3.6 RUNWAY AND TAXIWAY MARKING

Runways

Runways are defined rectangular surfaces, on an airport, prepared or suitable for the landing or takeoff of airplanes. The colors of markings on runways are white. A runway should be marked according to its usage. The three classifications of runways are

1. Visual Runways,
2. Nonprecision Instrument Runways, and
3. Precision Instrument Runways.

A Visual Runway does not have an existing or planned straight-in instrument approach procedure.

A Nonprecision Instrument Runway has an existing instrument approach procedure which uses navigational aids with only horizontal or lateral guidance to the airport or runway.

A Precision Instrument Runway has an existing instrument approach procedure using a precision instrument landing system, which provides both lateral and vertical guidance to a runway end.

Runway Centerline Markings

Centerline markings on runways identify the physical center of the runway and provides alignment guidance during landing and takeoff. The runway centerline markings are white and are located along the centerline of the runway between the runway designation markings. These markings consist of a line of uniformly spaced stripes and gaps. The stripes are 120 feet long and have gaps that are 80 feet in length. Any adjustments to the length and gaps of the stripes that may be needed because of runway length are to be made near the runway midpoint. The minimum width of each stripe is 12 inches for visual approach runways, 18 inches for non precision instrument runways, and 36 inches for precision instrument runways.

Runway Threshold Marking

A threshold marking identifies the beginning of the runway that is available and suitable for landing. The runway threshold markings consist of eight white longitudinal stripes of uniform dimension arranged evenly about the runway centerline. These markings start 20 feet from the runway threshold. The stripes must be 150 feet long, 5.75 feet wide, and spaced 5.75 feet apart except the center space which is 11.5 feet apart. The stripes extend sideways to within 10 feet from the edge of the runway or to a distance of 90 feet on either side of a runway centerline, whichever is the smaller lateral distance.

Runway Aiming Point Marking

An aiming point marking provides jet aircraft a visual aiming point for landing operations. The aiming points are white and the beginning of these markings are located 1,020 feet from the threshold. The aiming points consist of two rectangular markings, 150 feet in length, located on each side of the runway centerline. The width of each marking is 30 feet for a runway with a width of 150 feet or greater. The spacing between the inner sides of the markings is 72 feet for a runway width of 150 feet or greater. For runways that are less than 150 feet wide, the width of the markings and the space between the inner sides of the markings is decreased in proportion to the decrease in the width of the runway. Where there are touchdown zone markings, the space between the inner sides of the markings should be the same as that of the touchdown markings.

Runway Touchdown Zone Marking

The touchdown zone markings identify the touchdown zone for landings and are coded to provide distance information. These markings are white and consist of groups of one, two, and three rectangular bars evenly arranged in pairs along the runway centerline. For runways less than 150 feet in width, the markings and spaces are reduced proportionally, but the lengths remain the same. On runways having touchdown zone markings at both ends, the pairs of markings which extend to within 900 feet of the runway midpoint are eliminated. The fixed distance markings are a part

of the touchdown zone markings but are used alone on non precision instrument runways and visual runways 4,000 feet in length or longer used by jet aircraft. Touchdown zone markings are required on runways with precision instrument approaches.

Runway Side Strip Marking

Runway side stripe markings provide a visual distinction between the runway and the surrounding terrain and also outline the runway width. Runway side stripes are white and consist of continuous stripes located along each side of the runway. The maximum distance between the outer edges of the stripes is 200 feet. The stripes have a minimum width of 36 inches for precision instrument runways and are at least equal to the width of the runway centerline stripes on other runways. The stripes extend to the end of displaced threshold areas which are used for takeoffs and rollouts. Side stripes are required on precision instrument runways.

Runway Threshold Bar

A threshold bar identifies the beginning of the runway that is available for landing when there is pavement aligned with the runway on the approach side of the threshold. A threshold bar is white and is located on the landing runway at the threshold. The threshold bar is 10 feet wide and extends across the width of the runway.

Demarcation Bar

A demarcation bar identifies a runway with a displaced threshold from a blast pad, stopway or taxiway that precedes the runway. The demarcation bar is yellow and is located on the blast pad, stopway or taxiway at the point where the runway intersects. The demarcation bar is 3 feet wide and extends across the width of the blast pad, stopway or taxiway.

Arrows and Arrowheads

Arrows are used to identify a displaced threshold area and are useful for centerline guidance for takeoffs and/or rollouts. Arrowheads are used in connection with a threshold bar to highlight the beginning of a runway where the use of chevrons is

not appropriate. Arrows and arrowheads used in a displaced threshold area are white. Arrowheads used on taxiway prior to a runway threshold are yellow.

When a runway threshold is permanently displaced, the rows and arrowheads are located in the portion of the runway before the displaced threshold. Where the pavement area before a runway is used as a taxiway, arrowheads are located prior to the threshold bar. Please refer to the FAA Advisory Circular AC 150/5340-1J, "Standards for Airport Markings", for dimensions and spacing of arrows and arrowheads.

