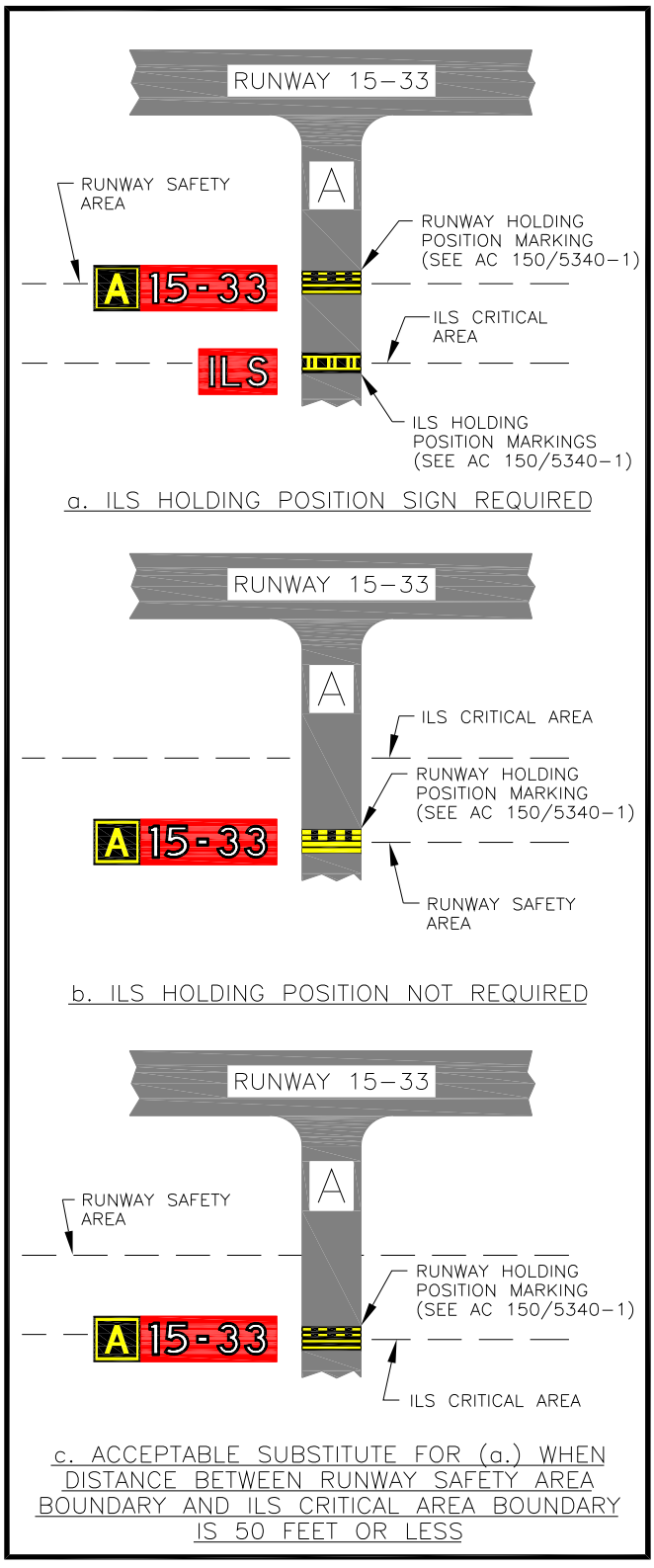
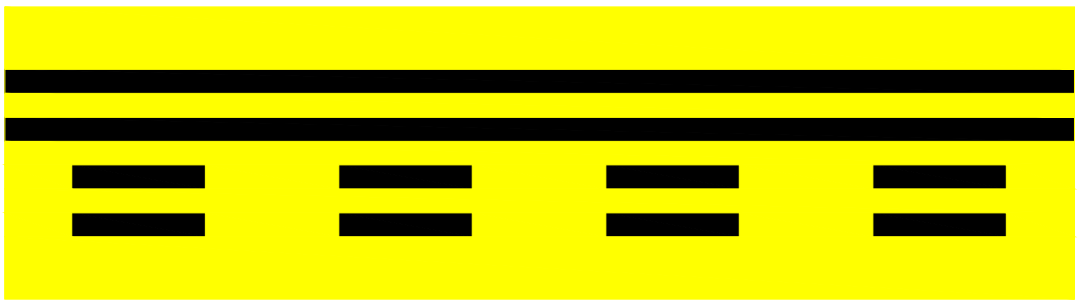


Figure 7. Sign Applications for ILS Critical Areas.

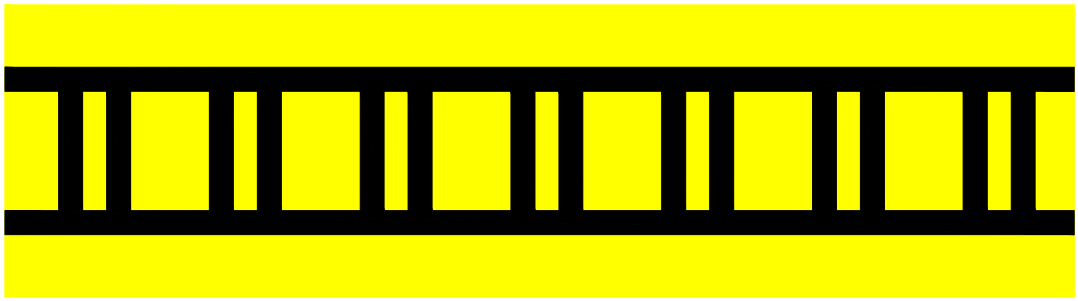
(a) Taxiway Location Sign

(b) Runway Location Sign

Figure 8. Examples of Location Signs.



(a) Boundary sign for RSA/OFZ and Runway Approach Area



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

Figure 9. Examples of Boundary Signs.

