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**Federal Aviation  
Administration**

# Advisory Circular

10A TECHNICAL UNIT

MAY 9 1986

Subject: **DOT LIBRARY M493.2** Date: 8/21/84 AC No: 150/5340-18B  
Initiated by: AAS-200 Change:  
**STANDARDS FOR AIRPORT SIGN SYSTEMS**

1. PURPOSE. This advisory circular contains the Federal Aviation Administration standards for the location and installation of signs for use on airports.
2. PRINCIPAL CHANGES. Principal changes include the addition of runway distance remaining signs and location criteria for signs indicating an intersecting runway for "hold short" landing operations.
3. CANCELLATION. This advisory circular (AC) cancels AC 150/5340-18A, Taxiway Guidance Sign System, dated June 2, 1980.
4. APPLICATION. The standards contained herein are recommended by the Federal Aviation Administration in all applications involving airport development of this nature. The standards are an acceptable means for compliance with Federal Aviation Regulation (FAR) Part 152 for projects funded under the Airport Improvement Program or with FAR Part 139 where such facilities may be required. Where alternate means are proposed, it must be demonstrated that equivalent levels of performance, safety, and for Federally funded projects, equivalent cost effectiveness, are achieved.
5. METRIC UNITS. To promote an orderly transition to the metric system, both English and metric units are included in the standards. The metric conversions may not be exact equivalents and, until there is an official changeover to the metric system, the English units will govern.

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Director, Office of Airport Standards

FEDERAL AVIATION ADMINISTRATION

STANDARDS FOR

AIRPORT SIGN SYSTEMS

1. SIGN APPLICATIONS. Signs are used on airports to provide information to pilots when operating aircraft on runways and taxiways. There are three basic types of signs which are color coded for specific uses as described below.

a. Mandatory Instruction Signs. These signs convey a message which, if not carried out, could create an unsafe condition. The signs have white inscriptions on a red background.

b. Information Signs. These signs are used to provide location or destination information and have black inscriptions on a yellow background.

c. Runway Distance Remaining Signs. These signs are used to provide runway distance remaining information to pilots when landing or taking off and have white numerals on a black background.

2. MANDATORY INSTRUCTION SIGNS.

a. Taxiway/Runway Intersections and Instrument Landing System Critical Areas. Signs are used to augment holding position markings denoting entrance to a runway or instrument landing system (ILS or MLS) critical area in accordance with AC 150/5340-1, Marking of Paved Areas on Airports, current edition. The inscription on a holding position sign at a taxiway/runway intersection is the runway number, such as "33." For taxiway/runway intersections used primarily for taxiing across the runway and not as a takeoff point, the sign inscription contains both runway end numbers, such as "33-15." The runway numbers are separated by a dash and their arrangement indicates the direction to the corresponding runway threshold. For example, "33-15" indicates that runway "33" is to the left and runway "15" is to the right. The inscription on a sign at an instrument landing system (ILS or MLS) holding position line is "ILS." Typical signs are shown in figure 1.

b. Runway/Runway Intersections. A sign used to identify intersecting runways contains both runway threshold designations of the intersecting runway, such as "33-15" which indicates that runway "33" is to the left and runway "15" is to the right. The sign should be placed on the left side as seen when approaching the intersection and located at a distance from the intersecting runway to meet the clearance requirements of the intersecting runway as specified in AC 150/5340-1. When operations are conducted on a runway in which the landing aircraft is instructed to hold short of an intersecting runway, the sign is located at least 500 feet (150 m) from the nearest edge of the intersecting runway.

c. Other Applications. Another use for this type of sign would be where it is desired to prohibit entry into a particular area, such as "NO ENTRY." A mandatory type sign may be used only in situations meeting the intent of paragraph 1a.



(a) Holding position sign for  
ILS or MLS critical areas



(b) Holding position sign for  
runway/taxiway intersections

Figure 1. Typical Mandatory Signs

### 3. INFORMATION SIGNS.

a. Taxiway Identification Signs. Taxiway identification signs are normally located at an intersection of taxiways or at an exit from a runway. A typical sign is shown in Figure 2. The signs are located as described in paragraph 3d and typical applications are shown in figure 5. The inscription on the sign contains the taxiway designation.

