Federal Aviation Administration

Memorandum

Date: NOV 29 2013

To: All Regional Airports Division Managers

From: John R. Dermody, Manager, Airport Engineering, AAS-100

Subject: INFORMATION: Engineering Brief No. 92, Light Spacing Guidance for New Taxiway Fillet Geometry

This Engineering Brief (EB) provides guidance on taxiway edge and taxiway centerline lighting design/ installation criteria associated with recent changes to Advisory Circular (AC) 150/5300-13A, Airport Design. This EB also proposes several edge lighting designs for taxiway fillets per AC 150/5300-13A.

Attachment

FAA
Airport Safety and Standards

ENGINEERING BRIEF #92

Light Spacing Guidance for New Taxiway Fillet Geometry

(per AC 150/5300-13A, Airport Design)

I. Purpose

The purpose of this Engineering Brief (EB) is to determine and analyze the impact of recent changes to Advisory Circular (AC) 150/5300-13A, Airport Design, on taxiway edge and taxiway centerline lighting design/ installation criteria. This EB also proposes several edge lighting designs for taxiway fillets per AC 150/5300-13A.

II. Background

In earlier versions of the Airport Design AC, the taxiway design was primarily driven by the predominant Airplane Design Group (ADG) using the airport. Because of the preceding, taxiway intersections are frequently designed to use judgmental over-steering. This design allows the least widening of pavement surfaces. The use of judgmental over-steering designs for taxiway intersections may increase the amount of complex maneuvering required and increase the risk of departure from full-strength pavement surfaces. AC 150/5300-13A uses newly formulated Taxiway Design Groups (TDGs) that are based upon the main gear width (MGW) and the distance from the cockpit to main gear (CMG). Coupled with the ADG, the addition of the TDG allows more precise taxiway design for cockpit over centerline steering, providing for optimized pavement fillets.

New taxiway design fillets can consist of straight line segments rather than the customary curves based on arcs or chords. Using these new design rules may significantly affect new taxiway edge lighting designs in both appearance and the number of lights used.

Current taxiway lighting installation guidelines are in AC 150/5340-30, Design and Installation Details for Airport Visual Aids.

III. Application

For use in taxiway edge and centerline lighting design and installation practices in AC 150/5340-30.

IV. Description

Existing taxiway edge and centerline lighting installation requirements are neither changed nor impacted by the cockpit over centerline taxiway fillet design in AC 150/5300-13A. However, whenever the airport performs an upgrade of taxiways, the new design criteria is applicable.

The addition of TDGs in AC 150/5300-13A allows the airport designer additional flexibility for taxiway/ taxilane design with the addition of aircraft MGW and CMG distance. The use of the new TDG Tables ensures that new taxiway designs are safe and efficient while minimizing the installation of excess pavement.

V. Effective Date

This Engineering Brief is effective after signature by the Manager of FAA Airport Engineering Division, AAS-100.

VI. Applicable Documents

AC 150/5340-30, Design and Installation Details for Airport Aids

AC 150/5300-13A, Airport Design

This EB will present sample new taxiway fillet designs and associated edge lighting designs.

This EB will provide taxiway design examples for the layout of taxiway edge lights. The current guidance for taxiway centerline lights in AC 150/5340-30 still applies.

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Manager, Airport Engineering Division (AAS-100)

1.0 Placing Taxiway Edge Lights for Standard Taxiway Turns

See Figure 1 for an example of a taxiway edge light layout.

a. The spacing of the taxiway edge lights along the outer curve of taxiway turns and along curved fillets should be identical to the current guidance in AC 150/5340-30G (Figure 17).

b. Because L-1 is a gradual taper, light spacing along L-1 may align with the outer edge straight segment.

c. The spacing used along the straight section of the taxiway should continue along the "L-1" taper.

d. A light should be placed at the intersection of the "L-1" and "L-2" tapers, and on the opposite edge of the taxiway directly across from this point.

e. A light should be placed at the intersection of the "L-2" taper and the curved fillet. Where there is no curved fillet (R-FILLET=0), a light should be installed at the intersection of the two "L-2" tapers.

f. Maximum spacing of lights for L-2 taper should not exceed 50 feet (15.24 m) ± 10 percent.

g. Where the radius of the fillet is equal to zero an apex light is required to define two tapered straight segments converging at a single point.

h. No less than three edge lights should be installed on a curved fillet where the angle of the intersection (delta) is more than 30 degrees. This is similar to the guidance in AC 150/5340-30G (Figure 17, note 4).

1.1 180-Degree Taxiway Turns

a. Use the design rules in Section 1.0 to place the fillet taxiway edge lights.

b. W-3, as defined in AC 150/5300-13A, Figure 4-17 and Table 4-12, represents the dimension of the narrowest paved segment for a cross-over taxiway. The placement of lights on opposite side of the narrowest paved segment is recommended.