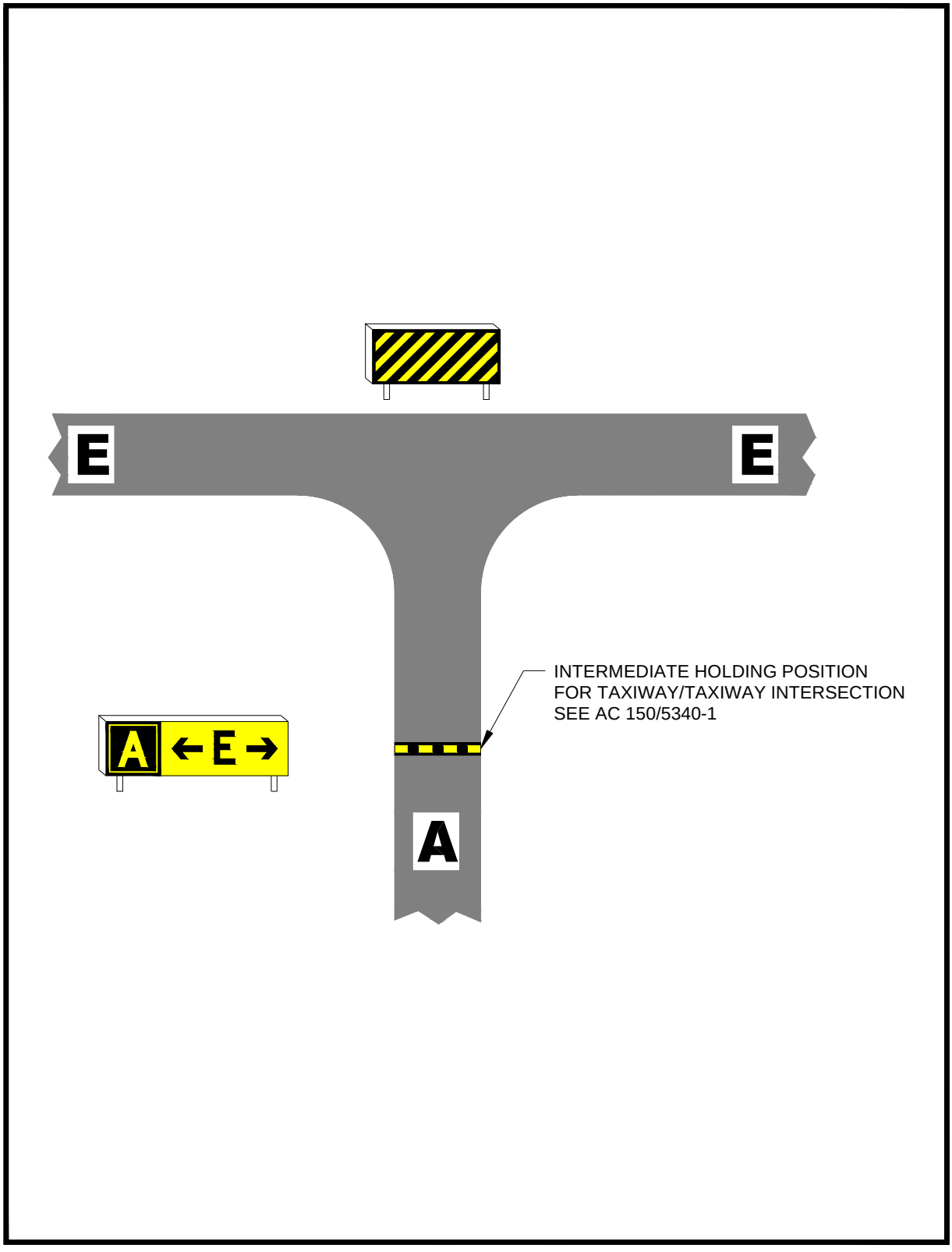


Figure 10. Taxiway Ending Marker.

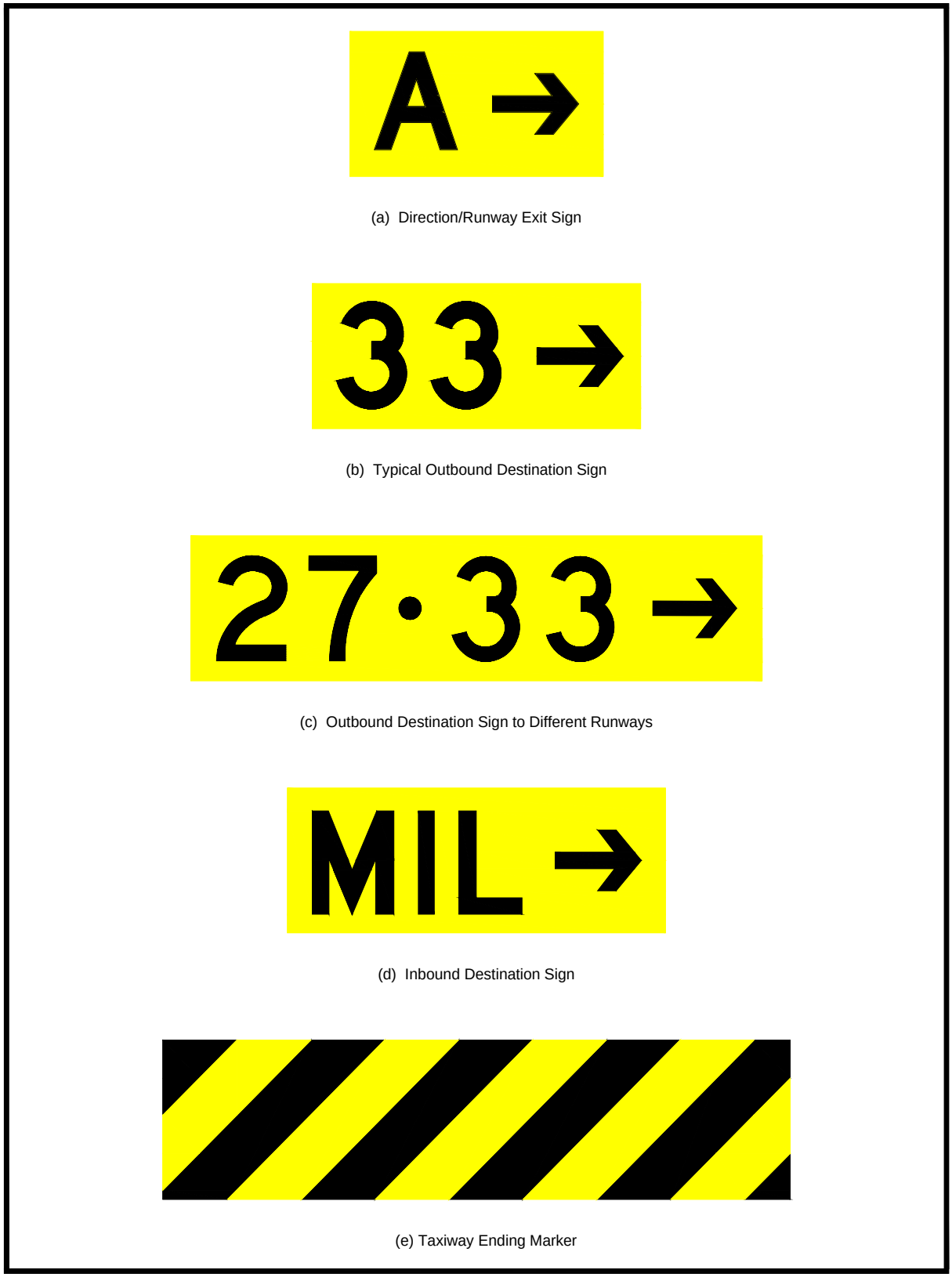


Figure 11. Examples of Direction Signs, Destination Signs, and Taxiway Ending Marker.

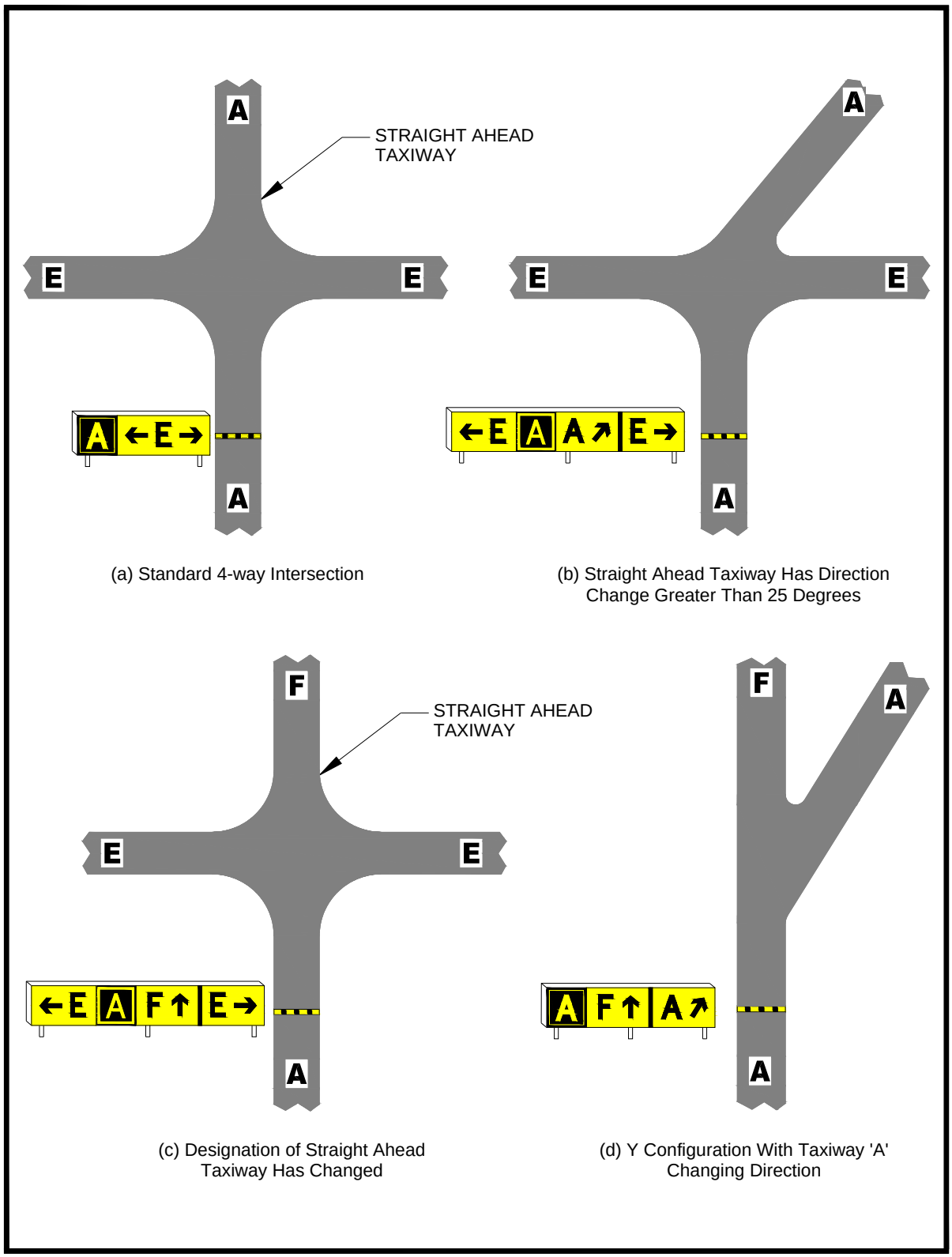


Figure 12. Examples of Signs at a Taxiway/Taxiway Intersection.

