U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Change 1 to AIRPORT DESIGN STANDARDS--TRANSPORT AIRPORTS--Provides additional separation standards and changes runway end gradient

Date: 3/14/85
Initiated by: AAS-100

AC No: 150/5300-12
Change: 1

1. PURPOSE. This Change provides separation standards to accommodate certain nonprecision operations by aircraft in Airplane Design Groups I and II. It also changes the standard for the runway end gradient to 0.8 percent.

The Change number and date of the changed material are carried at the top of the page. Changed material is marked by asterisks in the margins.

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Table 2-1. Separation standards

ITEM	DIM 2/	AIRPLANE DESIGN GROUP 1/					
		I	II	III	IV	V	VI
Runway Centerline to Taxiway Centerline 3/	D	400 ft 120 m	400 ft 120 m	400 ft 120 m	400 ft 120 m	4/ 4/	600 ft 180 m
Aircraft Parking Area 5/	G	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m	500 ft 150 m
Parallel Runway Centerline	H	- Refer to paragraphs 10 and 11 -					
Property/Building Restriction Line 6/	I	750 ft 230 m	750 ft 230 m	750 ft 230 m	750 ft 230 m	750 ft 230 m	750 ft 230 m
Helicopter Touchdown Pad		- Refer to Advisory Circular 150/5390-1 -					
Taxiway Centerline to Parallel Taxiway Centerline	J	69 ft 21 m	103 ft 31.5 m	153 ft 46.5 m	225 ft 68.5 m	251 ft 76.5 m	340 ft 102 m
Fixed or Movable Object and to Property Line	K	44 ft 13.5 m	64 ft 19.5 m	94 ft 28.5 m	139 ft 42.5 m	153 ft 46.5 m	205 ft 62 m
Taxilane Centerline to Fixed or Movable Object		39 ft 12 m	54 ft 16.5 m	80 ft 24.5 m	118 ft 36 m	131 ft 40 m	172 ft 52 m

1/ Airplane design groups are keyed to those of table 1-1.

2/ Letters are keyed to those shown as dimensions on figure 2-2.

3/ The location of a parallel taxiway may be adjusted such that no part of an aircraft (tail tip, wing tip) on taxiway centerline is above the runway safety area or penetrates the obstacle free zone (OFZ). For a detailed discussion on the OFZ, see AC 150/5300-4. Figure 2-3, herein, illustrates a precision OFZ for Aircraft Approach Category C or D airplanes.

4/ For Airplane Design Group V, the standard minimum runway centerline to taxiway centerline separation distance is 400 feet (120 m) for airports at or below an elevation of 1,345 feet (410 m); 450 feet (135 m) for airports between elevations of 1,345 feet (410 m) and 6,560 feet (2 000 m); and 500 feet (150 m) for airports above an elevation of 6,560 feet (2 000 m).

* 5/ For Airplane Design Groups I and II, with no precision instrument operations, this separation may be reduced to 400 feet (120 m) when visibility minimums are 1 mile (1.6 km) or greater.

6/ For Airplane Design Groups I and II, with no precision instrument operations, this separation may be reduced to 500 feet (150 m) when visibility minimums are 1 mile (1.6 km) or greater. *

CHAPTER 5. SURFACE GRADIENT AND LINE-OF-SIGHT

36. INTRODUCTION. This chapter contains gradient and line-of-sight standards. The standards are used to design the gradients of airport surfaces required for the landing, takeoff, and ground movement of airplanes.

37. BACKGROUND. Surface gradients must allow for design flexibility without adversely affecting operational safety. Line-of-sight standards impose additional restraints on surface gradients. This is due to the fact that runways are designed for bi-directional operations and may be intersected by other runways or taxiways. Therefore, it is important that a pilot be able to see anything on the runway or intersecting runway or taxiway which could endanger the operation. Airports with air traffic control towers exercise positive control of aircraft or surface vehicles on the airport runways and taxiways during hours of operation. Because of this, the standards for an unobstructed line-of-sight along individual runways or between intersecting runways, or between intersecting runways and taxiways, need not be as restrictive as they would be for an airport which is uncontrolled on a full or part-time basis.

38. SURFACE GRADIENT.

a. Runways and Stopways. The gradient standards for runways and stopways are as follows and are illustrated in figures 5-1 and 5-2.

(1) The maximum longitudinal grade is 1.5 percent; however, the longitudinal grade may not exceed 0.8 percent in the first and last quarter of the runway. * It is desirable to keep longitudinal grades to a minimum.

(2) Whenever possible, longitudinal grade changes are to be avoided. The maximum allowable grade change is 1.5 percent and is only used when absolutely necessary.

(3) When longitudinal grade changes are necessary, parabolic vertical curves are to be used. The length of the vertical curve is a minimum of 1,000 feet (300 m) for each 1 percent of change.

