

# Private Pilot (ASEL) Ground School Course

Lesson 12 | Airport Operations

Chester County  
Aviation



# Lesson Overview

## Lesson Objectives:

- Develop a knowledge of airport data, signs, lighting and markings.

## Lesson Completion Standards:

- Student demonstrates satisfactory knowledge of airport operations by answering questions and actively participating in classroom discussions.

# Types of Airports

Airport Operations

# Airport Types

- Many different types of airports exist, and all have their own purposes.
- Combinations of these can exist
- The different types are:
  - Towered
  - Non-Towered
  - Civil
  - Military/Federal
  - Private

# Airport Types - Towered

- Towered airports are busier airports that require an air traffic controller to separate airplanes in the local area



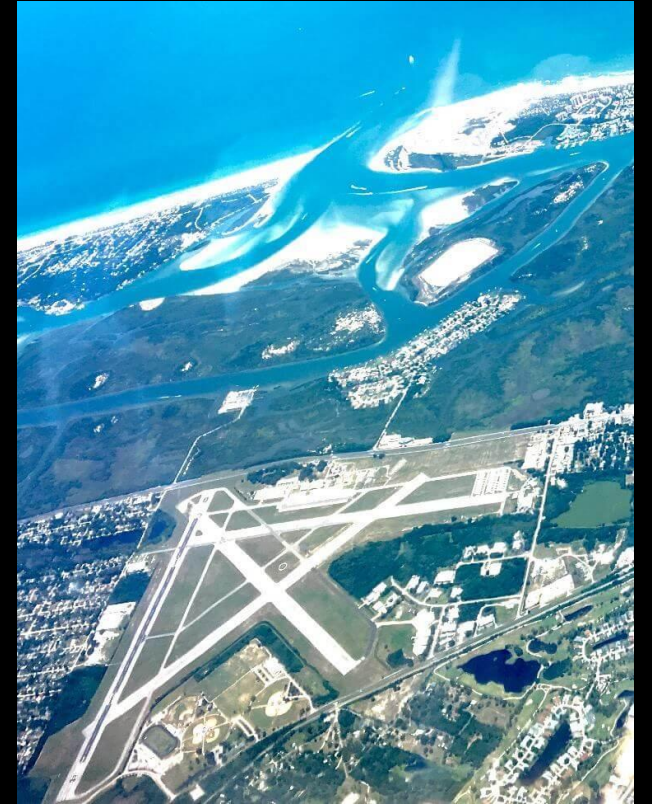
# Airport Types – Non-Towered

- Non-Towered airports are less busier airports that do not require an air traffic controller to separate airplanes in the local area
- Think of these as “Pilot-Controlled”



# Airport Types – Civil

- A civil use airport is a public airport that is open to all pilots.
- These airports can be towered or non-towered.



# Airport Types – Military/Federal

- These airports are operated by the military, National Aeronautics and Space Administration (NASA), or other agencies of the Federal Government.
- These airports can be towered or non-towered. (Often Towered)





# Airport Types – Private

- These are airports that are not for public or military/federal use.
- Often used by a particular party only.
- Often these are non-towered airports.



# Source of Airport Data

Airport Operations

# Airport Data

- Many different sources can be used to determine data about a particular airport.
- Some include:
  - Aeronautical Charts
  - Chart Supplement
  - Notice to Air Missions (NOTAM's)
  - Automated Terminal Information Service (ATIS)
  - Automated Weather Observing System (AWOS)

# Airport Data – Aeronautical Charts

- Aeronautical Charts can provide many details about an airport including
  - Airport name
  - Type/structure/design of airspace
  - Airport elevation
  - Length of longest runway
  - Tower/CTAF/Unicom Frequency
  - ATIS/AWOS Frequency
  - Beacon
  - Runway lighting type



# Airport Data – Chart Supplement

- The Chart Supplement can provide any information about an airport a pilot may need.

## COATESVILLE

**CHESTER CO G O CARLSON** (MQS)(KMQS) 2 W UTC-5(-4DT) N39°58.74' W75°51.93'

660 B NOTAM FILE IPT

**RWY 11-29:** H5400X100 (ASPH-GRVD) S-30, D-48 HIRL

0.4% up E

**RWY 11:** REIL. VASI(V4R)—GA 3.0° TCH 52'. Tree.

**RWY 29:** REIL. PAPI(P4L)—GA 3.0° TCH 57'. Tree.

**SERVICE:** S4 FUEL 100LL, JET A OX 1, 2, 3, 4 LGT Dusk-Dawn.

ACTVT REIL Rwy 11-29; VASI Rwy 11; HIRL Rwy 11-29—CTAF.

**NOISE:** Noise abatement procedures in effect ctc FBO 610-384-9000.

**AIRPORT REMARKS:** Attended 1100-0300Z±. Migratory birds and deer on and in/ov arpt. Helicopter ops in/ov arpt south and southwest of Rwy 11 thld. For svc after hrs ctc 610-384-9000. Helicopter t/c requested to land and t/k from rwy only. Hover taxi along Twy A prohibited. Wheel taxi on txy or hover from rwy to ramp side parking spot by crossing perpendicular to Alpha. Helicopter hover taxiing, tkfs and l/dgs prohibited from Twy A. +164' water twr 1343' from Rwy 11 thld 1842' right marked with strobe lgt dalgt hrs, standard obstruction lgt ngt hrs.