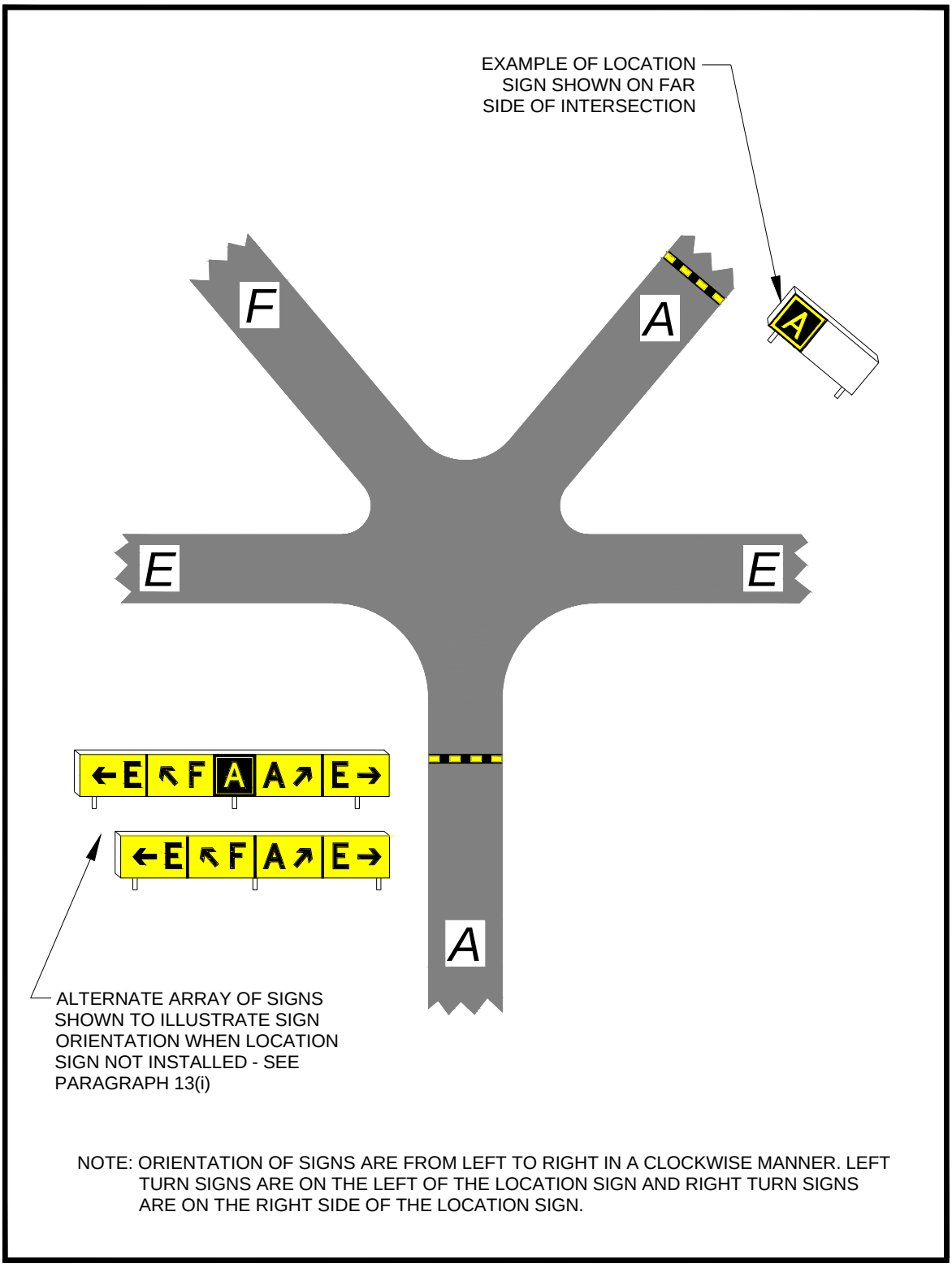


Figure 13. Examples of Signs at a Complex Taxiway/Taxiway Intersection.

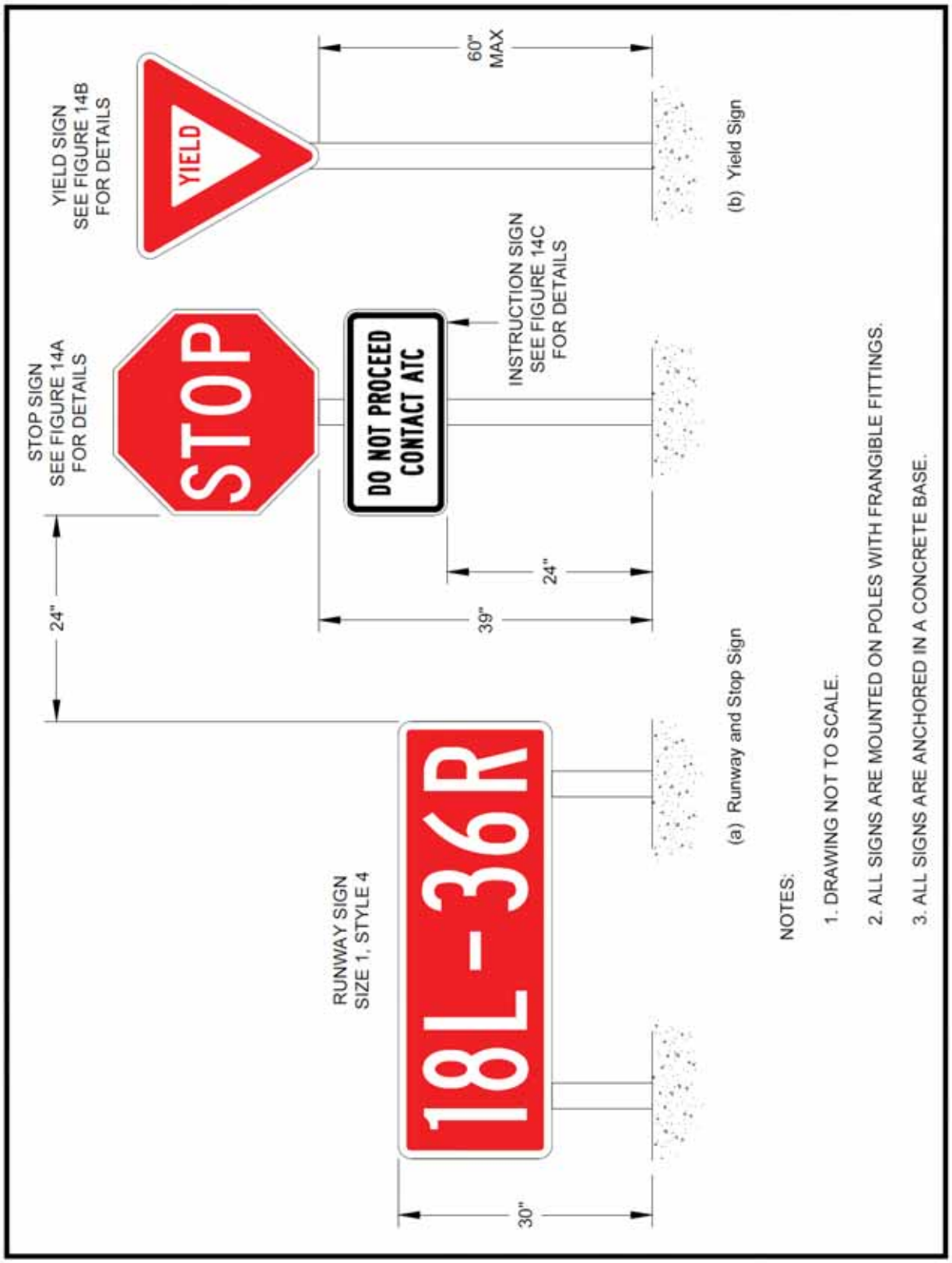


Figure 14. STOP and YIELD Sign Assemblies.

