AC NO: 150/5345-44A TAD-494.6

DATE: 30 Jul 71

ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SUBJECT: SPECIFICATION FOR L-858 RETROREFLECTIVE TAXIWAY GUIDANCE SIGNS

1. PURPOSE. This advisory circular describes the specification for retroreflective taxiway guidance signs. These signs may be lighted or unlighted.

2. BACKGROUND. The higher jet blast velocities of the larger jet aircraft striking the present taxiway signs have established a need for signs that can be placed further away from the runway or taxiway edge and, thus, be subjected to a lesser velocity. A testing program showed that retroreflective highway type signs could be adapted to give the guidance needed.

3. CANCELLATION. Advisory Circular 150/5345-44, Specification for L-858 Retroreflective Taxiway Guidance Signs.

4. REFERENCES. Appendix 1, Bibliography, lists those publications to be used with this circular.

5. EXPLANATION OF REVISION. This revision allows the use of internal lighting as well as external.

6. SCOPE OF PUBLICATION. The equipment covered by this specification covers the following types of signs:

   a. Type I - Mandatory signs - Red retroreflective background with silver white retroreflective legend. Lighting shall be supplied.

   b. Type II - Informational signs - Yellow retroreflective background with black legend.

   c. Type IIA - Same as Type II except lighted.

   d. Type III - Convenience signs - Green retroreflective background with silver white retroreflective legend.

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e. Type IIIA - Same as Type III except lighted.

7. DEFINITIONS.

a. Mandatory Sign. A sign which, if ignored by a pilot in an aircraft on the ground, could cause a hazard involving an aircraft landing or taking off. An example would be runway intersection signs.

b. Informational Sign. A sign which enables a pilot to efficiently determine locations and, if ignored, could cause a hazard to taxiing aircraft. Examples would be taxiway intersection sign, exit or taxiway identification sign.

c. Convenience Sign. A sign to direct pilots to aprons and specific locations and positions within apron areas. Examples would be destination signs such as "VSTR," "FUEL," "INTL," or "HGR."

8. MATERIALS AND WORKMANSHIP.

a. All retroreflective material shall meet the requirement of Federal Specification L-S 300A-Type 1 Class 2 Reflectivity No. 1. Colors shall comply with silver white, color g; green, color d; red; color f; and yellow, color j.

b. Black legends and borders shall be matte black as described in Bureau of Public Roads color chart.

c. Guidance on spacing and stroke of legends and symbols may be found in the Standard Alphabet Series D and Standard Highway Signs, both published by the Bureau of Public Roads. Guidance on design of the legends shall be in accordance with figure 1, Advisory Circular 150/5345-4.

d. The nonmetallic material for the sign panel shall be compatible with the adhesive backing on the retroreflective sheeting.

e. Workmanship shall be in accordance with the highest quality commercial practice covering this class of work.

9. PERFORMANCE REQUIREMENTS.

a. The entire unit, when installed with mounting columns and base plates, shall be designed and constructed for continuous service under the following operating conditions.

(1) Temperature - Any ambient temperature from a minimum of -45° F. to a maximum of +120° F. at sea level for cold weather signs and any ambient temperature from a minimum of -10° F. to a maximum of +120° F. for standard signs.

(2) Weather - Continuous outdoor operation under all normal weather conditions. Low temperature fixture shall operate in temperatures as shown in paragraph 10d.

(3) Wind - Wind velocities up to 100 miles per hour shall not cause any discernible permanent deformation of any part of the unit.

(4) Radio Interference - This sign and supports shall not adversely affect radio signals or navigational aids commonly used on an airport.

b. Legibility. The signs shall be clearly legible and background colors shall be readily discernible day or night at the following distances: Type I, 800 feet; Type II, 600 feet; and Type III, 400 feet. Surfaces shall have no mirror effect which adversely affects legibility.

c. The unit shall be strong enough to withstand the 100 m.p.h. wind, yet be light weight and frangible so that the coupling will break and prevent major damage to an aircraft which might inadvertently strike it. If the unit is damaged or the coupling is broken a means must be available, such as a tether, to restrain it in the same general location.

10. DETAIL REQUIREMENTS.

a. Base Assembly. The base (if required) shall conform to FAA Advisory Circular 150/5345-42. This base is not part of this specification.

b. Sign Assembly.

(1) The signs shall be of the dimensions shown in Figure 1, page 4. The supporting structure may be metal with the sign face and backing of a nonmetallic material. A possible configuration is shown in Figure 2, page 5.

TYPE	MINIMUM LETTER SIZE	LEGEND & BORDER	BACKGROUND	MAXIMUM SIZE OF SIGN OR SECTION	MAX. HEIGHT ABOVE GROUND
Mandatory	18"	Retroreflective Silver	Retroreflective Red	6' wide 3' high	3'6"
Informational	15"	Black	Retroreflective Yellow	6' wide 3' high	3'6"
Convenience *	12"	Retroreflective Silver	Retroreflective Green	6' wide 3' high	3'6"

* Smaller lettering may be used if necessary.