**AIRPORT MANAGER:** 610-383-6057

**WEATHER DATA SOURCES:** AWOS-3 126.25 (610) 384-6132.

**COMMUNICATIONS:** CTAF/UNICOM 122.7

® PHILADELPHIA APP/DEP CON 124.35

CLNC DEL 125.6

**CLEARANCE DELIVERY PHONE:** For CD ctc Philadelphia Apch at 800-354-9884.

**RADIO AIDS TO NAVIGATION:** NOTAM FILE IPT.

**MODENA (L) (L) VORTACW** 113.2 MXE Chan 79 N39°55.08' W75°40.25' 301° 9.7 NM to fld. 473/9W.

VOR unusable:

036°-046°

047°-057° byd 10 NM

058°-085°

170°-248° byd 27 NM blo 7,500'

170°-248° byd 30 NM blo 9,500'

170°-248° byd 8 NM blo 6,000'

268°-278° byd 28 NM

278°-290° blo 10,000'

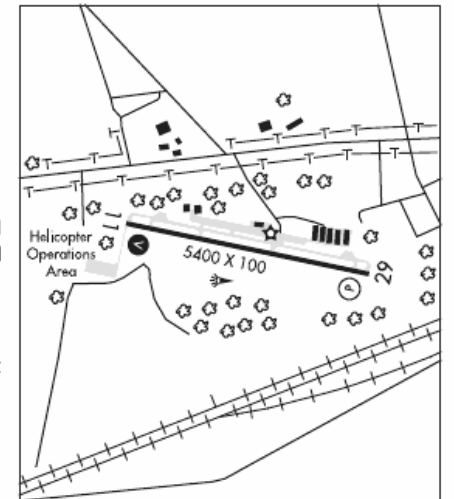
290°-326°

**ILS 108.5 I-MQS Rwy 29. Class IA.**

**WASHINGTON**

H-101, 12J, L-34G, A

IAP



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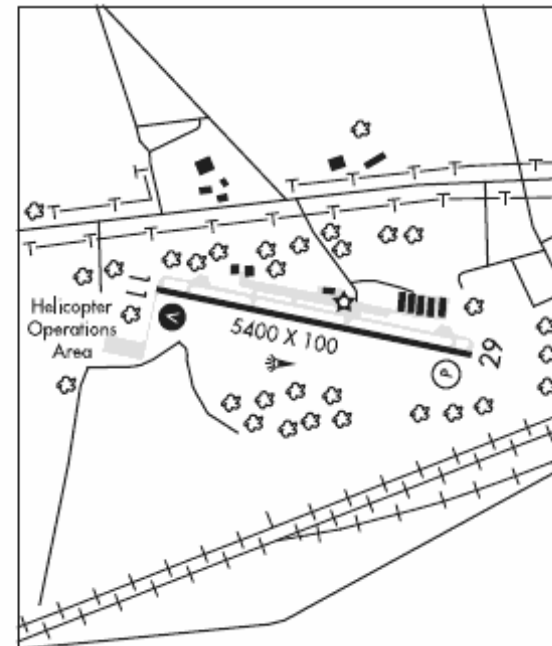
170°-248° byd 8 NM blo 6,000'

268°-278° byd 28 NM

278°-290° blo 10,000'

290°-326°

ILS 108.5 I-MQS Rwy 29. Class IA.



# Airport Data – NOTAM

- Notice to Air Missions (NOTAM) is a notice that contains information essential to personnel concerned with flight operations but not known far enough in advance to be publicized by other means. It states the abnormal status of a component of the National Airspace System (NAS) – not the normal status.
- Many different types of NOTAMs exist and should be checked prior to every flight.
  - NOTAMs can be checked online or by calling a Flight Service Station

# Airport Data – NOTAM

- NOTAM(D): Outlines all local and distant (D) NOTAMs for all navigational facilities, public use airports, seaports, and heliports in the U.S. Chart supplement.

**!MSN 01/006 MSN TWY B1, B2, J, AND  
TWY B NORTH OF RWY 14/32 CLOSED  
TO ACFT WINGSPAN MORE THAN 150  
FT 1801021800-PERM**



# Airport Data – NOTAM

- FDC NOTAMs: FDC, or Flight Data Center NOTAMs outline changes to instrument approach procedures and airways within the U.S.

**!FDC 7/7924 3CK IAP LAKE IN THE HILLS,  
Chicago/Lake In The Hills, IL  
VOR RWY 26, AMDT 4...  
CHART TDZE 887.  
DELETE THRE 885.  
S-26 HAT 493 ALL CATS.  
CHICAGO DUPAGE ALTIMETER SETTING MINIMUMS: S-26  
HAT 553 ALL CATS.  
THIS IS VOR RWY 26, AMDT 4A. 1712041941-PERM**

# Airport Data – NOTAM

- Pointer NOTAM: A pointer NOTAM, literally points out another NOTAM. NOTAMs listed as a pointer NOTAM highlights crucial information that shouldn't be looked passed.

**!IGQ 07/001 IGQ AIRSPACE SEE ZAU 07/033 UAS  
170707066-180707066**

**!VPZ 07/002 VPZ AIRSPACE SEE ZAU 07/033 UAS  
1707070600-1807070600**

# Airport Data – NOTAM

- SAA NOTAM: Special Activity Airspace NOTAMs are issued when the airspace is active outside its normally published times and when required by the published schedule.

**!SUAC ZMP AIRSPACE CRYPT NORTH MOA  
5000FT-16000FT 1307150400-1307150600**

# Airport Data – NOTAM

- NOTAM (U): A subpart of NOTAM (D), (U) NOTAMs are NOTAMs that come from an outside source and which have not yet been verified by management personnel.

**ORT 6K8 (U) RWY ABANDONED VEHICLE**

# Airport Data – NOTAM

- NOTAM (O): A subpart of NOTAM (D), (O) NOTAMs are information that doesn't fit NOTAM criteria but may be beneficial information for pilots.