R1-1 STOP SIGN
(24" ACROSS FLATS)

COLORS:
LEGEND - WHITE (RETROREFLECTIVE)
BACKGROUND - RED (RETROREFLECTIVE)

REF: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
(MUTCD) STANDARD HIGHWAY SIGNS 2004 (ENGLISH) EDITION

Figure 14a. STOP Sign.

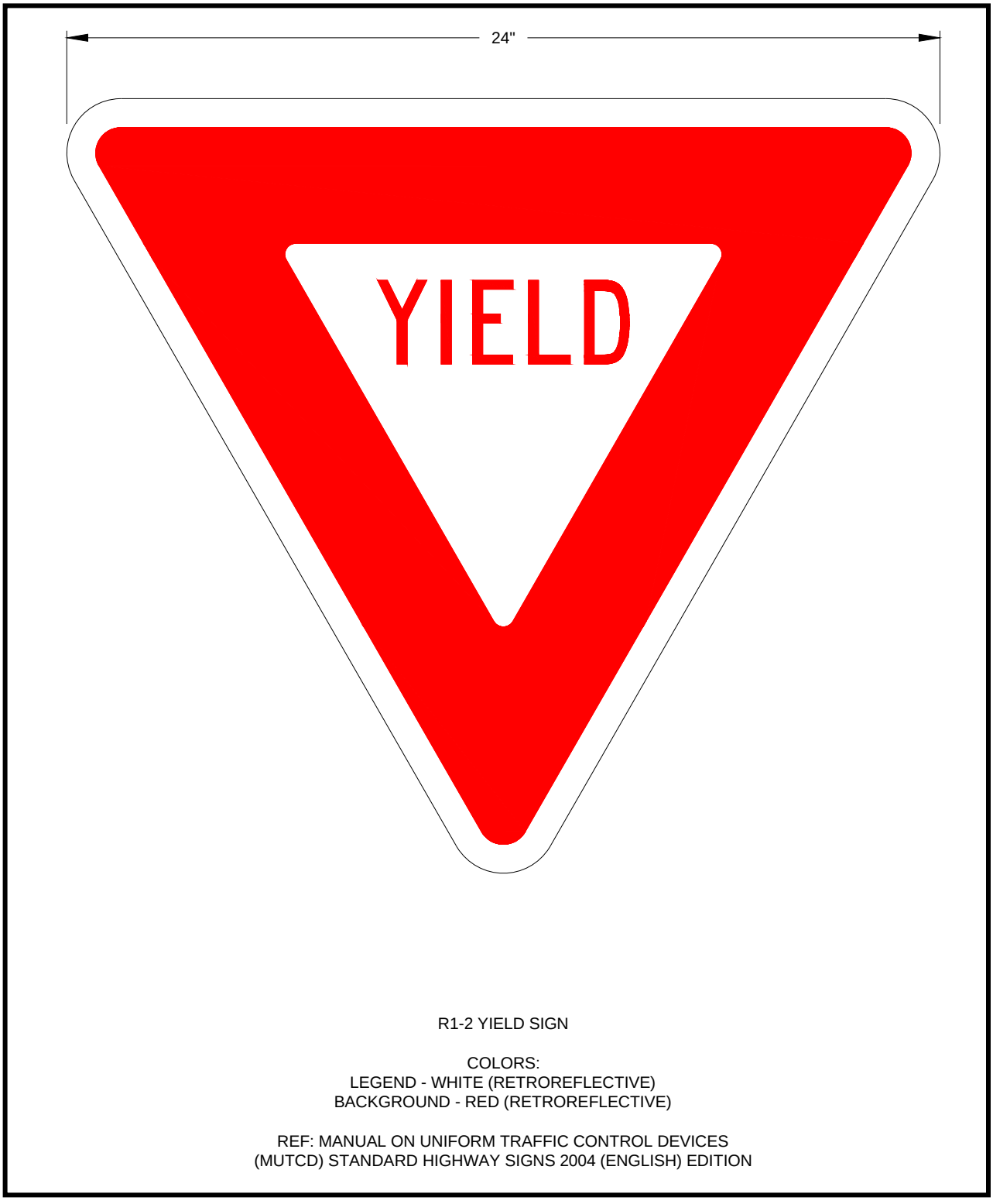


Figure 14b. YIELD Sign.

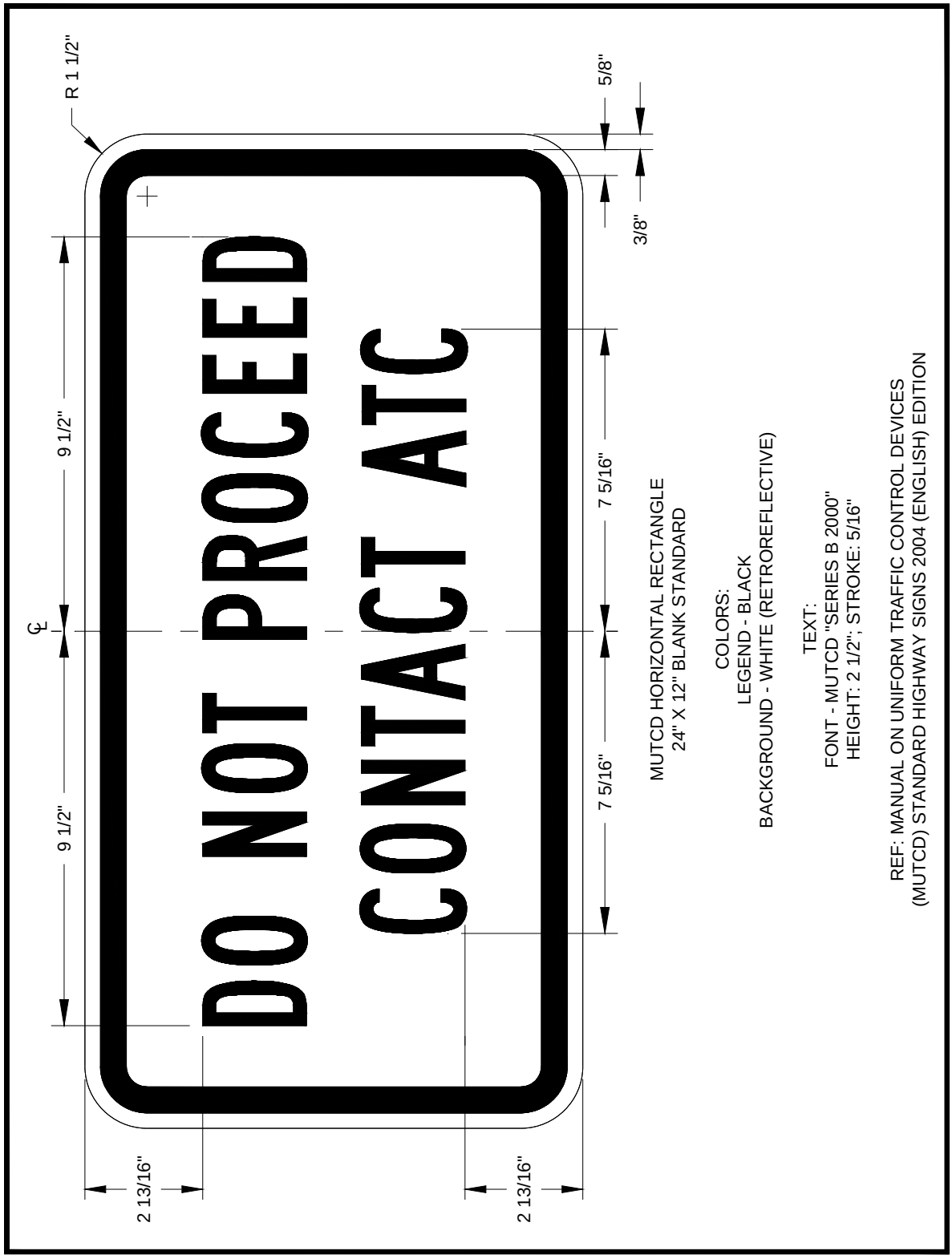


Figure 14c. DO NOT PROCEED Sign Detail.

