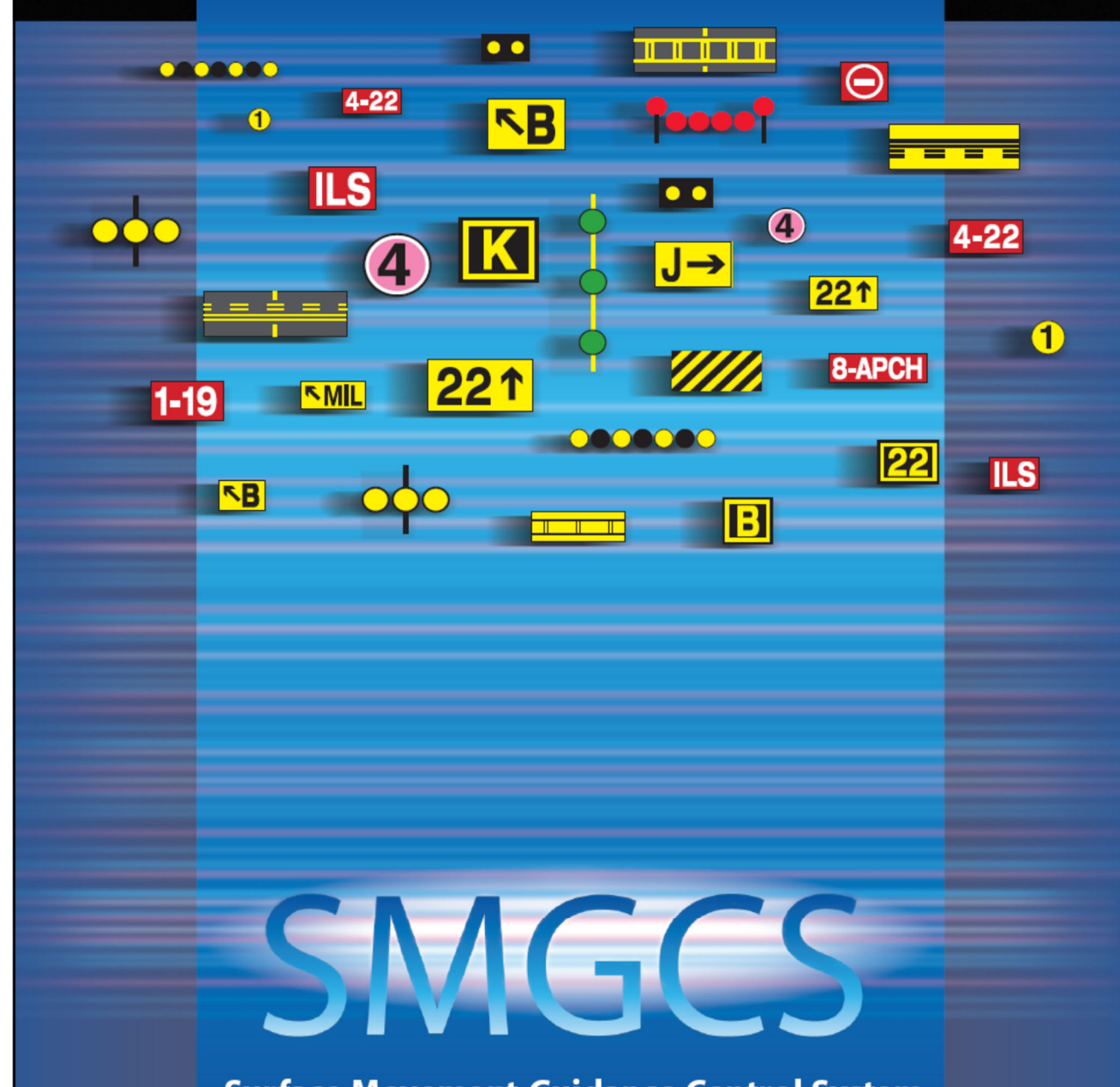




AIRPORT Markings, Signs, and Selected Surface Lighting




Surface Movement Guidance Control System

GUIDE TO SMGCS FEATURES


 In order to enhance taxiing capabilities in low visibility conditions and reduce the potential for runway incursions, improvements have been made in signage, lighting, and markings. In addition to these improvements, Advisory Circular (AC) 120-57A, Surface Movement Guidance and Control System, more commonly known as SMGCS (acronym pronounced 'SMIGS'), requires a low visibility taxi plan for any airport which has scheduled air carrier takeoff or landing operations with less than 1,200 feet runway visual range (RVR) visibility conditions. This plan affects both air crew and vehicle operators. Taxi routes to and from the SMGCS runway must be designated and displayed on a SMGCS Low Visibility Taxi Route chart.