FIGURE 1. DETAILS OF L-858 SIGN

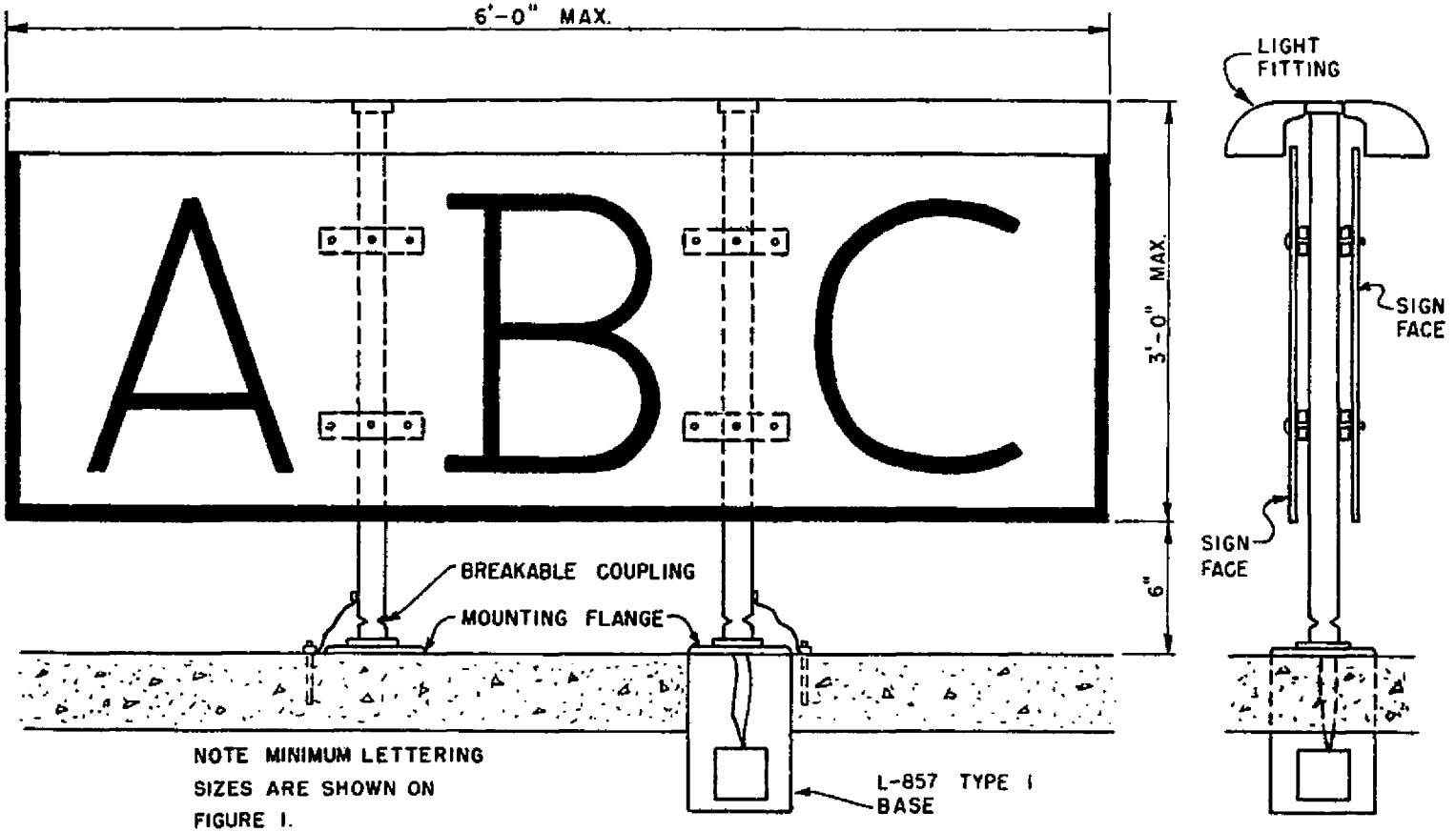

FIGURE 2. TYPICAL SIGN ASSEMBLY

(2) The structure may be of aluminum alloy or other metal. Guidance for the structure and calculation of the stresses may be obtained from Specification for the Design and Construction of Structural Supports for Highway Signs published by the American Association of State Highway Officials (AASHO).

(3) The signs shall be designed to meet the factors listed in Figure 1. If the maximum sign area cannot accommodate the message, additional sign sections may be erected adjacent to it. Adjacent sections may be connected to the first with breakaway clamps. The border shall continue from one section to the next.

(4) The signs shall be mounted on frangible mountings. An acceptable method is by the use of breakable couplings, each having two inch tapered male threads and a "shearing groove" produced by scoring, molding, etc., so that it withstands a static load of 300 pounds applied perpendicular to the axis at a point 18 inches from the shearing groove and breaks clean when a force of not more than 500 pounds is applied at the same point. The mountings shall be designed to withstand the force of 100 m.p.h. wind and break at not more than 200 m.p.h.

(5) Where required, signs may be either externally or internally lighted. The lighting arrangement shall not interfere with the legibility of the sign or produce objectionable glare or spill light.