Figure 15. Runway Distance Remaining Sign.

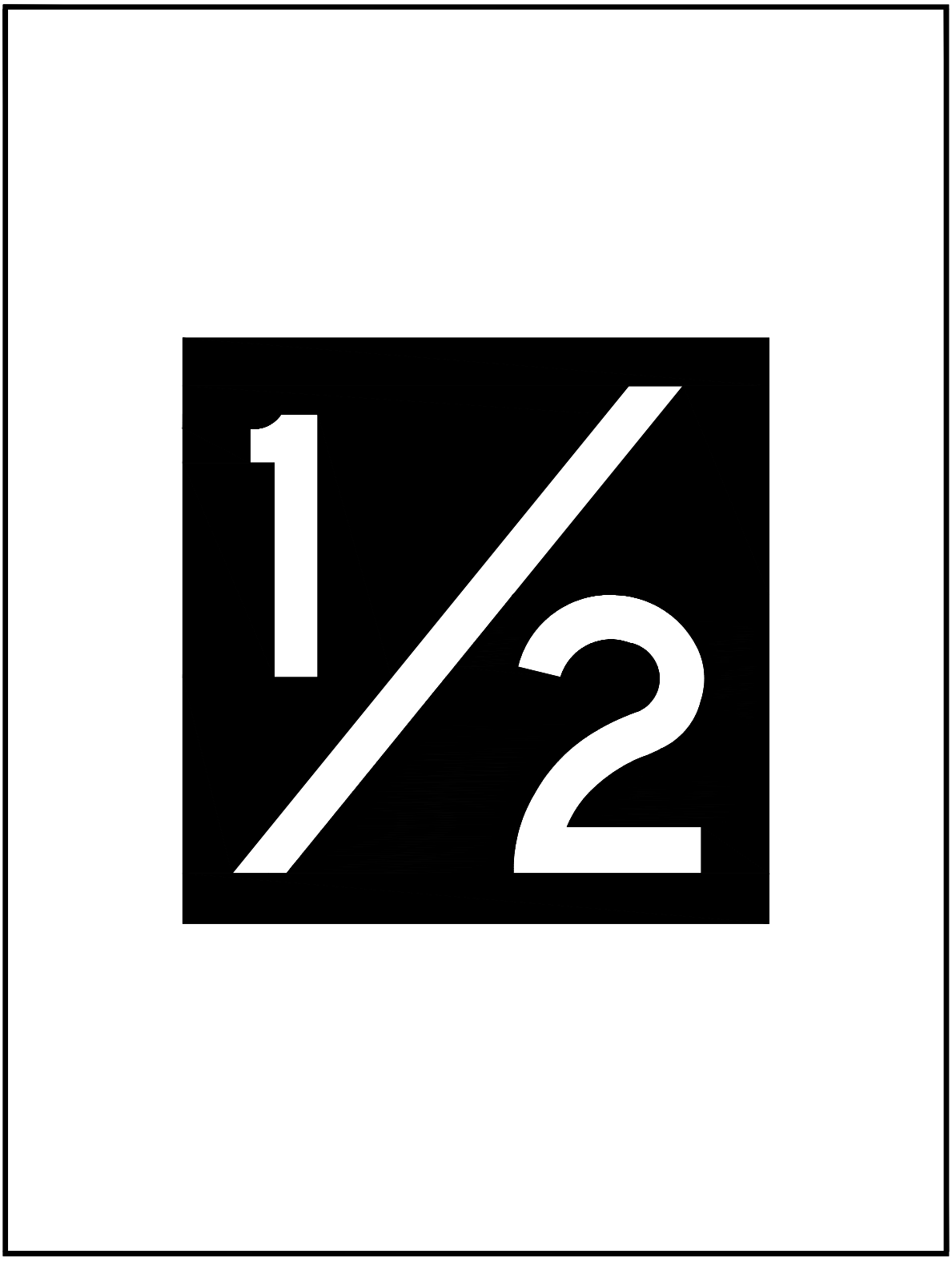
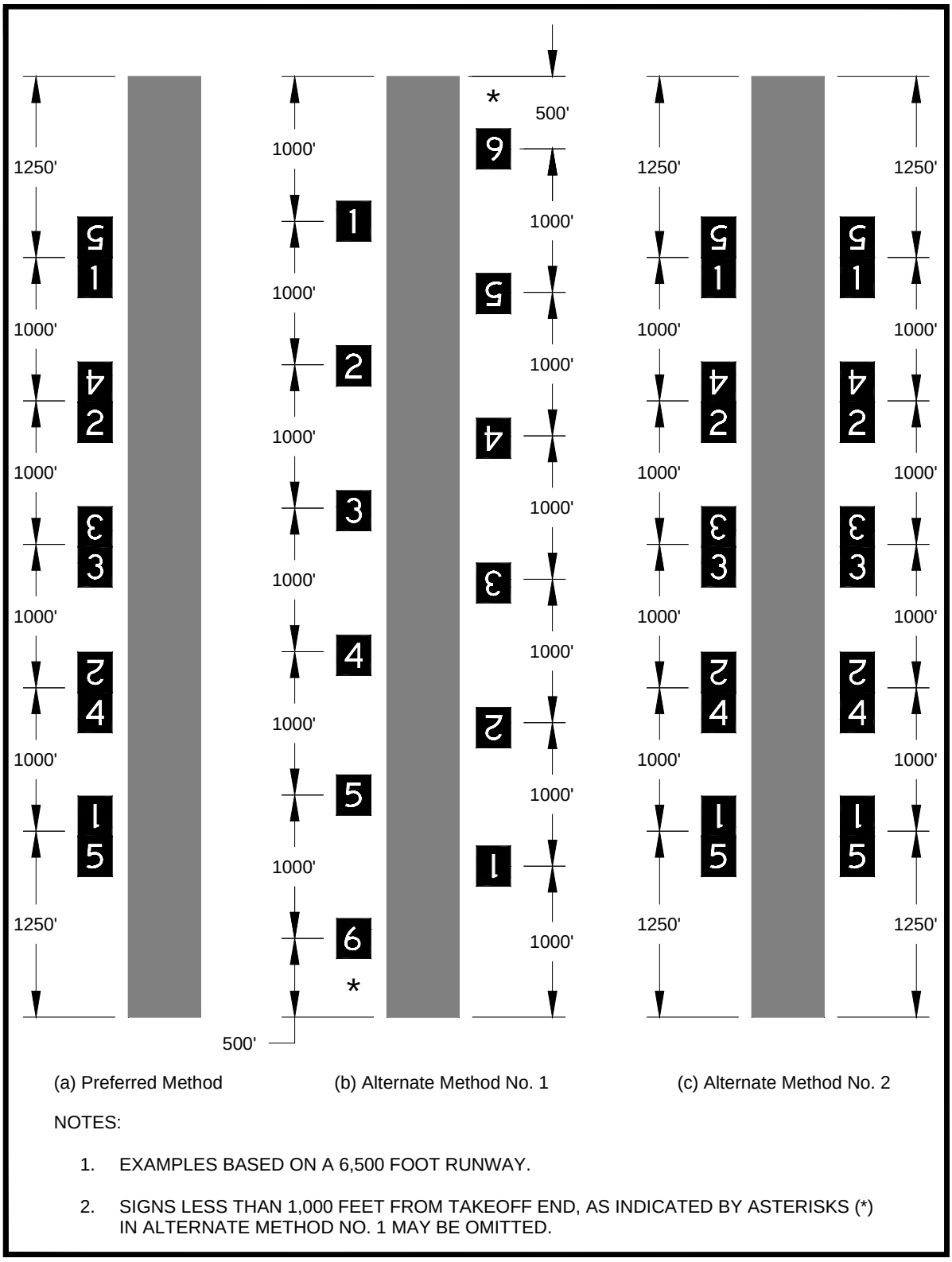


Figure 16. One-Half Distance Remaining Sign.