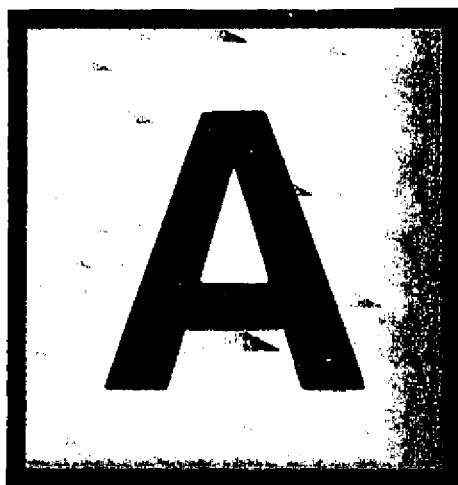


Figure 2. Typical Taxiway Identification Sign

b. Method for Designating Taxiways. Taxiways are identified by letters of the alphabet insofar as possible. Only one letter should be used to identify an entire taxiway, which may consist of several continuous taxiway sections, as shown in figure 3. For example, a taxiway from a ramp to the end of a runway should be considered as one taxiway even though the route consists of a number of taxiway

sections due to intersections with other runways and taxiways, except that another taxiway making a junction with a taxiway so identified should be assigned a different letter. A taxiway section should not be assigned more than one identification letter, even though it may be common to several possible taxiing routes. It may be necessary, however, to assign double letters, such as "AA", where an airport has a larger number of taxiways than there are single letters available.

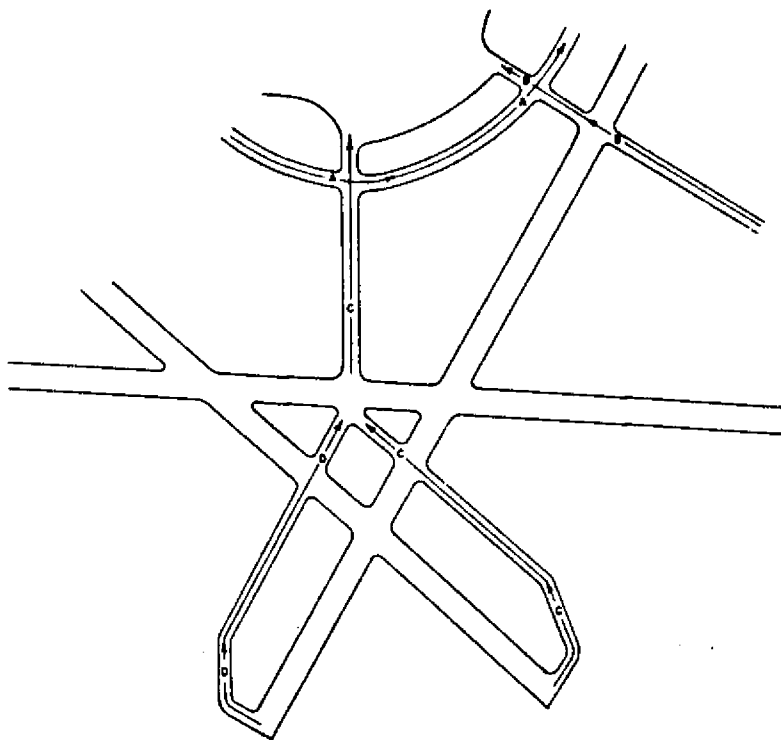


Figure 3. Identification of Taxiways by Letters

c. Destination Signs. The inscription on a destination sign should indicate the destination and include an arrow indicating the direction to be followed. The arrow should be on the side of the sign to which the direction indicates. If the direction to be followed is straight ahead, the arrow should precede the destination inscription. Typical destination signs are shown in figure 4.

(1) Outbound Destination Signs. Outbound destination signs are used to identify taxiing routes to the 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. More than one runway number may be shown where the taxiing route is common to both runways.

