

Cancelled by 1C

AC NO: 150/5340-1B

DATE: 4/2/69



ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

SUBJECT: MARKING OF SERVICEABLE RUNWAYS AND TAXIWAYS

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1. PURPOSE. This advisory circular sets forth standards and practices for the guidance of the public in marking and remarking serviceable runways and taxiways. The use of this standard is required for project activity under the Federal-aid Airport Program.
 2. CANCELLATION. AC 150/5340-1A, Marking of Serviceable Runways and Taxiways, dated June 30, 1966, and Change 1 to AC 150/5340-1A, dated September 15, 1966, are cancelled.
 3. REFERENCES.
 - a. AC 150/5340-7A, Marking of Deceptive, Closed, and Hazardous Areas on Airports, dated January 10, 1968.
 - b. AC 120-20, Criteria for Category II Airports.
 4. EXPLANATION OF REVISION. The Category II hold lines and the runway direction numbers for four and five parallel runways have been added.
 5. APPLICATION. The standards and practices contained herein apply whenever serviceable runways and taxiways are to be marked or remarked. The standards recognize degrees of marking requirements dependent upon meteorological minima, availability of electronic aids, and other factors associated with the use of the runway. The runway marking system is divided into three phases of markings taking into account the severity of operating conditions and cost factors of installation and maintenance. The taxiways serving Category II runways shall have the limits of the critical areas marked as shown herein.
 6. GENERAL REQUIREMENTS. In the interest of safety, regularity, or efficiency of aircraft operations, the following requirements shall be applied.
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- a. Runway Marking Requirements. Runway markings, divided into three phases with minimum elements specified for each phase, shall be in accordance with the requirements set forth below. Configurations complying with the standards are detailed in Figures 1 and 2 (see also Paragraph 8).
- (1) Basic Runway Marking. Markings on runways used for operations under Visual Flight Rules shall be:
- (a) Centerline marking and runway direction numbers (and letters if required).
 - (b) The additional elements of the instrument runway and all-weather runway marking patterns outlined below may be added.
- (2) Instrument Runway Marking. Markings on runways served by a nonvisual navigation aid intended for landings under instrument weather conditions shall be:
- (a) Basic runway marking plus threshold marking.
 - (b) The additional elements of the all-weather runway marking pattern outlined below may be added.
- (3) All-Weather Runway Marking. Markings on runways served by nonvisual precision approach aids and on runways having special operational requirements shall be:
- (a) Instrument runway marking.
 - (b) Landing zone markings.
 - (c) Side stripes.
- b. Precedence of Runway Markings. At intersection of runways, the runway markings of highest precedence shall be displayed and the other runway markings shall be interrupted. The following is the order of precedence:
- (1) All-weather runway marking.
 - (2) Instrument runway marking.
 - (3) Basic runway marking.

- c. Runway Centerline Marking. The runway centerline marking shall be a broken line with 120-foot dashes and 80-foot blank spaces. The minimum width of the basic runway centerline marking shall be one foot. The minimum width of the instrument runway centerline marking and the all-weather runway centerline marking shall be three feet.
- d. Runway Direction Number. Each runway end shall be designated by numbers assigned and by letters, where required. Numbers and letters assigned shall be determined from the approach direction and conform to the form and dimensions shown in Figure 1. The number assigned shall be the whole number nearest one-tenth the magnetic azimuth of the centerline of the runway measured clockwise from the magnetic north. Where four or five parallel runways are considered, two of the runways shall be assigned numbers of the next nearest one-tenth the magnetic azimuth. Single digits shall not be preceded by a zero.
 - (1) Parallel Runways. The letter or letters, where required, to differentiate between parallel runways shall be as follows, in the order shown from left to right:
 - (a) For two parallel runways "L", "R."
 - (b) For three parallel runways "L", "C", "R."
 - (c) For four parallel runways, two shall be numbered as in (a) above and two shall be numbered the next nearest one-tenth the magnetic azimuth with letters "L", "R."
 - (d) For five parallel runways, three shall be numbered as in (b) above and two shall be numbered the next nearest one-tenth the magnetic azimuth with the letters "L", "R."
 - (2) Intersection of Runway Ends. Where runway ends have a common intersection, preference in locating the marking shall be given the most important runway.
 - (3) VFR Runways. A proportional reduction of the size and transverse spacing of numbers (shown in Figure 1) up to 50 percent for runway designation markers may be used for VFR airport runways which are less than 75 feet in width.