(a) Preferred Method (b) Alternate Method No. 1 (c) Alternate Method No. 2

NOTES:

1. EXAMPLES BASED ON A 6,500 FOOT RUNWAY.
2. SIGNS LESS THAN 1,000 FEET FROM TAKEOFF END, AS INDICATED BY ASTERISKS (*) IN ALTERNATE METHOD NO. 1 MAY BE OMITTED.

Figure 17. Runway Distance Remaining Sign Configurations.

APPENDIX A. AIRPORT SIGNING EXAMPLES

A-1. GENERAL.

This appendix depicts examples of signs that might be installed on various airport configurations. To understand why some signs are included in this system while others are omitted, it is important to understand the functional layout of each of these airports. For this reason, this section provides a brief description of the airport with each example as well as a brief rationale on why certain signs were installed or omitted. The intent of these examples is to illustrate that the types and locations of the signs included in an airfield sign system reflect a determination made by the airport operator in consultation with the users and the FAA.

A-2. EXAMPLE 1—COMPLEX AIRPORT.

Figure 18 depicts a taxiway guidance sign system for a portion of a complex airport. The airport serves both domestic and international air carriers, as well as general aviation, and is controlled. The apron area shown at the south of this figure is for air carriers, with the international terminal being located on the eastern end of the apron. The two high-speed exits (Taxiways D and E) have centerline lights. All the other taxiways have edge lights. General aviation aircraft also commonly use this intersection for intersection departures. Taxiway holding position markings are shown on the taxiways where a pilot would normally be requested by air traffic control to hold because of traffic on an intersecting taxiway. The airport is in a southern state where it rarely snows. With this background, the signs included in this system are as follows:

a. Holding position signs along with taxiway location signs are installed on all taxiways that intersect the runway.

b. Taxiway B passes through the ILS critical area. Because the critical area is not within the area protected by the standard runway holding position marking, an ILS holding position sign is also necessary on this taxiway.

c. On Runway 9, exit signs are shown for Taxiways C and E, because aircraft using Runway 9 would normally use these taxiways as exits. On Runway 27, exit signs are shown for Taxiways B, C and D because aircraft using Runway 27 would normally use these taxiways as exits. The exit signs for Taxiways D and E are installed in accordance with the guidance provided in Paragraphs 8b(2) and 8b(3).

d. Taxiways D and E are both high-speed exits that are equipped with centerline lights. Since the lights on these taxiways are color coded (green/yellow), RSA/OFZ boundary signs are not needed even though air traffic control commonly asks pilots to report when they are clear of the runway. Also, because an aircraft would not normally use these taxiways as an entrance to the runway, it is not necessary to install direction signs on Taxiway B.

e. Pilots that use Taxiway C as an exit are commonly asked by air traffic control to report when they are clear of the runway. To assist these pilots in judging when their aircraft is clear of the runway, a RSA/OFZ boundary sign has been installed on the back of the holding position sign on Taxiway C.

f. Pilots exiting the runway on Taxiway B during instrument meteorological conditions are asked to report when they are clear of the ILS critical area. Since this taxiway is not equipped with color coded (green/yellow) centerline lights, an ILS critical area boundary sign is included on the back of the ILS holding position sign to identify the perimeter of the critical area.

g. As illustrated at the intersection of Taxiways B, E, and F, taxiway direction signs are placed only at the intersections for the taxiways on which a pilot would normally turn.

h. On Taxiway B, direction signs are provided only for Taxiway F because an aircraft would not be expected to turn onto Taxiway E.

i. On Taxiway E, direction signs are provided for both Taxiways B and F because an aircraft could be expected to turn onto any of these taxiways.

j. On Taxiway F, a direction sign is provided only for Taxiway B because an aircraft would not normally proceed from Taxiway F onto Taxiway E.

k. 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. Direction signs have been placed on the edge of the apron for the former case while location signs have been installed on these taxiways for the latter case.

l. In the past, the airport has had problems with international airline pilots becoming lost as they taxied to the international terminal. For this reason, the air traffic control tower developed a preferred routing for these pilots. The airport operator has decided to install destination signs to indicate this preferred routing in addition to the taxiway direction signs. At the intersection of Taxiways B and C and the intersection of Taxiways B, E and F, destination signs that indicate the direction of the international terminal are located on the far side of the intersection on the right side of the taxiway. This is permissible in accordance with the signing conventions provided in Paragraph 13c(5). The destination sign at the intersection of Taxiways B and D is located on the far side of the intersection even though it indicates a turn. This is permissible in accordance with the signing conventions provided in Paragraph 13j because Taxiway D ends at this intersection. Taxiway direction signs also are provided on Taxiway D prior to the intersection.

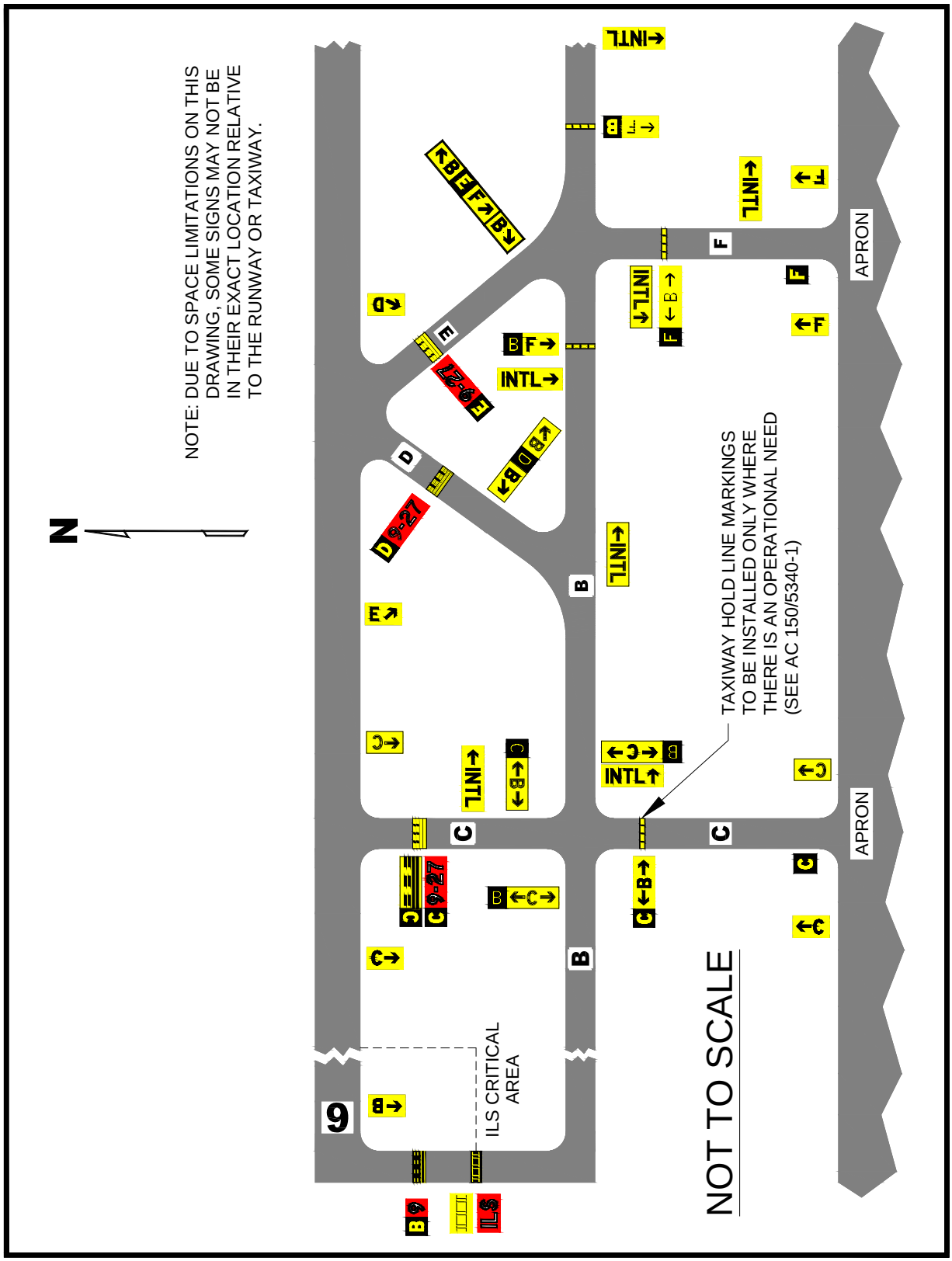


Figure 18. Signing Example for a Complex Airport.