(2) Inbound Destination Signs. Major destination areas are usually shown on inbound destination signs located at runway exits. For example, at many airports, signs indicating the way to the ramp may be adequate whereas at other airports it may be necessary to make a distinction between passenger ramps, freight ramps, military ramps, or between ramps in different locations on the

airport, such as north ramp, east ramp, etc. At appropriate points closer to the major destination areas, more detailed destination signs should be provided to indicate specific areas which are designated for parking service, passenger handling, military aircraft, etc. Common abbreviations used for destinations are:

RAMP --- General parking, servicing, and loading areas  
FUEL --- Areas where aircraft are fueled or serviced  
GATE --- Gate positions at which aircraft are loaded or unloaded  
ITIN --- Areas set aside specifically for itinerant aircraft  
MIL --- Areas set aside for military aircraft  
CIVIL--- Areas set aside for civil aircraft  
VSTR --- Areas set aside for transient aircraft  
PASS --- Areas set aside for passenger handling  
CRGO --- Areas set aside for cargo handling  
INTL --- Areas set aside for handling international flights

d. Locating Identification and Destination Signs. Taxiway identification signs are usually installed at intersections and should be located prior to the intersection and on the left side as viewed in the taxiing direction. However, the signs may be located on the right side where necessary for clearance purposes or as required by the intersection configuration. Destination signs are normally placed on the far side of the intersection since the back side of the identification sign can be used for this purpose. Typical examples are shown in figure 5.