**LOZ LOZ (O) CONTROLLED BURN OF HOUSE 8 NE APCH  
END RWY 23 WEF 0710211300-0710211700**

# Airport Data – NOTAM

- Military NOTAM: NOTAMs pertinent to the U.S. military navigational aids and airports located within the national airspace system.

**ZMP W0501/17 Military 11/16/2017 1755 02/01/2018  
0601 [DAFIF AND/OR FLIP CHANGE] AIR NAVIGATION  
ROUTE; AP/1B P3-73; VR-604; ROUTE DESCRIPTION  
POINT D, CHG ALTITUDE DATE TO: 500 FT AGL BLOCK  
10000 FT MSL.**

# Airport Data – ATIS/AWOS

- ATIS/AWOS is a source of weather data that can be received over the radio at many airports.
- ATIS is found at Towered airport and is recorded by a person
- AWOS is commonly found at Non-towered airports and is automated

# Airport Data – ATIS/AWOS

- AWOS is an Automated Weather Observation system that uses weather sensors at the airport to determine the current weather conditions and broadcasts those over the radio.
- Different Types exist:
  - AWOS-1/2/3
  - AWOS-A or AWOS-AV
  - ASOS





# Airport Data – ATIS/AWOS

- ATIS is Automatic Terminal Information Service that uses human observer and automated sources to broadcast the conditions over the radio. ATIS is encoded with a letter, “Advise you have information Alpha.”
- ATIS includes critical info like NOTAMs or approaches/runways in use



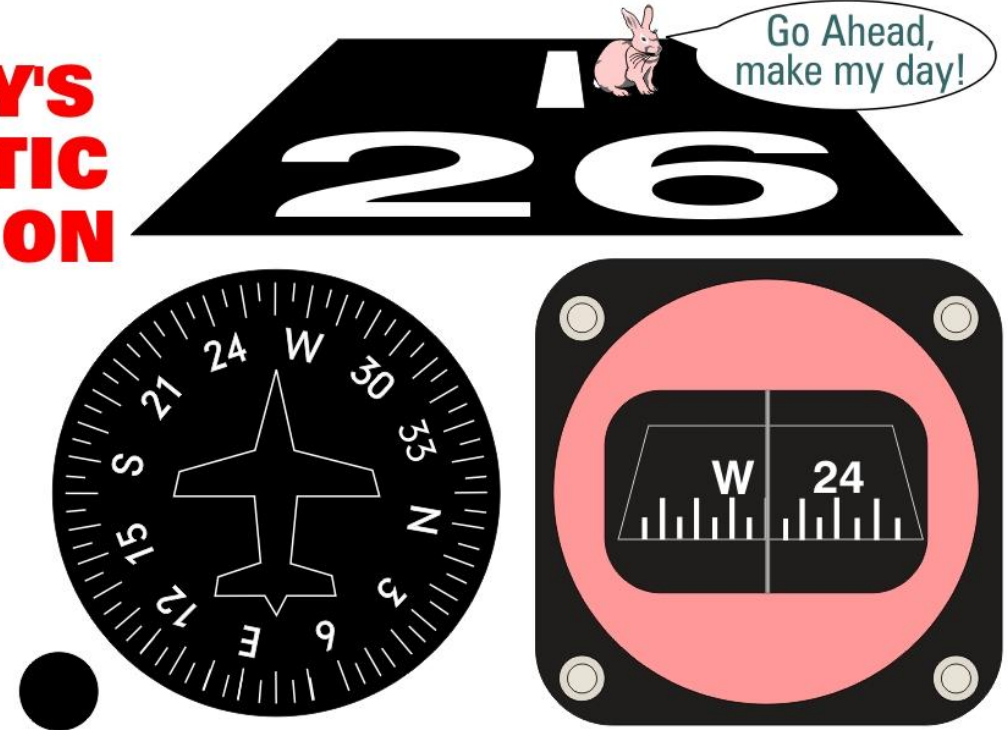
# Airport Signs and Markings

Airport Operations

# Runway Direction

- When the airplane is pointed down any runway, the airplane's magnetic compass should indicate that runway's direction
- When operating at an airport wind direction, landing direction, and any headings ATC assigns are all based on magnetic direction