A-3. EXAMPLE 2—AIRPORT WITH TWO INTERSECTING RUNWAYS.

Figure 19 shows an airport with two intersecting runways. The main runway, 9-27, is 8,500 feet in length, while the crosswind runway, 18-36, is 5,000 feet in length. The air carriers use only Runway 9-27, while the commuters and general aviation use both runways. The air carrier and commuter terminal is on the south side of the airport, and all general aviation facilities are located on the north side. The airport has an air traffic control tower. When general aviation aircraft are landing on Runway 9, air traffic control will often ask them to hold short of Runway 18-36 so it can be used for a general aviation departure.

With this background, the signs included in this system are as follows:

a. Holding position signs along with taxiway location signs are installed on all taxiways that intersect the runways. Though it is possible to cross the runway at the thresholds for Runway 27 and Runway 36, a sign with only one runway designation is installed at each of the runway holding positions located on these taxiways. Since air traffic control does not use these taxiways to cross the runways, there is not an operational need to have two runway destinations on these signs (see Paragraph 5a).

b. Holding position signs have been installed at the intersection of the two runways. Because Runway 9 is used for "land and hold short" operations, two signs are installed at its intersection with Runway 18-36.

c. Exit signs are installed for the taxiways where aircraft normally exit. For Runway 9, exit signs have been installed at Taxiways D, F, G, and A. Because Taxiway F crosses this runway, it is necessary to install an exit sign on both the left and right side of the runway. For Runway 27, exit signs are installed on Taxiways A, B, C, and D. Exit signs are installed on Runways 18 and 36 at Taxiway A as well as at the runway ends.

d. Because of the straightforward layout of this airport, the airport operator, in conjunction with the users and the FAA, determined that taxiway direction signs were only needed at two intersections. This airport's configuration requires the majority of the aircraft to taxi through or turn at the intersection of Taxiways A and F. For this reason, direction signs and the associated location sign were installed on each leg of this intersection. A direction sign was also installed on Taxiway E at its intersection with Taxiway A. Because the left side of Taxiway E is contiguous with the air carrier apron at this point, the sign is installed on the right side of Taxiway E.

e. A location sign is installed on Taxiway A where it leaves the west side of the air carrier apron. A similar sign is not included on the east side because the location sign installed with the runway holding position sign is sufficient to provide location information to the pilot. A location sign is installed on Taxiway E where it leaves the air carrier apron. Location signs have also been installed on Taxiways F and G where they leave the general aviation apron.

There was no need to install RSA/OFZ boundary signs on this airport.

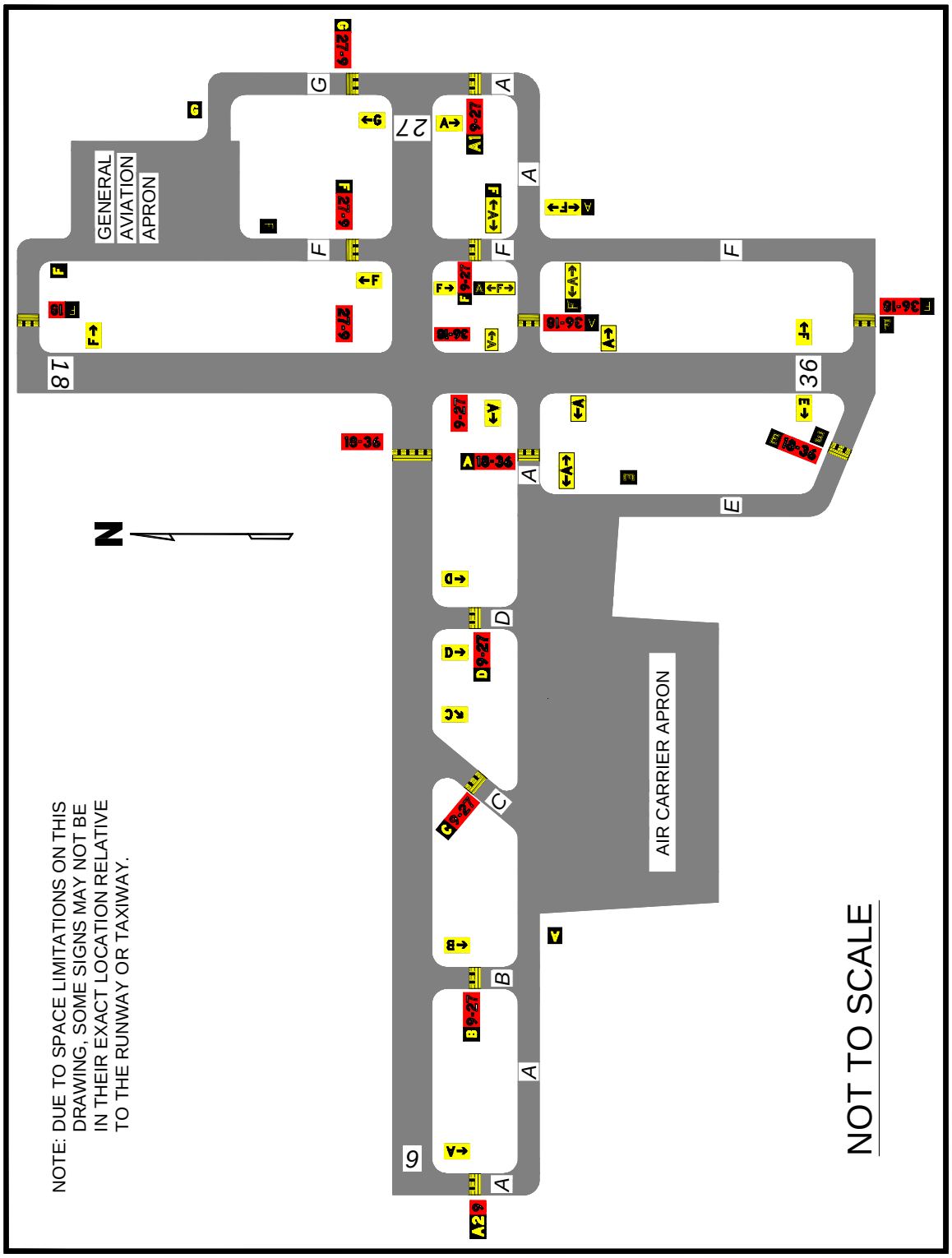


Figure 19. Signing Example for an Airport With Two Intersecting Runways.

A-4. EXAMPLE 3—AIRPORT WITH A SINGLE RUNWAY.

Figure 20 involves an airport with a single runway and parallel taxiway. The runway is 4,500 feet in length. The airport is uncontrolled. The apron serves both general aviation and the scheduled commuter.

With this background, the signs included in this system are as follows:

a. Holding position signs along with taxiway location signs are installed on all taxiways that intersect the runway.

b. Exit signs have been installed for both runway directions at Taxiways B and D as well as at the end of each runway for Taxiway A.

c. Direction signs for Taxiway A have been installed at the intersections of Taxiways B, C, and D. Direction signs for Taxiway C have also been installed on Taxiway A. (**NOTE:** *Since this airport is uncontrolled, an analysis might have concluded that it was advantageous to install destination signs in lieu of direction signs.*) Location signs have not been installed as part of the direction sign arrays, because in the case of Taxiways B and D, location signs were installed on the back of the runway holding position array. For the intersection of Taxiways A and C, it was determined by the airport operator in conjunction with the users and the FAA, that location signs were not needed because this location should be obvious to the pilot. This determination was based on the relatively simple configuration of this airport and that there is only one parallel taxiway and one apron with a single taxiway providing access to it.

d. Location signs have been placed along Taxiway A for aircraft taxiing from the runway ends toward the terminal.

e. An outbound destination sign for the runway ends has also been placed at the intersection of Taxiways A and C. Because this is a "T" intersection and direction signs are provided prior to the intersection, it is permissible to install this sign on the far side of the intersection (see Paragraph 13j). On the face of this sign, the runway numbers are separated by a vertical border rather than a dash because this is a destination sign. In this case, each runway designation and its associated arrow is considered to be a separate panel and, therefore, separated by a black vertical border (see Paragraph 13l).