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- e. Threshold Marking. The threshold marking, with outer dimensions of 150 by 130 feet, shall consist of eight stripes, each 12 feet wide and 150 feet long. The stripes shall be separated by spaces three feet wide, except that the center space shall be 16 feet. The threshold marking dimensions shall remain constant for all runways of 150 feet or greater width. For a runway less than 150 feet wide, the length of the threshold marking shall remain at 150 feet, but the overall width of the marking shall be the runway width less 20 feet, and the width of the stripes and the distance between the stripes shall be reduced proportionally to the reduction in overall width of the threshold marking. For a runway more than 150 feet wide, additional threshold marking stripes may be added in accordance with the space available. Where side stripes are present, the first additional runway threshold stripe shall be five feet inboard of the side stripe with additional stripes separated by three-foot spaces.
- f. Side Stripes. Side stripes shall be continuous lines having a minimum width of three feet. For runways of 150 feet or greater width, the distance between stripes measured at the inside edge shall be constant at 140 feet. For runways less than 150 feet wide, side stripes shall have the maximum available distance between inside edges. Runways of 150-foot widths or less, having adequate visual contrast of the runway edge, may not need side striping.
- g. Landing Zone Markings. When used, landing zone markings shall be placed at each 500-foot section of a 2,000-foot landing zone at each end of the runway as shown in Figure 1.
- h. Taxiway Marking Requirements. Taxiway markings shall be in accordance with the requirements set forth below and as shown in Figure 1.
 - (1) Longitudinal Stripes. Each taxiway shall be marked by a single continuous stripe along the centerline. The stripes shall have a minimum width of six inches.
 - (a) At taxiway intersections with runway ends, taxiway stripes shall terminate in line with the nearest edge of the runway.
 - (b) At intersections of taxiways with runway, where the taxiway may serve as a normal exit from the runway, except

as provided in Paragraph 6h(1)(a), the centerline marking shall be curved into the runway centerline marking as shown in Figure 1. This marking may be extended parallel to the runway centerline marking for a distance of 200 feet beyond the point of tangency. The curve of this taxiway turnoff shall be drawn tangent to a line parallel to and three feet from the near side of the runway centerline marking and tangent to the taxiway centerline. The curve shall have the largest radius of curvature which will retain a clearance to the taxiway or runway edge of not less than one-half the width of the taxiway.

- (c) When a taxiway crosses a runway, the taxiway centerline marking shall continue across the runway but shall be interrupted for the runway markings.
 - (d) At taxiway intersections the taxiway centerline markings shall intersect.
- (2) Taxiway Holding Line Marking. A taxiway holding line marking shall be placed a distance of not less than 100 feet and not more than 200 feet from the nearest edge of the runway or taxiway which the taxiway intersects. This distance shall be measured on a line perpendicular to the centerline of the runway or taxiway which is intersected. The distance shall be increased from the minimum 100 feet, as necessary, to provide adequate clearance between larger aircraft operating on the runway or taxiway and the holding aircraft. When the taxiway is associated with a warmup pad, the marking may be parallel to the centerline of the runway or taxiway which is intersected. Details of the taxiway holding line marking shall be as shown in Figure 1.
- (3) The Category II hold lines detailed in Figure 3 shall be applied to indicate critical areas associated with Category II runways. The markings shall be applied to all paved operational areas to outline the critical areas shown in Figure 3. The markings may be coincident with the border of the areas outlined or perpendicular to the centerline of taxiways, runways, etc. When not coincident with the area border, the near edge of the marking shall not penetrate the critical area. Where the centerlines of the runways and taxiways are parallel and 400 feet apart, hold lines shall be placed at the throat of the taxiways providing access to the critical areas (see Figure 3). Hold lines shall not be installed across usable runways.

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7. DETAIL REQUIREMENTS.

a. The color of markings shall be:

- (1) White for all runway markings.
- (2) Yellow for all taxiway markings.

b. On runway surfaces of light color, runway markings may be outlined in black to increase their conspicuity.

8. SPECIAL REQUIREMENTS.

a. Marking of Displaced Thresholds. The marking of displaced thresholds shall be as illustrated in Figure 2.

b. Markers and Marking for Snow-Covered Runways. Markers and markings shall be used to indicate the usable limits of snow-covered runways. Markers shall be placed along the sides of the usable portion of snow-covered runways, spaced at intervals of not more than 330 feet, and shall be located symmetrically about the axis of the runway. Sufficient markers shall be placed to indicate the runway thresholds.