## THE RUNWAY'S MAGNETIC DIRECTION



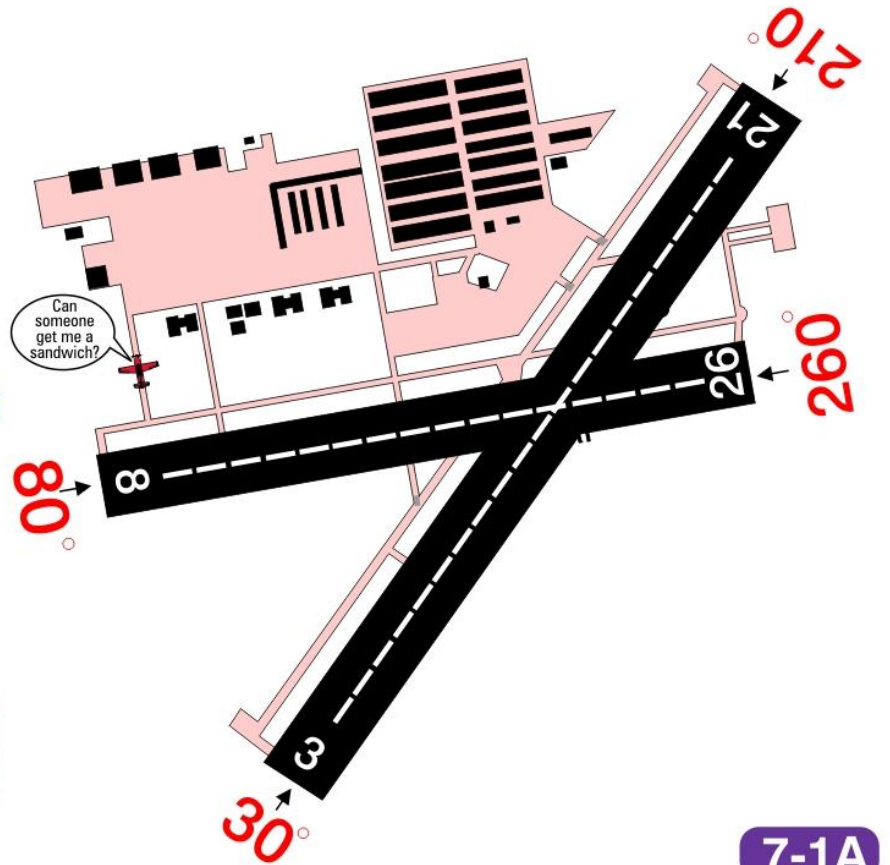
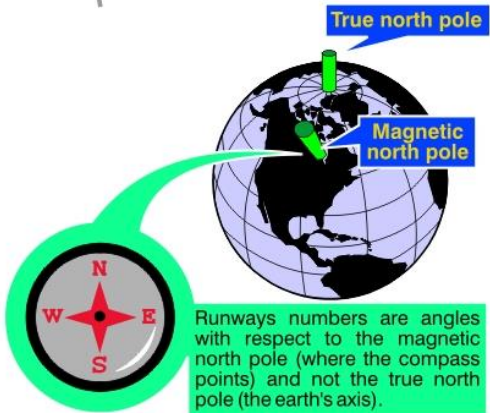
7-2

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Both the heading indicator and the magnetic compass show the magnetic direction when pointed down the center of runway 26.

# Airport Layout

## THE AIRPORT LAYOUT



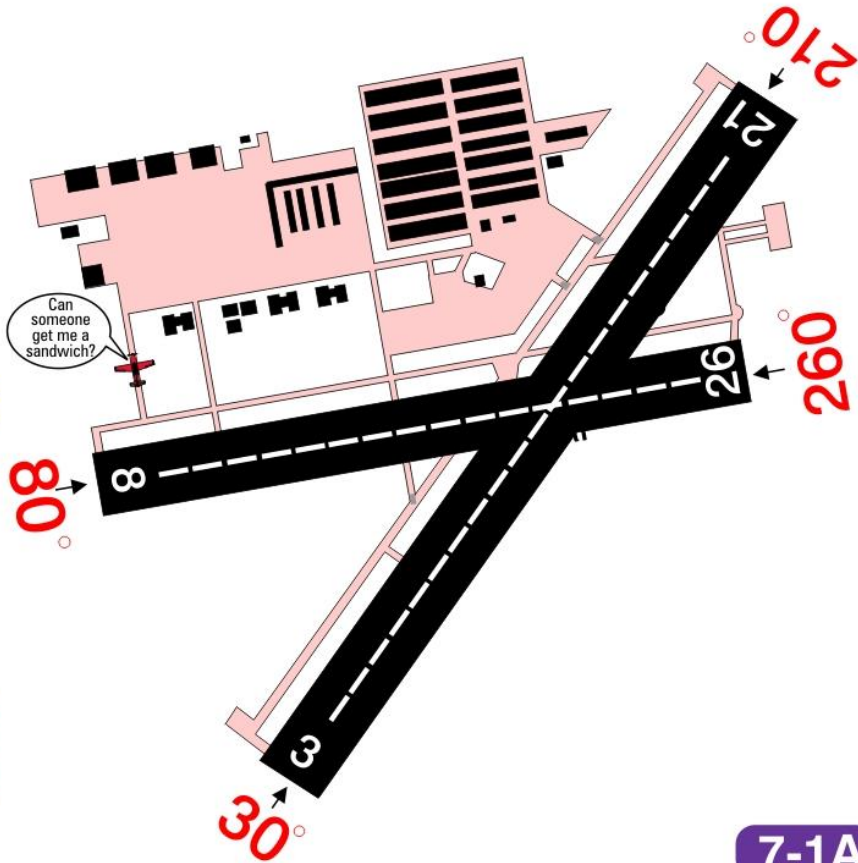
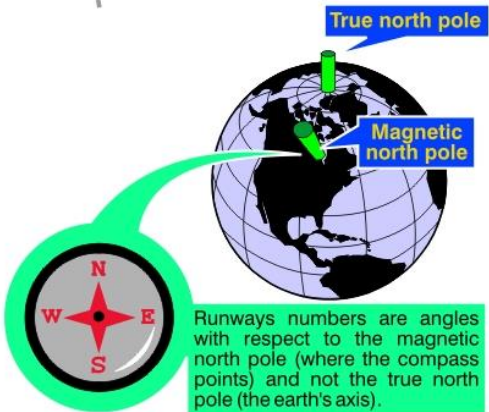
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7-1A

- Runway numbers represent the first 2 digits of the runway's actual 3 digit *magnetic* direction
- Rounded off to the nearest 10 degrees
- A runway oriented at 211 degrees becomes Runway 21
- A runway pointed 076 degrees becomes Runway 8