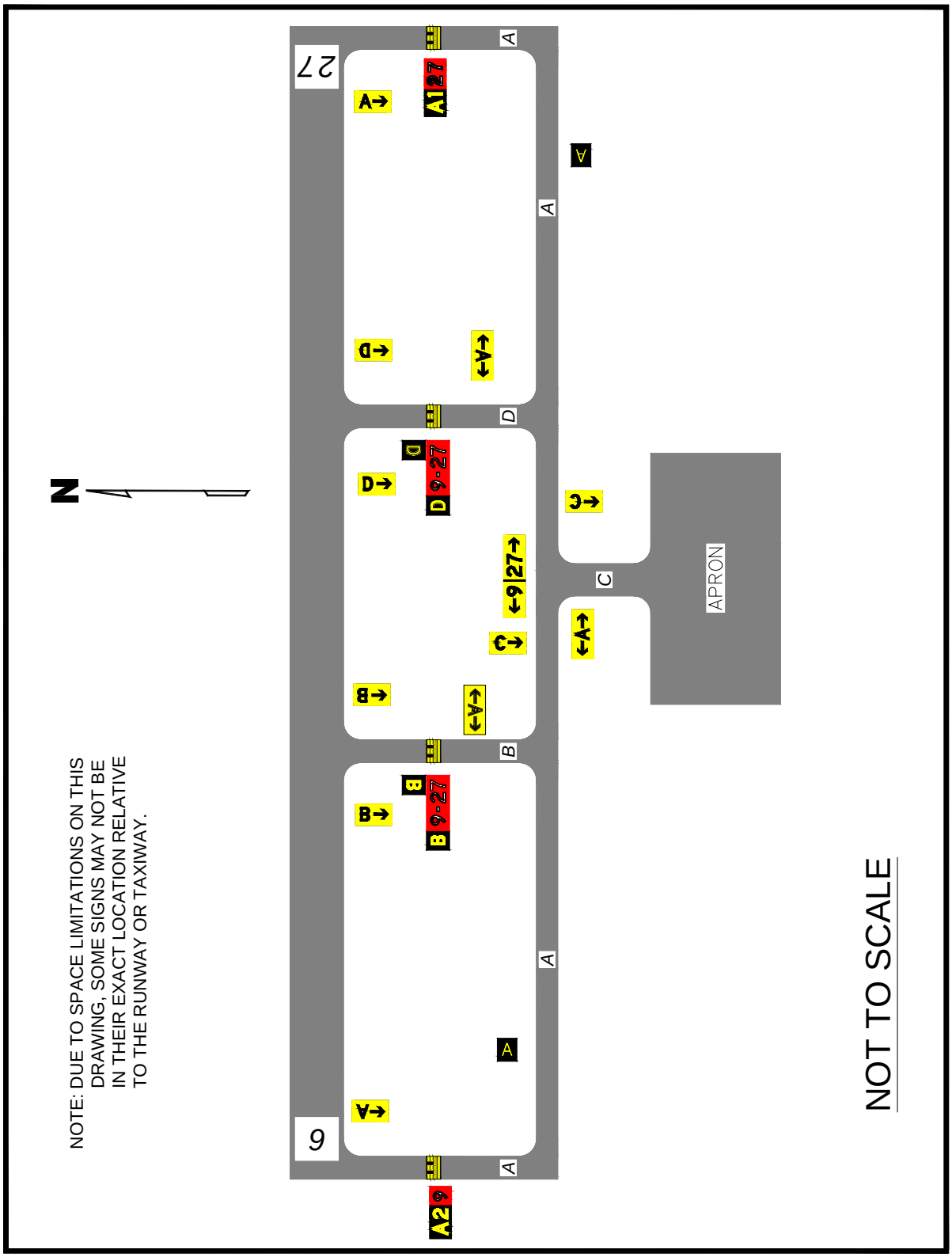


Figure 20. Signing Examples for an Airport with a Single Runway.

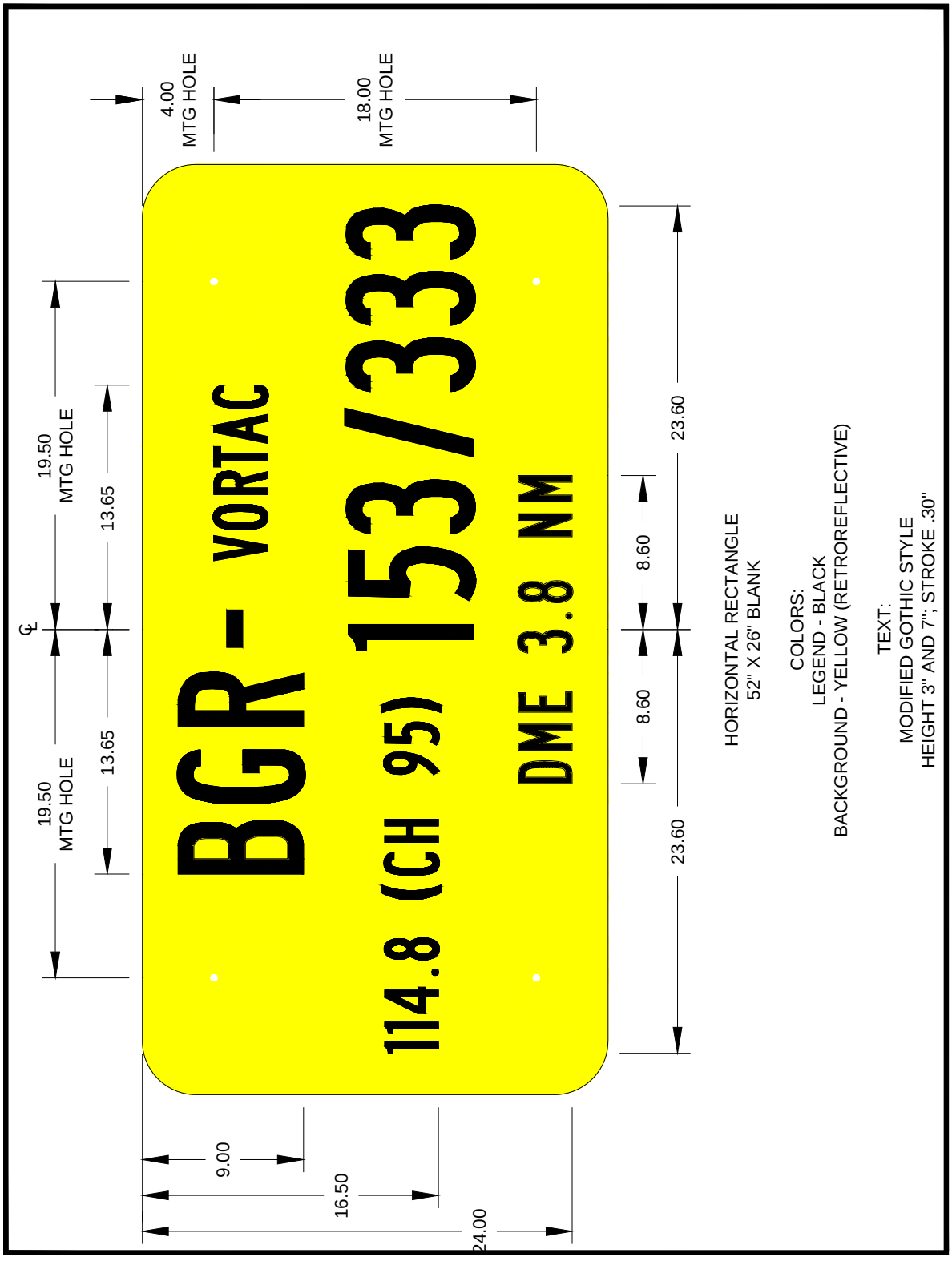


Figure 21. VOR Receiver Checkpoint Sign