 A brief detail of SMGCS features is listed below but SMGCS airports may not have all of these features. For additional SMGCS information refer to the Aeronautical Information Manual or the particular airport's SMGCS Low Visibility Taxi Route chart.

STOP BAR LIGHTS

 Stop bars are required at intersections of an illuminated (centerline or edge lighted) taxiway and an active runway for operations less than 600 feet RVR. These lights consist of a row of red unidirectional, in-pavement lights installed along the holding position marking. When extinguished by the controller, they confirm clearance for the pilot or vehicle operator to enter the runway. Controlled stop bars operate in conjunction with green centerline lead-on lights, which extend from the stop bar location onto the runway. Normal operation of stop bars include:

- a. When ATC issues a clearance to the pilot to enter the runway they activate a timer. This action causes the red stop bar to be extinguished and the green lead-on lights to illuminate.
- b. After traveling approximately 150 feet beyond the stop bar, the aircraft or vehicle activates a sensor. This sensor illuminates the red stop bar and extinguishes the first segment of the lead-on lights between the stop bar and the sensor. This protects the runway against inadvertent entry by a trailing aircraft or vehicle.
- c. The aircraft then activates another sensor at approximately 300 feet which extinguishes the remaining lead-on lights.
- d. If either sensor is not activated within a specified time limit, the stop bar will automatically reset to "on" and both sets of lead-on lights will be turned "off."

 Should the pilot or vehicle operator have a discrepancy between the condition of the stop bar or lead-on lights and the verbal clearance from the controller, the aircraft or vehicle shall stop immediately.

WARNING

PILOTS AND VEHICLE OPERATORS
SHALL NEVER CROSS
AN ILLUMINATED RED STOP BAR

RUNWAY GUARD LIGHTS

☞ Runway guard lights, either elevated or in-pavement, may be installed at all taxiways which provide access to an active runway. They consist of alternately flashing yellow lights. These lights are used to denote both the presence of an active runway and identify the location of a runway holding position marking.

TAXIWAY CENTERLINE LIGHTING

☞ Taxiway centerline lights guide ground traffic under low visibility conditions and at night. These lights consist of green in-pavement lights.

GEOGRAPHIC POSITION MARKINGS

☞ ATC will verify the position of aircraft and vehicles using geographic position markings. The markings can be used either as hold points or for position reporting. These checkpoints or “pink spots” will be outlined with a black and white circle and be designated with a number, or a number and a letter.

CLEARANCE BAR LIGHTS


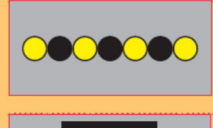
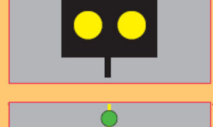
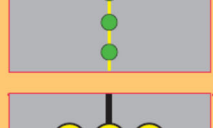
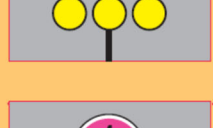


☞ Three yellow in-pavement clearance bar lights will be used to denote holding positions for aircraft and vehicles. When used for hold points, they are co-located with geographic position markings.

A CAUTION ON LAHSO

LAHSO is an acronym for “Land and Hold Short Operations.”

Pilots should consult the Aeronautical Information Manual, Airport/Facility Directory and airport diagrams to thoroughly prepare for, and safely conduct, LAHSO operations. LAHSO operational requirements are contained in FAA order 7110.118. See www.faa.gov/ats/ata/atx.

RUNWAY/TAXIWAY ARRANGEMENT OF SMGCS FEATURES

	Feature	Description and/or Action
	Stop Bar Lights	Row of red, in-pavement lights that when illuminated designate a runway hold position. NEVER CROSS AN ILLUMINATED RED STOP BAR.
	In-Pavement Runway Guard Lights	Row of alternately flashing yellow lights at runway holding positions indicating an active runway.
	Elevated Runway Guard Lights	Alternately flashing yellow lights at runway holding positions indicating an active runway.
	Centerline Lead-on Lights	Green in-pavement lights to assist taxiing aircraft at night and in low visibility conditions.
	Clearance Bar Lights	In-pavement yellow lights. When installed with geographic position markings they indicate designated aircraft or vehicle hold points.
	Geographic Position Marking (pink spot)	Indicates a specific location on the airport surface.
	Taxiway Centerline Marking	Provides a visual cue to permit taxing along a designated path. Marking may be enhanced on light-colored pavement by outlining with a black border.