# Airport Layout

## THE AIRPORT LAYOUT



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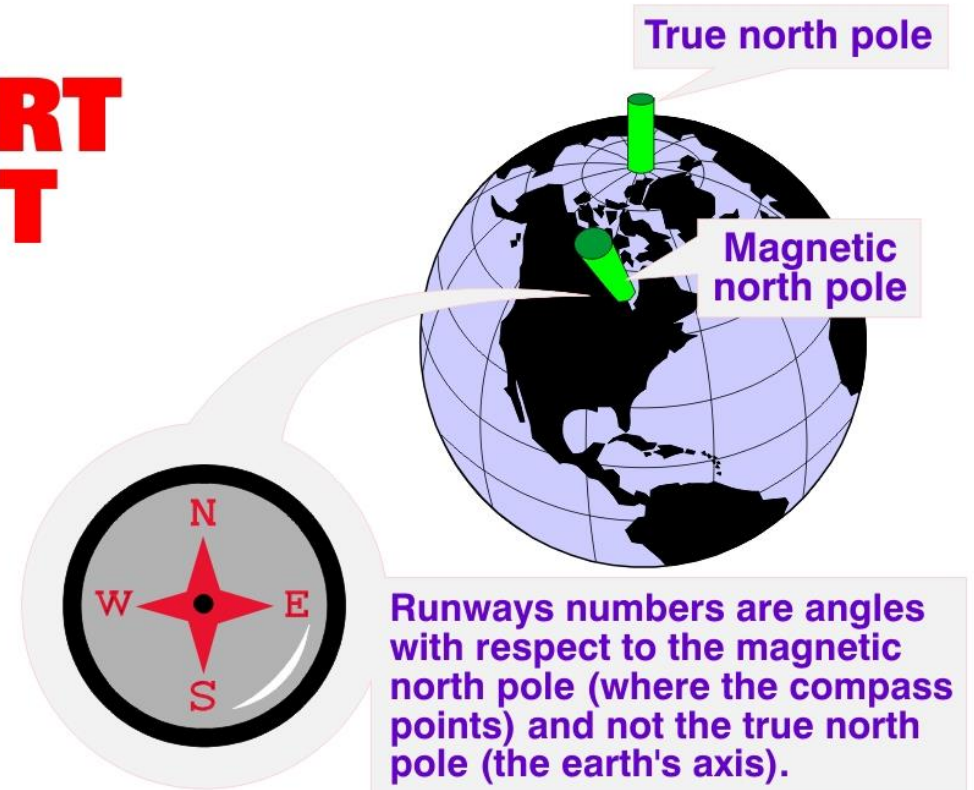
7-1A

- Each runway has numbers on each end
- These numbers, when expressed as 3 digit figures, differ by a value of  $180^\circ$

# Runway Direction

- All runway angles are oriented to the magnetic north pole, where the magnetic compass points - not the true north pole