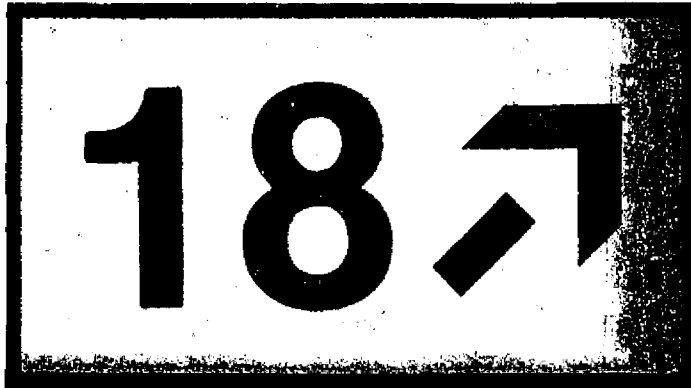


Figure 4. Typical Destination Signs

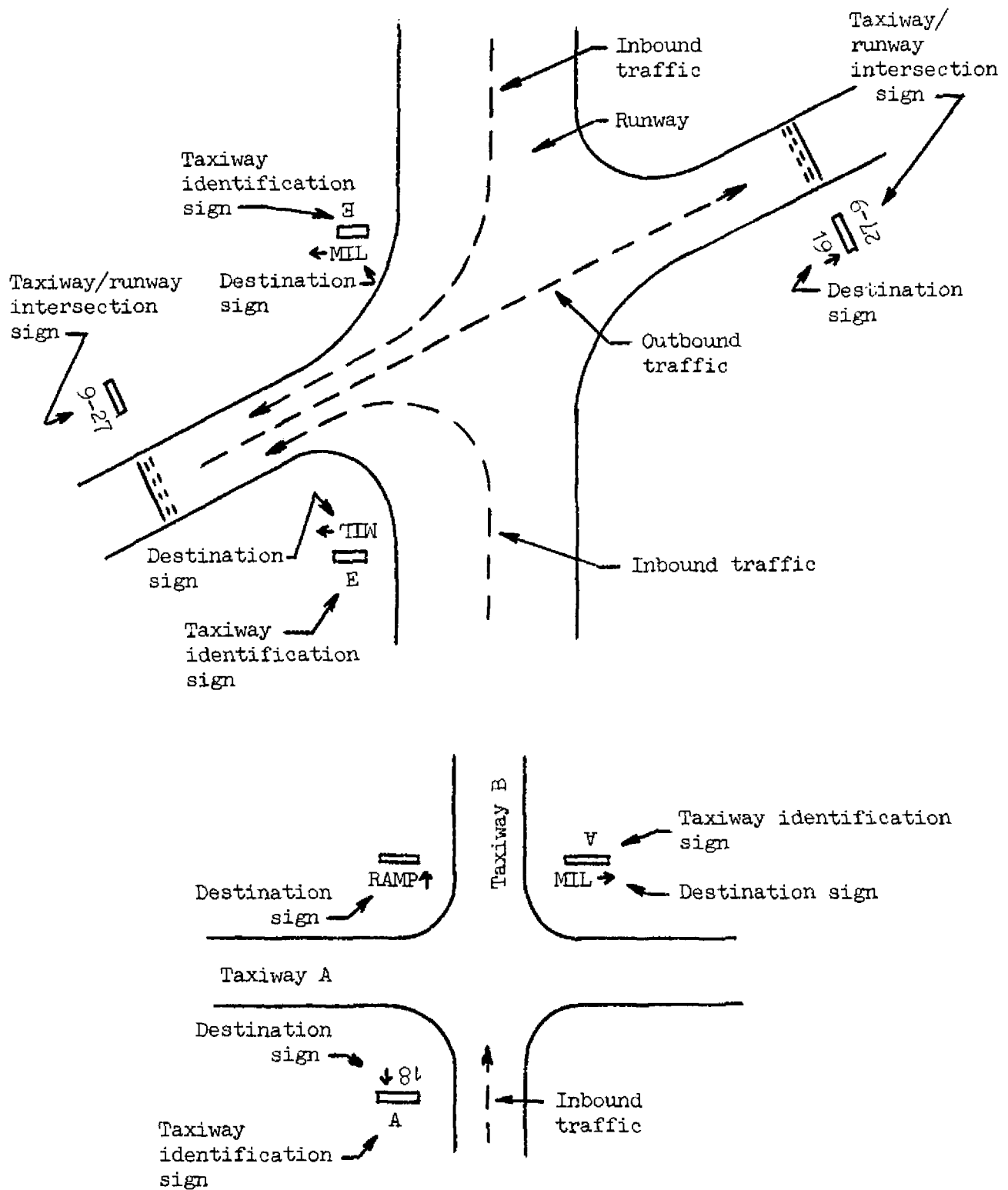


Figure 5. Typical Sign Applications

4. RUNWAY DISTANCE REMAINING SIGNS. These signs are used to provide runway distance remaining information to pilots during takeoff and landing operations. The sign inscriptions consist of a number denoting the distance, in thousands of feet, of the runway distance remaining. The signs, as shown in figure 6, are installed at 1000 foot + 50 foot (300 m + 15 m) intervals along the side of the runway so that they can be seen in both directions. Displaced threshold areas, which are used for takeoffs and rollout, are treated as part of the runway for purposes of locating the signs. Three different methods, as illustrated in figure 7 and as described below, may be used. 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 which are not an exact multiple of 1000 feet, one-half of the excess distance is added to the distance of each sign on each runway end. For example, for a runway length of 6500 feet (1950 m), the excess distance is 500 feet (150 m) and the location of the last sign on each runway end is 1000 feet plus  $\frac{1}{2}(500)$  or 1250 feet (375 m).

a. Preferred Method. The most economical installation consists of double-faced signs located only on 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 be placed on the opposite side where necessary due to runway/taxiway separation distances or because of conflicts between intersecting runways or taxiways.