(4) The distance between the points of intersection of vertical curves is a minimum of 1,000 feet (300 m) multiplied by the sum of the grade changes (in percent) associated with the two vertical curves.

* (5) The maximum allowable difference in runway centerline elevation is 1 percent of the runway length. For stopways, there is no maximum difference. If a clearway is to be provided, the stopway cannot penetrate the clearway plane. *

(6) For runways and stopways, the maximum transverse grade is 1.5 percent. However, the acceptable transverse grade range is from 1 to 1.5 percent.

(7) Intersections on runways are designed to provide a smooth transition between the intersecting pavement surfaces as well as an adequate drainage of the intersection. The grades for the dominant (e.g., higher speed, higher traffic volume, etc.) runway in a runway-runway situation and for the runway in a runway-taxiway situation have precedence.

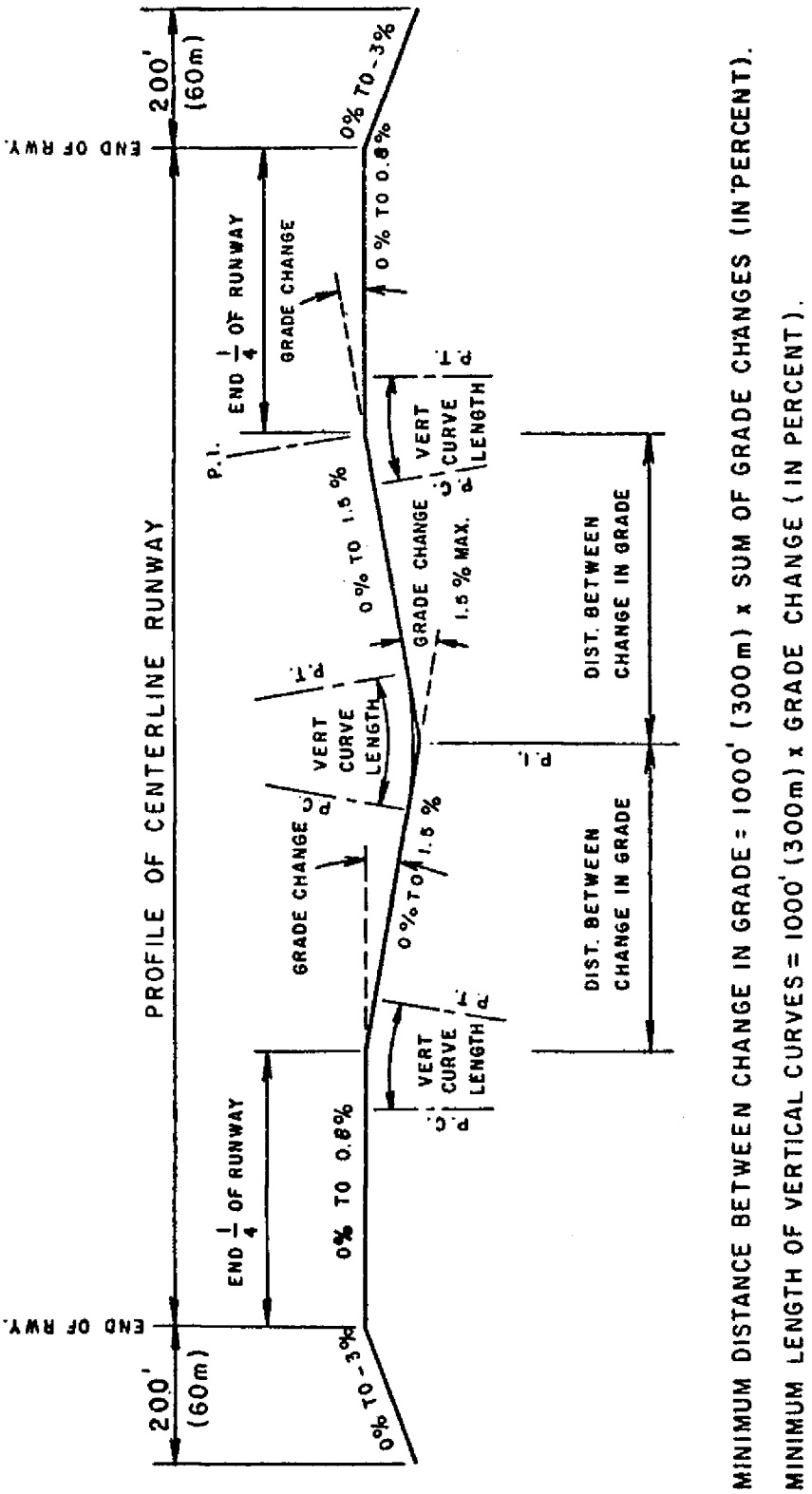

Figure 5-1. Longitudinal grade limitations