## THE AIRPORT LAYOUT

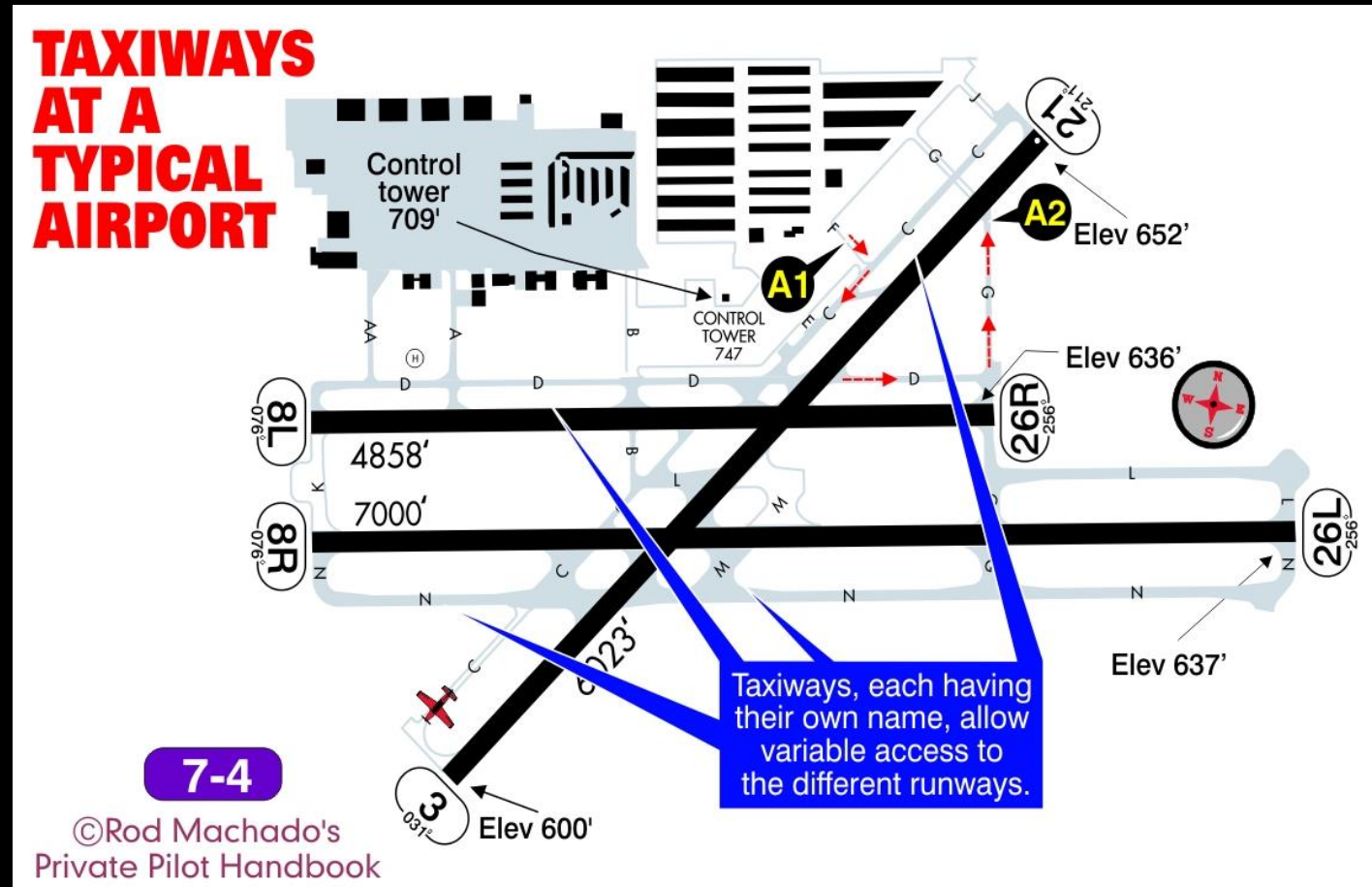


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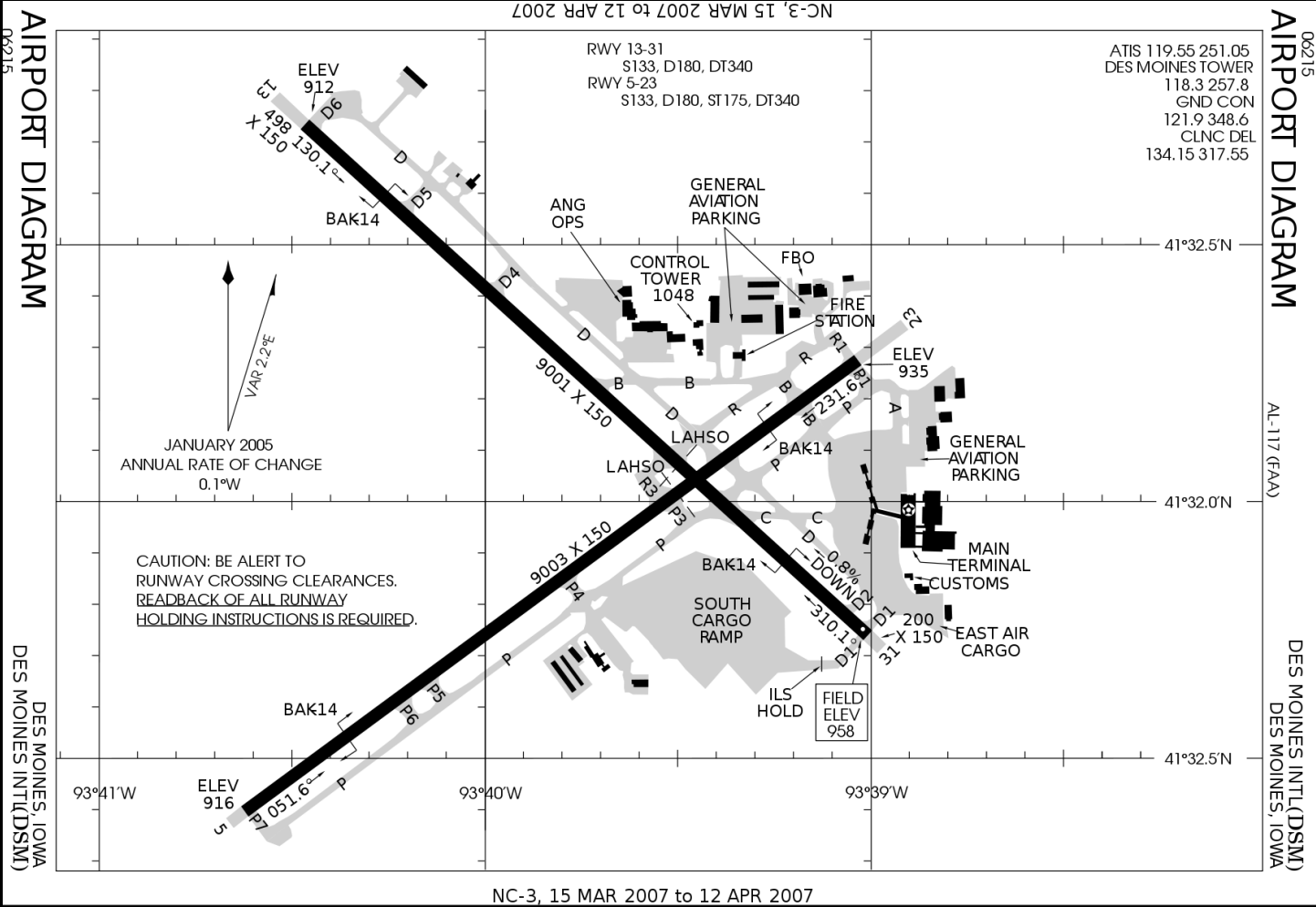
7-1B

# Airport Diagram

- Taxiway D (Delta) parallels the north side of Runway 8L-26R
- Taxiway C (Charlie) parallels the northwest side of Runway 3-21
- Taxi clearance:  
*“November 67730, taxi to Runway 21 via Charlie, southwest to Delta, turn left; cross Runway 21, left on Golf, hold short of Runway 21 at Golf.”*



# Airport Taxi Chart





# Phonetic Alphabet

- Pilots and ATC use the phonetic alphabet
- Some letters and numbers can sound a lot like others, especially when spoken over an aviation radio by a non-native speaker of English
- It's easy to mistake B for C, or E, but there's little chance of mixing up Bravo, Charlie, and Echo
- Phonetic alphabet permits unambiguous communication

