File

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ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SUBJECT: SPECIFICATION FOR L-858 RETROREFLECTIVE TAXIWAY GUIDANCE SIGNS

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1. PURPOSE. This advisory circular describes the specification for retroreflective taxiway guidance signs.

2. BACKGROUND. The higher jet wake velocities of the larger jet aircraft striking the present taxiway signs has 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. REFERENCES. Appendix 1, Bibliography, lists those publications to be used with this circular.

4. 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. External lighting shall be supplied.

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

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

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

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

Initiated by: AS-580

5. DEFINITIONS.

a. Mandatory Sign. A sign which, if ignored by a pilot in an aircraft on the ground, could cause a hazard involving aircraft in flight. Examples would be runway intersection signs and CAT II hold 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 VISITOR, FUEL, INTERNATIONAL or HANGAR.

6. MATERIALS AND WORKMANSHIP.

a. All retroreflective material shall meet the requirements 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 matt black as described in Bureau of Public Roads color chart.

c. Spacing and stroke of legends and symbols shall be in accordance with guidance in the Standard Alphabet Series D and Standard Highway Signs, both published by the Bureau of Public Roads. The design of the legends shall be in accordance with Figure 1, AC 150/5345-4.

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

e. The external lighting fixtures shall be designed to operate from a 6.6 or 20 ampere runway or taxiway circuit or 110-volt multiple circuit.

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

7. 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.

(2) Weather - Continuous outdoor operation under all normal weather conditions.

(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 signal or navigational aids commonly used on an airport.

b. 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.

8. 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 4-1. The supporting structure may be metal with the sign face and backing of a nonmetallic material such as fiberglass reinforced plastic. A possible configuration is shown in Figure 2, page 5.

(2) The structures may be of aluminum alloy or other metals. 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 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 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 break 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.

For externally lighted signs, a lighting fixture shall be provided. It shall illuminate the sign so that the legend is clearly lighted with an average illumination of 20 foot-candles. The maximum to minimum illumination shall not produce objectionable contrast. If mounted separately, it shall be set on a frangible mounting. The light shall not interfere with the legibility of the sign and shall not produce objectionable spill light. The fixture shall be capable of operating from a 2.8 - 6.6 ampere or 8.5 - 20 ampere runway or taxiway circuit or from a 110-volt multiple circuit. Necessary transformer and cable connectors will be furnished with the light.

9. 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.

10. 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 of the sign in day and night conditions by mounting the type sign under test a distance of Type I, 800 feet; Type II, 600 feet; and Type III, 400 feet. 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 any 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.

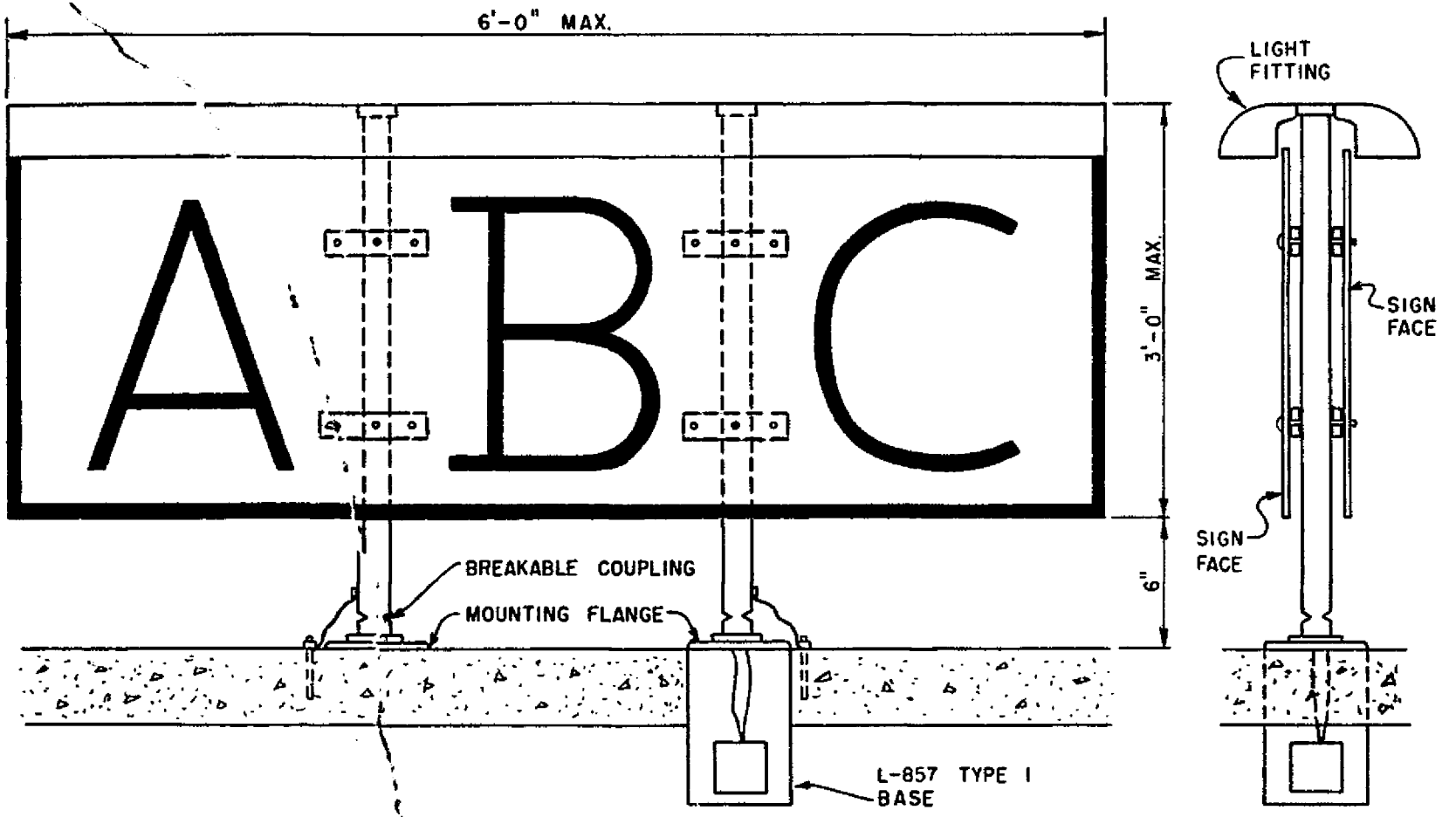

FIGURE 2. TYPICAL SIGN ASSEMBLY

11. 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 10 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 laboratorys' or manufacturers' test reports and the additional data required in paragraph 11c, 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 AC 150/5345-1B, Approved Airport Lighting Equipment.

Chester G. Bowers
Director, Airports Service

APPENDIX 1. BIBLIOGRAPHY

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

2. Federal Specification L-S-300A, Sheeting and Tape, Reflective Non-exposed 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 AC 150/5345-44, 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) AC 150/5340-18, Taxiway Guidance Sign Systems.

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

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

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

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Washington, D.C. 20590

Official Business

PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
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