**Edge of Protected
Area for Runway**

These signs are used on controlled airports to identify the boundary of the runway protected area. It is intended that pilots exiting this area would use this sign as a guide to judge when the aircraft is clear of the protected area.



**Edge of ILS
Critical Area**

These signs are used on controlled airports to identify the boundary of the ILS critical area. It is intended that pilots exiting this area would use this sign as a guide to judge when the aircraft is clear of the ILS critical area.



Taxiways and Runways

On Taxiways—Provides direction to turn at next intersection to maneuver aircraft onto named taxiway.
On Runways—Provides direction to turn to exit runway onto named taxiway.



Taxiway

Provides general taxiing direction to named runway.



Taxiways and Runways

Provides general taxiing direction to identified destination. Other destination signs include directions to taxiway, runway.



Runway

Provides remaining runway length in 1,000 feet increments.



**Hold Short Position
Sign for Other
Designated Point**

Hold Short at a point on a runway other than at an intersecting runway or taxiway as instructed by ATC.



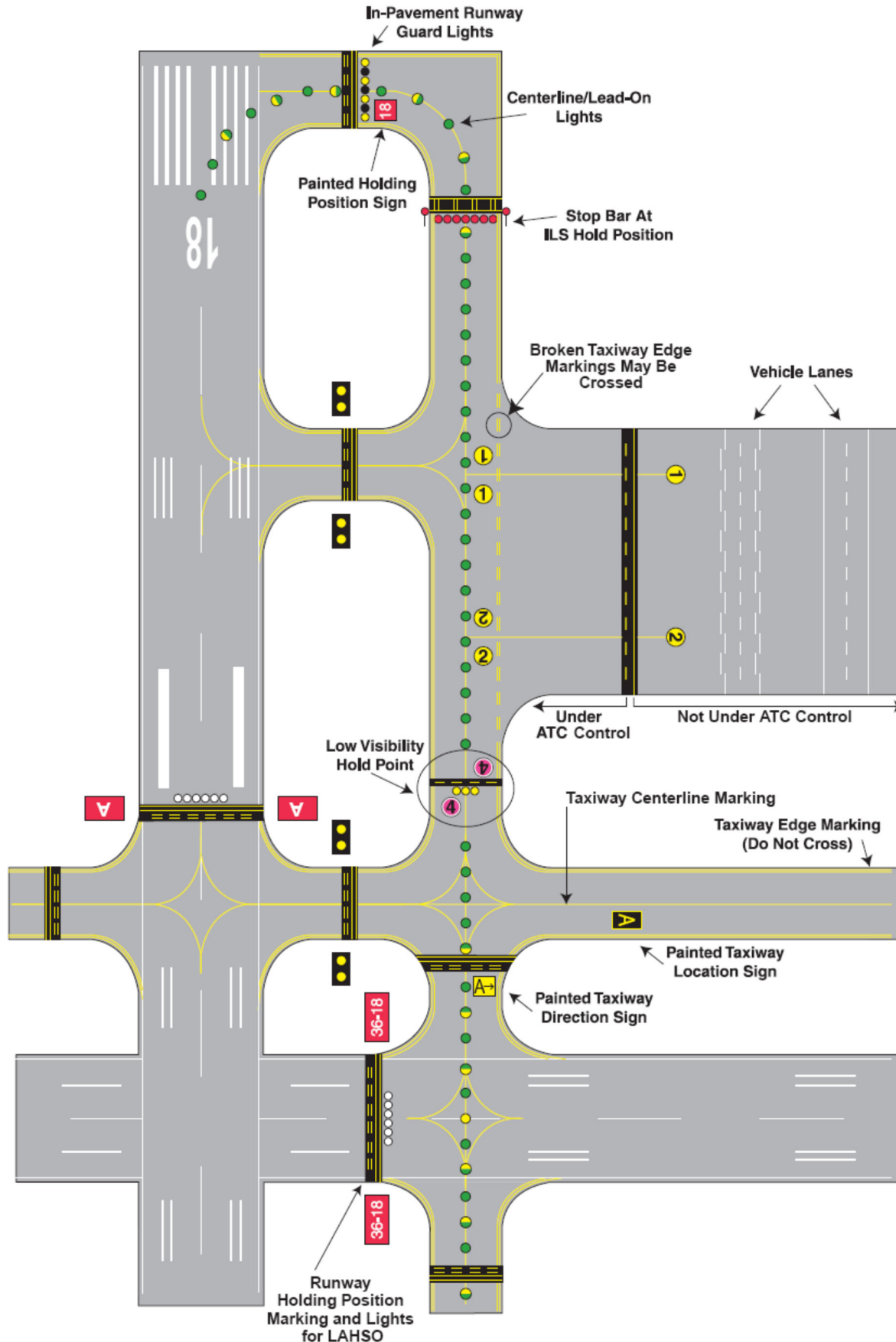
Taxiway Ending Marker

Indicates taxiway does not continue.