Chevrons

Chevrons are used to identify pavement areas unusable for landing, takeoff, and taxiing. Chevrons are yellow and are located on pavement areas that are aligned with and adjacent to the runway. Please refer to the FAA Advisory Circular AC 150/5340-1J, "Standards for Airport Markings", for dimensions and spacing of chevrons.

Markings For Blast Pads And Stopways

A runway blast pad is a surface near the ends of runways provided to reduce the erosive effect of jet blast and propeller wash. A runway stopway is a defined surface beyond the end of the runway that was designed to be suitable for supporting an aircraft, without damaging that aircraft, during an aborted takeoff. All markings on blast pads and stopways are painted yellow.

Taxiways

Taxiways are defined as the paths that are used for the taxiing of aircraft from one part of an airport to another. All taxiway markings are yellow. The different types of taxiway markings are as follows:

- Taxiway Centerline Marking
- Taxiway Edge Marking
- Holding Position Markings
- Markings for a Taxiway in Front of a Runway

Taxiway Centerline Marking

Taxiway centerlines are marked to provide a visual identification of the designated taxiing path. Taxiway centerlines are yellow and consist of a continuous stripe along the centerline of the designated taxiway. On a taxiway curve, the markings continue from the straight portion of the taxiway at a constant distance from the outside edge of the taxiway. A width of between 6 inches and 12 inches wide is acceptable provided the width selected is uniform for its entire length.

The centerline will be continuous in length except where it intersects a holding position marking or runway marking element. For taxiway intersections designed for the straight thorough method of taxiing, the centerline markings continue straight through the intersection. At taxiway intersections with a runway end, the taxiway centerline marking is terminated at the runway edge, (with the exception of the situation where there is a displaced threshold, in which case the taxiway centerline may be extended onto the runway displaced area). On taxiways used as an entrance or exit to a runway, the taxiway centerline marking curves onto the runway and extends parallel to the runway centerline marking for 200 feet past the point where the two markings become parallel. For taxiways crossing a runway, the taxiway centerline marking may continue across the runway but must be interrupted for the runway markings.

Taxiway Edge Marking

Taxiway edge markings are used to delineate the edge of the taxiway. They are used when the taxiway edge does not correspond with the edge of the pavement and where the full strength pavement of the taxiway is not readily visible. Taxiway edge markings are yellow and can either be continuous or dashed. Continuous taxiway edge markings are used to identify the taxiway from the shoulder or some other surface not intended to be used by aircraft.

Dashed taxiway edge markings are used when the aircraft would need to cross the lines, for example when a taxiway enters or crosses aprons.

Continuous taxiway edge markings consist of a continuous double yellow line, each being at least 6 inches in width and spaced 6 inches apart. Dashed taxiway edge

markings consist of a broken double yellow line, each being at least 6 inches wide spaced at 6 inches apart from edge to edge. The lines are 15 feet in length with 25 foot gaps.

Runway Holding Position Markings

On Taxiways Holding position markings identify the location on a taxiway where an aircraft is supposed to stop while awaiting clearance to proceed onto the runway. Holding position markings should be located on all taxiways that intersect runways based upon the most critical aircraft using the runway. There are four types of holding position markings. These markings are outlined with black lines and black interim spaces if needed for improved visibility on light colored (such as Portland cement) pavement areas. They are as follows:

- Holding Position Markings for Taxiway/Runway Intersections
- Holding Position Markings for Runway/Runway Intersections
- Holding Position Markings for Taxiway/Taxiway Intersections
- Holding Position Markings for Instrument Landing System (ILS) Critical Areas

Holding Positions Markings For Taxiway/Runway Intersections

Holding position markings for taxiway/runway intersections are indicated with two solid lines followed by two broken lines. The solid lines are always on the side where the aircraft is to hold.

Holding Positions Markings For Runway/Runway Intersections

Holding position markings for runway/runway markings are identical to the holding position markings for taxiway/runway intersections (see Figure 13.1). The solid lines of these markings are also always on the side where the aircraft is to hold. However, these markings should only be installed on a runway where that portion of the runway is used as a taxiway or used for “land and hold short” operations.

Holding Positions Markings For Taxiway/Taxiway Intersections

Holding position markings for taxiway/taxiway intersections are indicated with a single line of dashes and spaces. These markings should only be installed at taxiway/taxiway intersections where there is an operational need to hold aircraft at this point, and are often not necessary.

Holding Positions Markings For ILS Critical Areas

The holding position markings for ILS critical areas are indicated with a set of two parallel lines spaced four feet apart, in between these two lines and perpendicular to them are sets of two parallel lines spaced one foot apart . Due to their appearance, these markings are commonly referred to as a "ladder" or "rail road tracks".

The holding position markings for ILS critical areas identify the location on a taxiway where an aircraft is supposed to stop when it does not have clearance to enter these critical areas. These critical areas are used to protect the navigational aid signal or the airspace required for the approach procedure. These markings are installed at the perimeter of the ILS critical area and are perpendicular to the taxiway centerline. Where the distance between the taxiway/runway holding position and the holding position for an ILS critical area is 50 feet or less, one holding position may be established, provided it does not affect capacity. The local FAA airways facilities office will help designate the ILS critical areas for the airport operator.