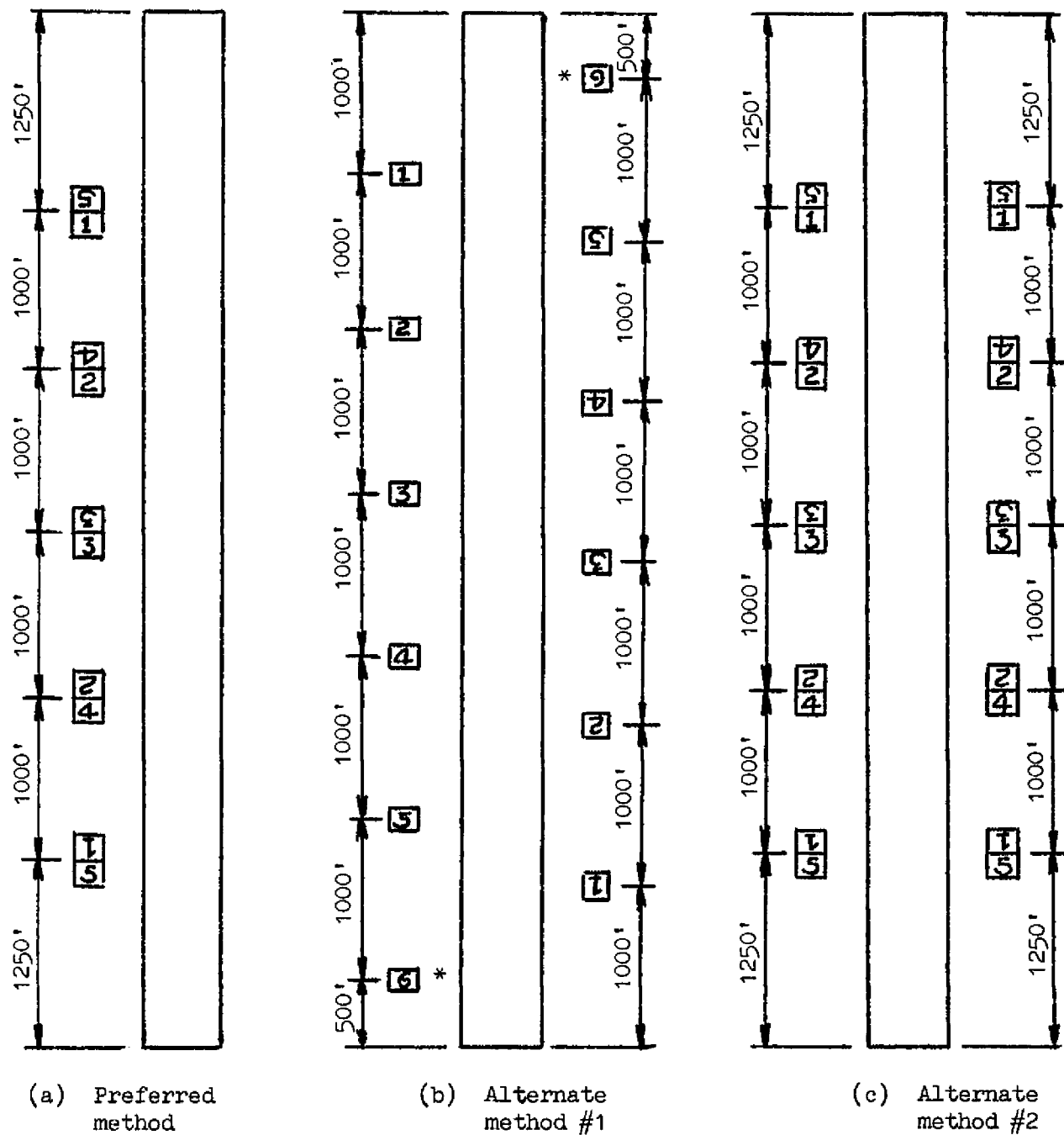
b. Alternate Method #1. This method uses single-faced signs installed on both sides of the runway. The advantage of this method is that the runway distance remaining can be more accurately reflected in cases where the runway length is not an exact multiple of 1000 feet (300 m).

c. Alternate Method #2. This method uses double-faced signs installed on both sides of the runway. The advantage of this method is that runway distance is displayed on both sides of the runway which is particularly advantageous when a sign on one side only has to be deleted because of a clearance conflict.



Figure 6. Typical Runway Distance Remaining Sign

5. SIGN SELECTION. Sign requirements are contained in AC 150/5345-44, Specification for Taxiway and Runway Signs, current edition, and should be consulted in determining desired sign characteristics.



## Notes:

- (1) Examples based on a 6500 ft. runway.
- (2) Signs less than 1000 ft. from takeoff end, as indicated by asterisks in alternate method #1, may be omitted.