2.0 Taxiway Centerline Lights

a. For straight line segments entering and exiting a turn there should be two equally spaced lights at 50-foot spacing prior to and after exiting the curve. Thereafter, the centerline lights on the straight segments can be equally spaced per AC 150/5340-30.

b. For centerline radii less than 75 ft. (22.9 m), the centerline lights need be installed at a maximum of 25 ft. (7.6 m) on curved sections for 1,200 ft. (366 m) runway visual range

(RVR) and above, and a maximum of 12.5 ft. (3.8 m) for curved sections below 1,200 ft. (366 m) RVR.

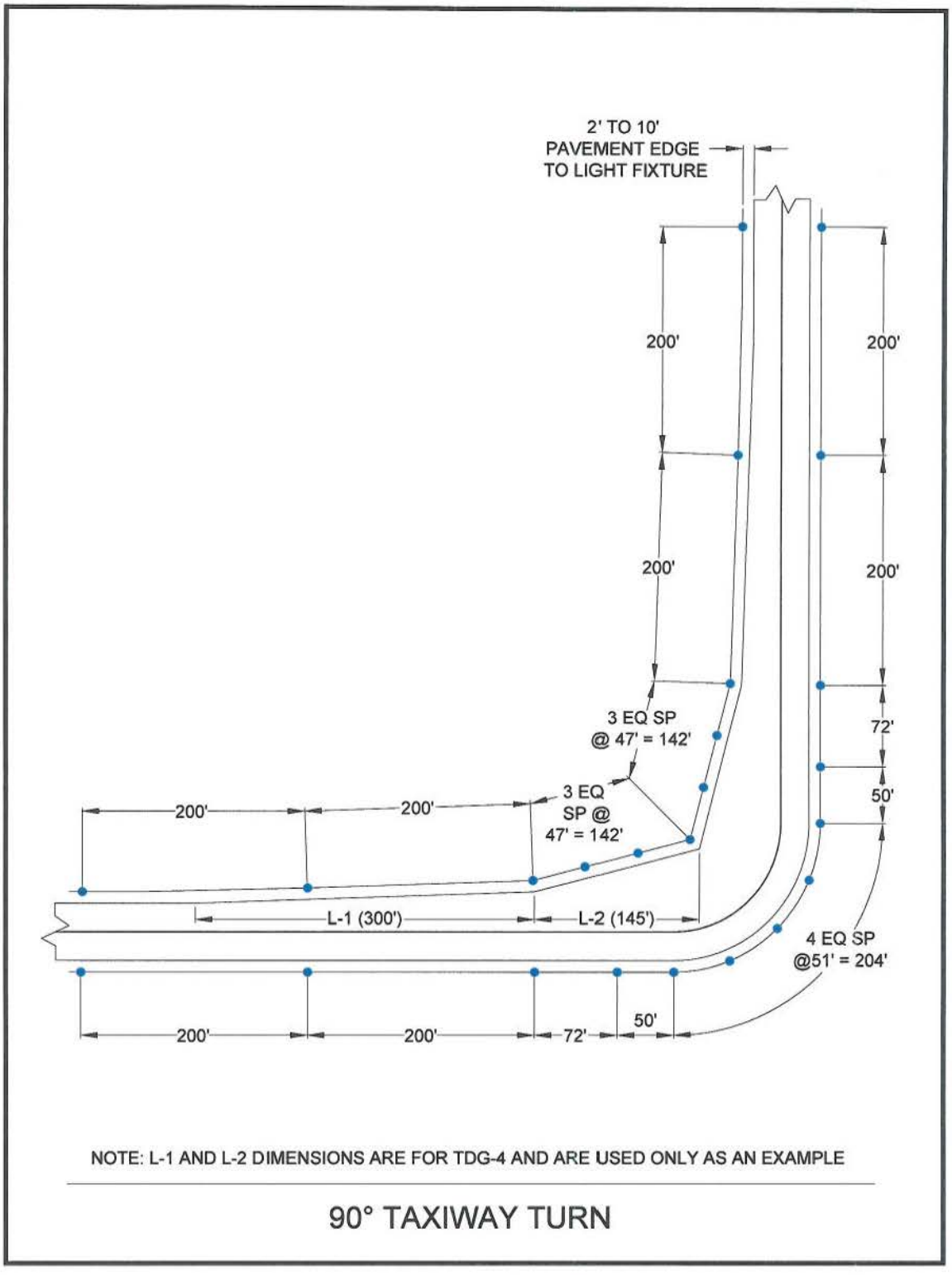

Figure 1. Sample Layout for Taxiway Edge Lights