U.S. Airport Signs

Sign & Location	Pilot Action/Sign Purpose
 On Taxiways at Intersection with Runway and at Runway/Runway Intersection	Do not cross unless clearance has been received (towered airport) or until clear (nontowered airport). At runway/runway intersections, hold short if land and hold-short clearance has been accepted.
 Hold Position on Taxiway Located in Runway Approach or Departure Area Hold	Controlled Airport —Hold when instructed by ATC. Noncontrolled Airport —Proceed when no traffic conflict exists.
 ILS Critical Area	Hold when instructed by ATC when approaches are being made with visibility less than 2 miles or ceiling less than 800 feet.
 Aircraft Entry Prohibited	Do not enter. Identifies paved areas where aircraft entry is prohibited.
 Taxiway	Identifies taxiway on which aircraft is located.
 Runway	Identifies runway on which aircraft is located.

Key Airport Markings And Selected Lighting



Signs, Markings, and Lights for Land and Hold Short Operations (LAHSO)



Runway Holding Position Marking—Located at the hold short point on LAHSO runways.



Hold Short Position Sign for Intersecting Runway—Located alongside the hold short points on LAHSO runways. Hold short of intersecting runway on taxiway.



Hold Short Position Sign for Intersecting Taxiway—Hold short of intersecting taxiway.

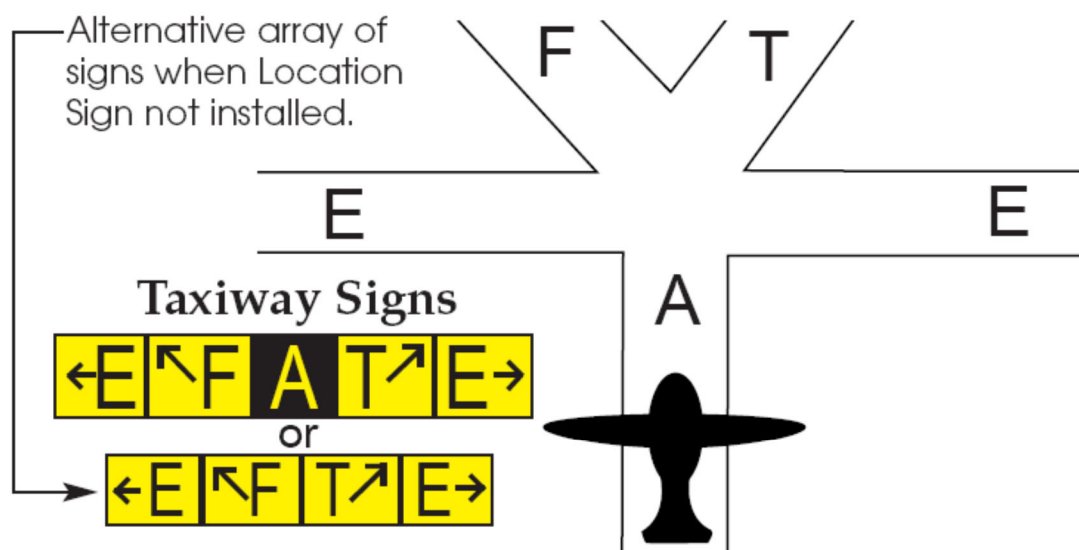


Hold Short Position Sign for Other Designated Point—Hold short at a point on a runway other than at an intersecting runway or taxiway.



LAHSO Lights (in-pavement pulsing white lights)—Located at the LAHSO hold short point.

Arrangement of Signs at Intersection





U.S. Department of Transportation
Federal Aviation Administration

Current as of July 2002

For the most current information on airport markings, signs, surface lights, and SMGCS, refer to:

- the latest edition of the Aeronautical Information Manual
- Flight Standards Web site for SMGCS AC and additional SMGCS information at <http://www.faa.gov/avr/afs/afs410/index.cfm>
- Office of Runway Safety Web site at <http://www.faarsp.org>
- Office of System Safety Web site at http://www.asy.faa.gov/safety_products/

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