- (1) Characteristics. Markers on snow-covered runways shall consist of conspicuous objects such as spruce trees about five feet high, set upright, or light wooden tripods.
- (2) Markings. Runways covered with snow and to be used while so covered shall be marked (for example, with dyes) with centerline marking, threshold marking, and side marking when required. Details specified for regular marking may be varied to accomplish the purpose intended.

c. Aiming Marker for Turbojet Operations. To provide an aiming point for landing of turbojet aircraft on other than all-weather marked runways, marking similar to the 1,000-foot landing zone marker of the all-weather pattern shall be provided 1,000 feet from the threshold. This marking shall consist of three stripes, 75 feet long on each side of the runway centerline. For runways other than 150 feet wide, the stripe widths and the spacing between stripes shall be proportionately increased or decreased (but to not less than two feet wide) in a proportionate relation to the existing runway width.

9. DEFINITIONS. With respect to this standard, the following definitions apply:
- a. Threshold. The line established by competent authority perpendicular to the runway centerline designating the beginning of that portion of a runway usable for landing.
 - b. Displaced Threshold. A threshold that is not at the beginning of the runway pavement.
10. HOW TO GET THIS PUBLICATION AND THE REFERENCED CIRCULAR Obtain additional copies of this circular, AC 150/5340-1B, Marking of Serviceable Runways and Taxiways, and the referenced circulars from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590.