(a) Externally mounted lighting fixture shall be frangible if mounted separately.

(b) Internally lighted signs shall be clearly legible day or night and provide an identifiable indicator of the background color of the type sign involved.

c. Power Input. Lighted signs shall operate from a taxiway or runway series circuit (2.8 to 6.6 amperes or 8.5 to 20 amperes) or from a 120 volt multiple circuit. Limit the input power of the series multiple transformer to 250 watts for a two-sided 6-foot wide sign. Maximum volt ampere input shall be 700 for both the transformer and ballast if needed.

d. Types. One of two types lighting fixtures may be ordered and supplied, i.e., a standard temperature fixture which will operate between -10° F. and 120° F. or a low temperature fixture which will operate between -45° F. and 120° F. If no designation is made the standard fixture will be supplied.

11. PARTS LIST AND INSTALLATION INSTRUCTIONS. Furnish a complete parts list and installation instructions with each new installation, and with each shipment of individual assemblies for maintenance or replacement purposes.

12. TESTING.

a. Approval Testing. Furnish one sample unit of each type submitted for approval to be tested and checked for compliance with the tests.

(1) Load the surface of the sign with a static load equal to 1/2-pound per square inch applied horizontally for a period of ten minutes. This test shall be made with the unit completely assembled.

(2) Check the legibility and color discernibility of the sign in day and night conditions mounting the type sign under test at distances shown in paragraph 9b. The sign shall be viewed perpendicular to the surface with an eye height of 15 feet.

(3) Provide necessary certification to show that the various components comply with the specification.

(4) Make additional inspection and tests as deemed necessary by the FAA, Airports Service, Washington, D.C. 20590, to determine compliance with the requirements of the specification.

13. QUALIFICATION.

a. The manufacturer shall provide a sign to a disinterested independent testing laboratory acceptable to the FAA, Airports Service, to be tested as described in paragraph 12 to obtain certification regarding the ability to manufacture equipment meeting the requirements of this specification. The manufacturer shall provide two copies of the test report to the Airports Service for review and approval consideration. The cost of testing shall be borne by the manufacturer.

b. If the manufacturer has satisfactory laboratory facilities, the tests may be performed at the factory. These factory tests must be witnessed by a representative of the FAA, Airports Service. The manufacturer shall provide a written report of these tests.

c. In addition to the tests performed by the independent testing laboratory or by the manufacturer, the manufacturer must furnish the following:

(1) Parts lists, installation instructions, and drawings to the FAA, Airports Service, Washington, D. C. 20590, for review and approval.

(2) A production model to the FAA, Airports Service, Washington, D. C. 20590, for physical inspection. Cost of submitting the production model shall be borne by the manufacturer.

d. Upon approval of the disinterested laboratory's or manufacturer's test reports and the additional data required in paragraph 11, which have shown satisfactory conformance to the specification requirements, the Airports Service will list the name of the manufacturer and a description of its sign in Advisory Circular 150/5345-1B, Approved Airport Lighting Equipment.

14. ORDERING INFORMATION.

a. When signs are ordered the following information must be included for each sign:

(1) Message

(2) Type - Type I, II, III, IIA or IIIA

(3) Lighting, if Required - External or internal (It is recommended that only one type be used on an airport.)

(4) Electrical Power - Series or multiple check regulator on series circuit for capacity.

(5) Temperature - A standard temperature sign will be furnished unless a low temperature sign is specified.

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APPENDIX 1. BIBLIOGRAPHY

1. Interim FAA Report Number NA 70-9, Evaluation of Taxiway Guidance Signs. Copies may be obtained from the FAA, Systems Research and Development Service, RD-300, Washington, D. C. 20590.

2. Federal Specification L-S-300A, Sheeting and Tape, Reflective Nonexposed Lens, Adhesive Backing. Copies may be obtained from the General Services Administration offices in Washington, D.C.; Seattle, Washington, San Francisco, California; Denver, Colorado; Kansas City, Missouri; Chicago, Illinois; Atlanta, Georgia; New York, New York; Boston, Massachusetts; Dallas, Texas; and Los Angeles, California.

3. Specification for the Design and Construction of Structural Supports for Highway Signs. Copies may be obtained from the American Association of State Highway Officials (AASHO), 341 National Press Building, Washington, D. C. 20004.

4. Standard Alphabets for Highway Signs. Copies may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, price 30¢.

5. Standard Highway Signs. Copies may be obtained from the Bureau of Public Roads, Federal Highway Administration, Washington, D.C. 20591.

6. Copies of the following advisory circulars and additional copies of this Advisory Circular 150/5345-44A, Specification for L-858 Retroreflective Taxiway Guidance Signs, may be obtained from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590.

   (1) Advisory Circular 150/5340-18, Taxiway Guidance Sign Systems.

   (2) Advisory Circular 150/5345-4, Specification for L-829 Internally Lighted Airport Taxi Guidance Sign.

   (3) Advisory Circular 150/5345-42, Specification for L-857 Airport Light Bases, Transformer Housing and Junction Boxes.