Figure 7. Runway Distance Remaining Sign System Configurations



a. Size. Three sizes (height) of signs may be used for mandatory or information type signs and two sizes for runway distance remaining signs. Runway distance remaining signs must be of the same size on any particular runway. The choice of a particular size involves 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 whereas 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. 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 pavement edge. The distances shown in table 1 should be used in determining sign locations.

Table 1. Sign Location Distances

Sign size*	Max. sign heights (in.(cm))			Distance from pavement edge (ft.(m))	Use
	Legend	face	Installed		
1	12 (30)	18 (45)	30 (76)	10-20 (3-6)	1/
2	15 (38)	24 (61)	36 (91)	20-35 (6-10.5)	1/
3	18 (46)	30 (76)	42 (107)	35-60 (10.5-18)	1/
4	40 (100)	48 (120)	60 (152)	50-75 (15-22.5)	2/
5	25 (64)	30 (76)	42 (107)	20-35 (6-10.5)	2/

\* AC 150/5345-44    1/ mandatory or information    2/ runway distance remaining

b. Lighted and Unlighted Signs. Only lighted signs are used for runway distance remaining signs. Also, all mandatory signs are lighted when used on certificated airports or on other types of airports having instrument operations. Unlighted, retroreflective, mandatory signs may be used at general aviation airports having only VFR (visual flight rules) operations. Lighted information type signs are used on certificated airports having night operations.

6. SIGN ORIENTATION. Signs are orientated so that the face is perpendicular to the centerline of the taxiway or runway centerline. Single sided signs may be canted in toward the centerline up to a maximum of 15 degrees.

7. CONTROL. Lighted signs are intended to be energized whenever the respective runway or taxiway lights are energized. Signs which are not powered from the runway or taxiway light circuits should be "tied into" these circuits for control purposes.

8. MOUNTING. The signs may be mounted on a concrete slab, concrete pedestals, or angle iron stakes. The concrete edges or stakes should not protrude above grade level. Power input to the signs shall be 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 should be installed in a light base can embedded in the ground.

9. POWER REQUIREMENTS. Power loads of signs vary from 45 to 200 volt-amperes depending on the size and particular manufacturer's design and may not be a purely resistive load. Sign manufacturers should be consulted on specific power requirements.

10. MATERIALS AND EQUIPMENT. The following equipment and materials, where used, shall be in accordance with the current edition of the cited specification or standard:

a. Signs. AC 150/5345-44, Specification for Taxiway and Runway Signs.

b. Power Cables. AC 150/5345-7, Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits.

c. Isolation Transformers. AC 150/5345-47, Isolation Transformers for Airport Lighting Systems.

d. Cable Connectors. AC 150/5345-26, Specification For L-823 Plug and Receptacle, Cable Connectors.

e. Ground Wire. AC 150/5370-10, Standards for Specifying Construction of Airports, Item L-108.

f. Transformer Bases. AC 150/5345-42, Specification for Airport Light Bases and Transformer Housings, Junction Boxes, and Accessories.

g. Concrete. American Society for Testing Materials C387 or equal.

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APPENDIX 1. BIBLIOGRAPHY

1. Obtain copies of the following publications from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590.
  - a. AC 150/5340-1A, Marking of Serviceable Runways and Taxiways.
  - b. AC 150/5340-15A, Taxiway Edge Lighting System.
  - c. AC 150/5345-4, Specification for L-829 Internally Lighted Airport Taxi Guidance Sign.
  - d. AC 150/5345-6, Specification for L-809 Airport Light Base and Transformer Housing.
  - e. AC 150/5345-7, Specification for L-824 Underground Electrical Cables for Airport Lighting Circuits.
  - f. AC 150/5345-20, Specification for L-802 Runway and Strip Light.
  - g. AC 150/5345-22, Specification for L-834 Individual Lamp Series-to-Series Type Insulating Transformer for 5000 Volt Series Circuit.
  - h. AC 150/5345-26, Specification for L-823 Plug and Receptacle, Cable Connectors.
  - i. AC 150/5345-31, Specification for L-833 Individual Lamp Series-to-Series Type Insulating Transformer for 600 Volt or 3000 Volt Series Circuits.
2. Obtain copies of Advisory Circular 150/5370-1A, Standard Specifications for Construction of Airports, from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Send check or money order with your request made payable to the Superintendent of Documents in the amount of \$3.50 for each copy. No c.o.d. orders accepted.