Chester G. Bowers
Director, Airports Service

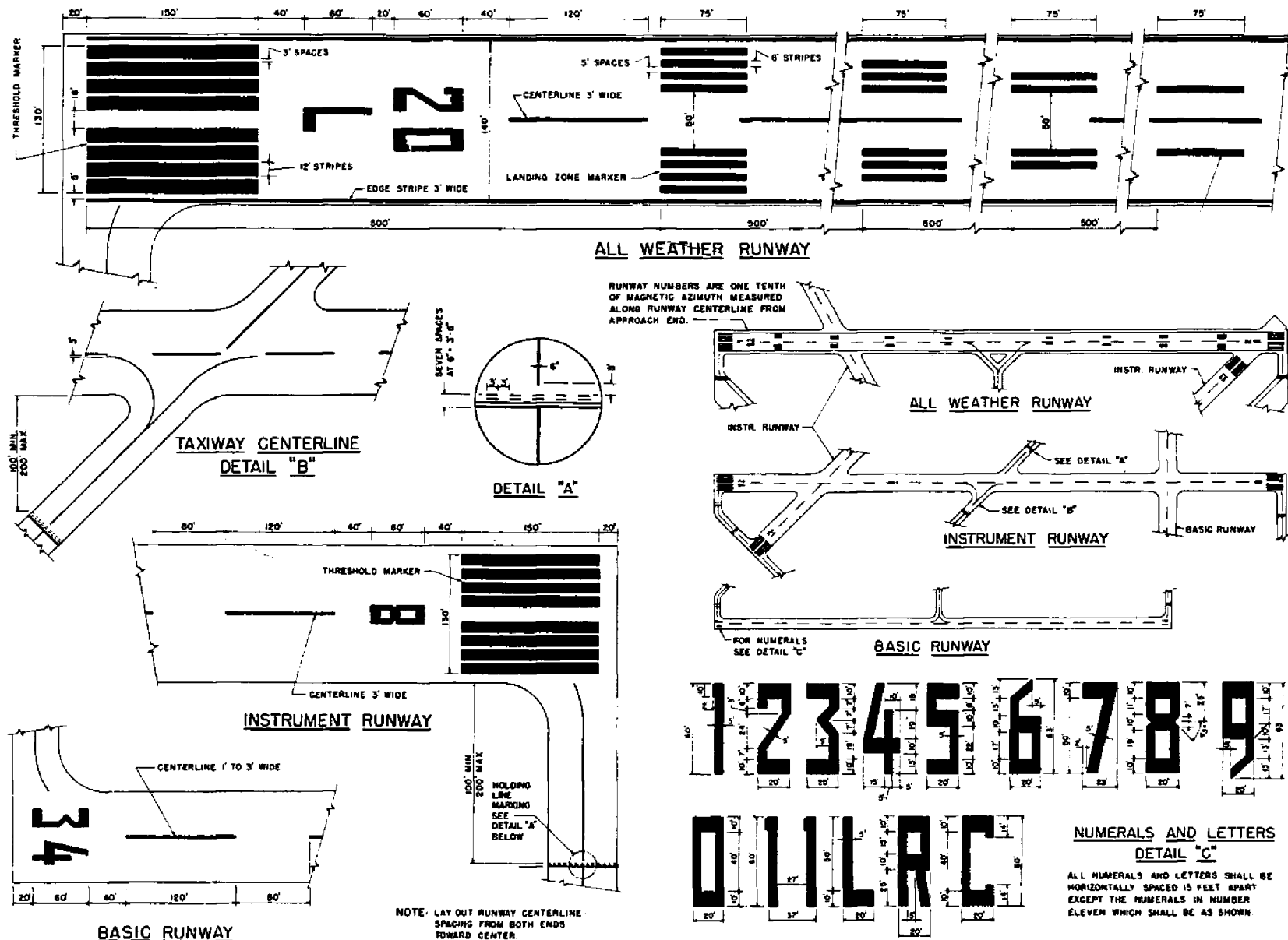


FIGURE 1. RUNWAY AND TAXIWAY MARKING

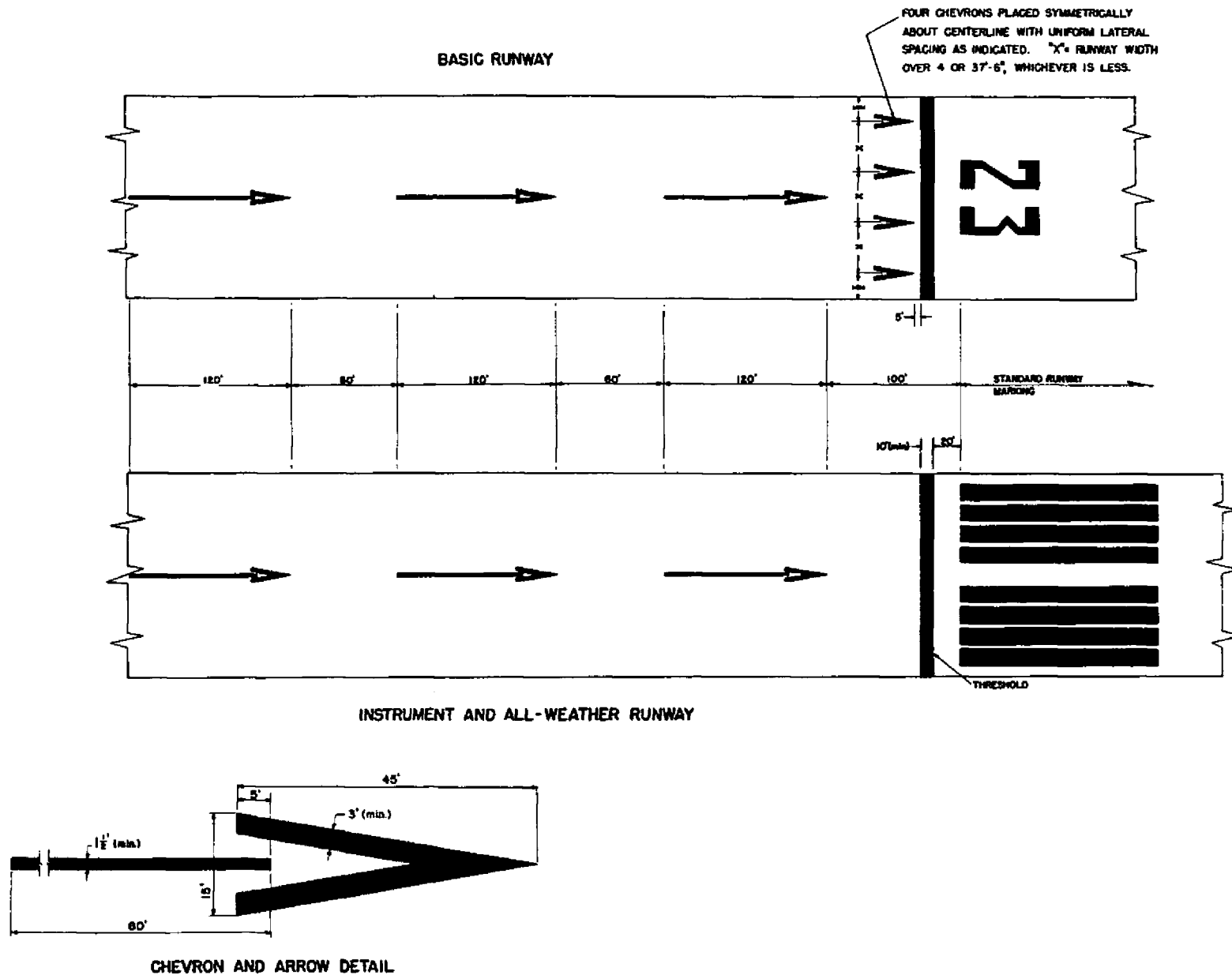
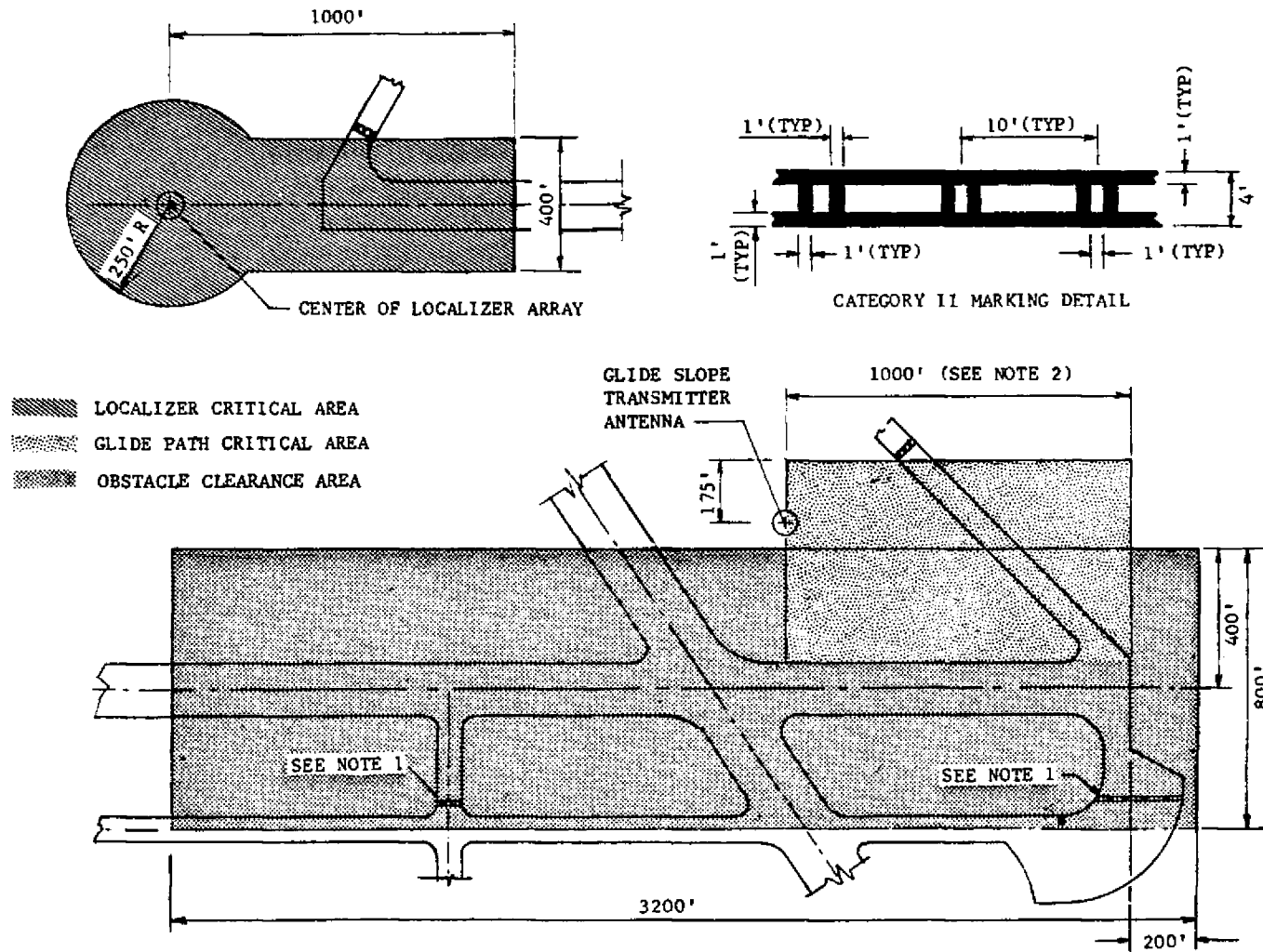


FIGURE 2. MARKING OF DISPLACED THRESHOLD



NOTE 1. Location of hold lines when operations are permitted on a 400' parallel taxiway.

NOTE 2. Or to the end of the runway, whichever is greater.

FIGURE 3. CATEGORY II CRITICAL AREAS.

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