traffic routes and in the vicinity of the general destination area with symbols which show the direction to specific areas, such as "GATE 3," "VSTR," etc. This requirement is provided as a general guide and may be varied where necessitated by local conditions due to variations in airport layout and ground traffic conditions.

- (4) Destination Sign Location. Install destination signs indicating the direction to travel to a destination for an aircraft approaching an intersection on the far side of an intersection as follows:
  - (a) Right and Left Turns. Install the destination sign on that side of the aircraft's route to which the turn is to be made where taxiing aircraft usually turn into an intersecting taxiway or runway. See Appendix 2, Figures 3(a)(1), 3(a)(2), and 3(a)(3).
  - (b) Straight Ahead. Install the destination sign on either the left or right side of the aircraft's route where taxiing aircraft usually proceed across the intersection. See Appendix 2, Figure 3(a)(4).

g. Intersection Signs.

- (1) General. Provide intersection signs with appropriate numbers or letters at the intersections of a runway, taxiway, or runway and taxiway with aprons to inform the pilot that he is approaching an intersection and to identify the intersecting taxiway or runway. See Appendix 2, Figures 3(d) and 3(e).
- (2) Runway Intersection Signs. Provide numbers and letters assigned to each end of a runway on runway intersection signs to identify a runway. Separate the assigned numbers and letters shown on the intersection sign by a dash, such as "33-15."

Indicate, by arrangement of the runway numbers on the sign, the direction to the corresponding numbered ends of a runway. For example, "33-15" indicates to the pilot that the "33" end of the runway is to the left, and the "15" end of the runway is to the right. See Appendix 2, Figure 3(d).

- (3) Taxiway Intersection Signs. Use letters to identify taxiways as shown in Appendix 2, Figure 3(e). Use the same letters to identify an entire taxiway even though it is composed of short sections caused by intersections of other taxiways or runways as shown in Appendix 2, Figure 3(f). Use double letters to identify taxiways where an airport has a larger number of

taxiways than there are usable single letters available such as "AA."

(4) Location of Taxiway and Runway Intersection Signs.

- (a) Location. To identify intersecting runways or taxiways for approaching aircraft, locate intersection signs on the near side of the intersection.
- (b) Right and Left Turns. To identify the intersecting taxiway or runway where taxiing aircraft usually turn into an intersecting taxiway or runway, install intersection signs on the side of the aircraft route toward which the turn is to be made. Install intersection signs on both sides of the aircraft's route where turns are usually made in either direction. See Appendix 2, Figure 4(a).
- (c) Straight Ahead. Install the intersection sign on either the left or right side of the aircraft's route where taxiing aircraft usually proceed across the intersection. See Appendix 2, Figure 4(a)(4).

3. DESIGN.

- a. General. Prior to designing a taxiway guidance sign system, make a thorough study of the designed taxiway layout drawing with the paving and drainage personnel, local traffic controllers, and the operational groups using the airport. Coordination of this study with the airport paving and drainage personnel will aid in determining the number and size of ducts or conduits to provide under paved areas and will assure proper locations for cable runs.
- b. Taxiway Signs. Taxiway signs are designed for operation with two types of circuits, Type I for installation in a 6.6-ampere series primary circuit and Type II for installation with a 120/240-volt multiple circuit. Taxiway signs are installed at the locations specified on the plans along the edge of a taxiway on a transformer base housing installed in a poured concrete pad. Each poured concrete pad has a minimum of one transformer base housing installed in place for mounting a sign support and for housing the insulating transformer. Where additional sign flange supports are used, anchor bolts are placed in the poured concrete pad in the correct position for these flange supports. See Appendix 2, Figure 5 for typical 3-panel sign and mounting arrangements.