**Aviation Phonetic Alphanumeric Codes**

0 ZE-RO	A Alpha	N November
1 WUN	B Bravo	O Oscar
2 TOO	C Charlie	P Papa
3 TREE	D Delta	Q Quebec
4 FOW-er	E Echo	R Romeo
5 FIFE	F Foxtrot	S Sierra
6 SIX	G Golf	T Tango
7 SEV-en	H Hotel	U Uniform
8 AIT	I India	V Victor
9 NIN-er	J Juliet	W Whiskey
	K Kilo	X X ray
	L Lima	Y Yankee
	M Mike	Z Zulu

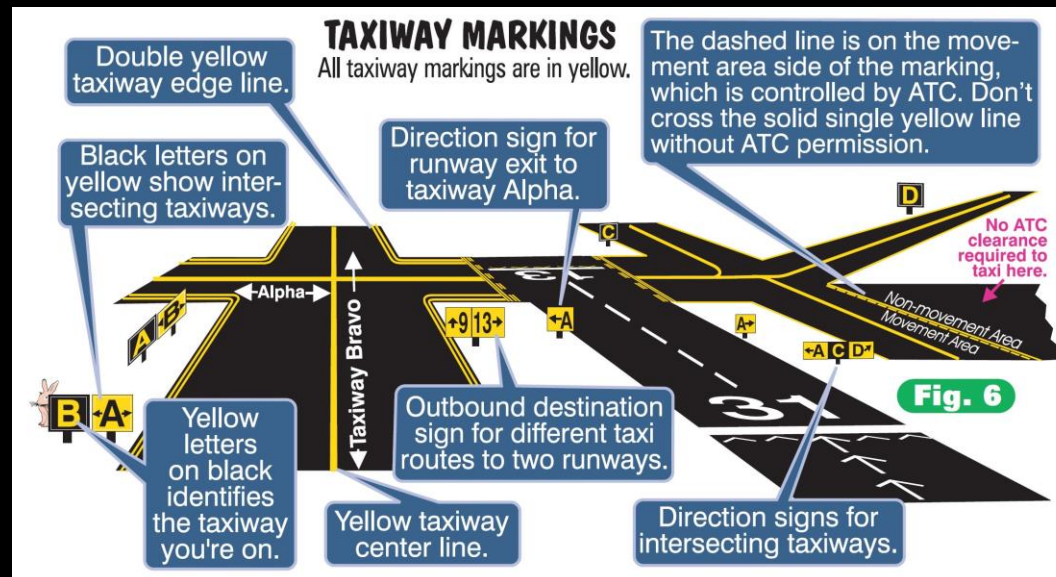


# Practice

Fifty SIX  
Big Red  
Jet planes  
Zoomed  
quickly by  
the tower

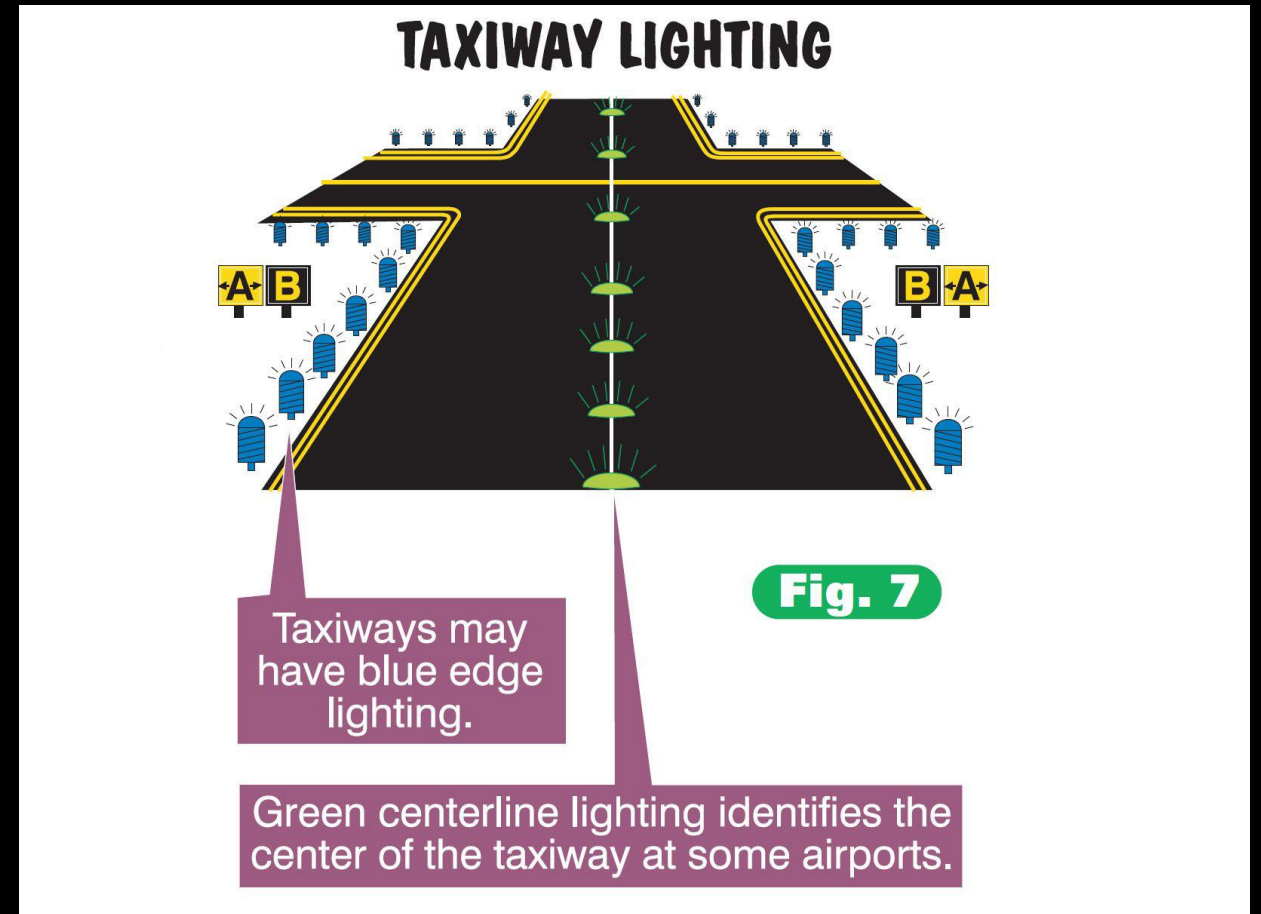
# Taxiways

- Identified by a continuous yellow line with parallel double yellow lines on the outer edges of the taxi surface
- Names are shown by small signs consisting of yellow lettering on a black background
- Signs containing black lettering on a yellow background indicate the position of intersecting taxiways
- Arrows indicate the relative direction of these intersecting taxiways



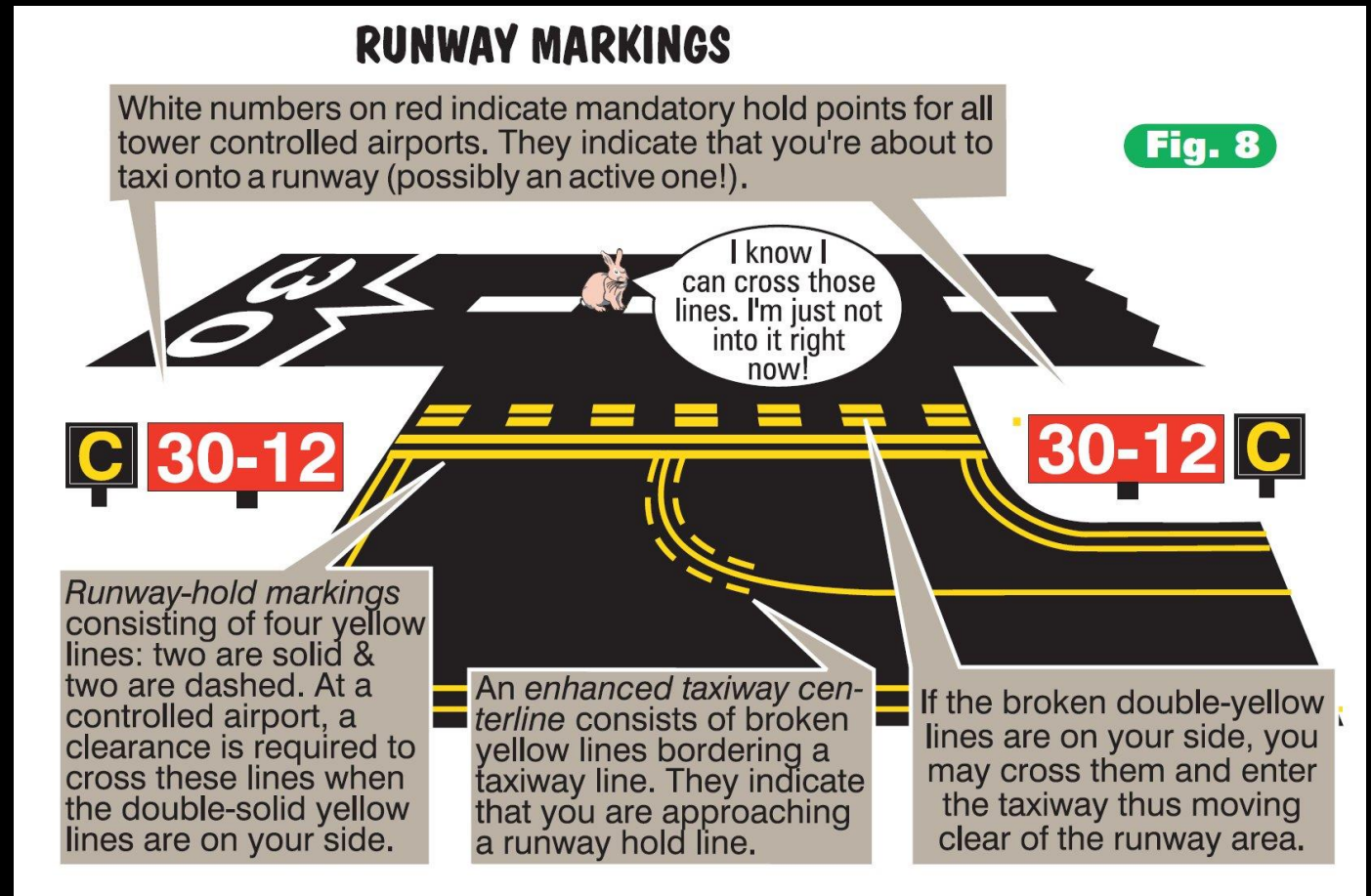
# Taxiway Lighting

- At night, many taxiways have blue omnidirectional sideline lighting
- Some airport taxiways may have embedded green centerline lighting



# Runway Hold Markings

- Pilots must be able to identify the point where the taxiway ends, and the runway begins
- This transition is identified by four yellow lines
- Two solid and two dashed crossing perpendicular to the taxiway and running parallel to the runway



# Runway Hold Markings

## RUNWAY MARKINGS

White numbers on red indicate mandatory hold points for all tower controlled airports. They indicate that you're about to taxi onto a runway (possibly an active one!).

Fig. 8

I know I can cross those lines. I'm just not into it right now!

C 30-12

30-12 C

Runway-hold markings consisting of four yellow lines: two are solid & two are dashed. At a controlled airport, a clearance is required to cross these lines when the double-solid yellow lines are on your side.

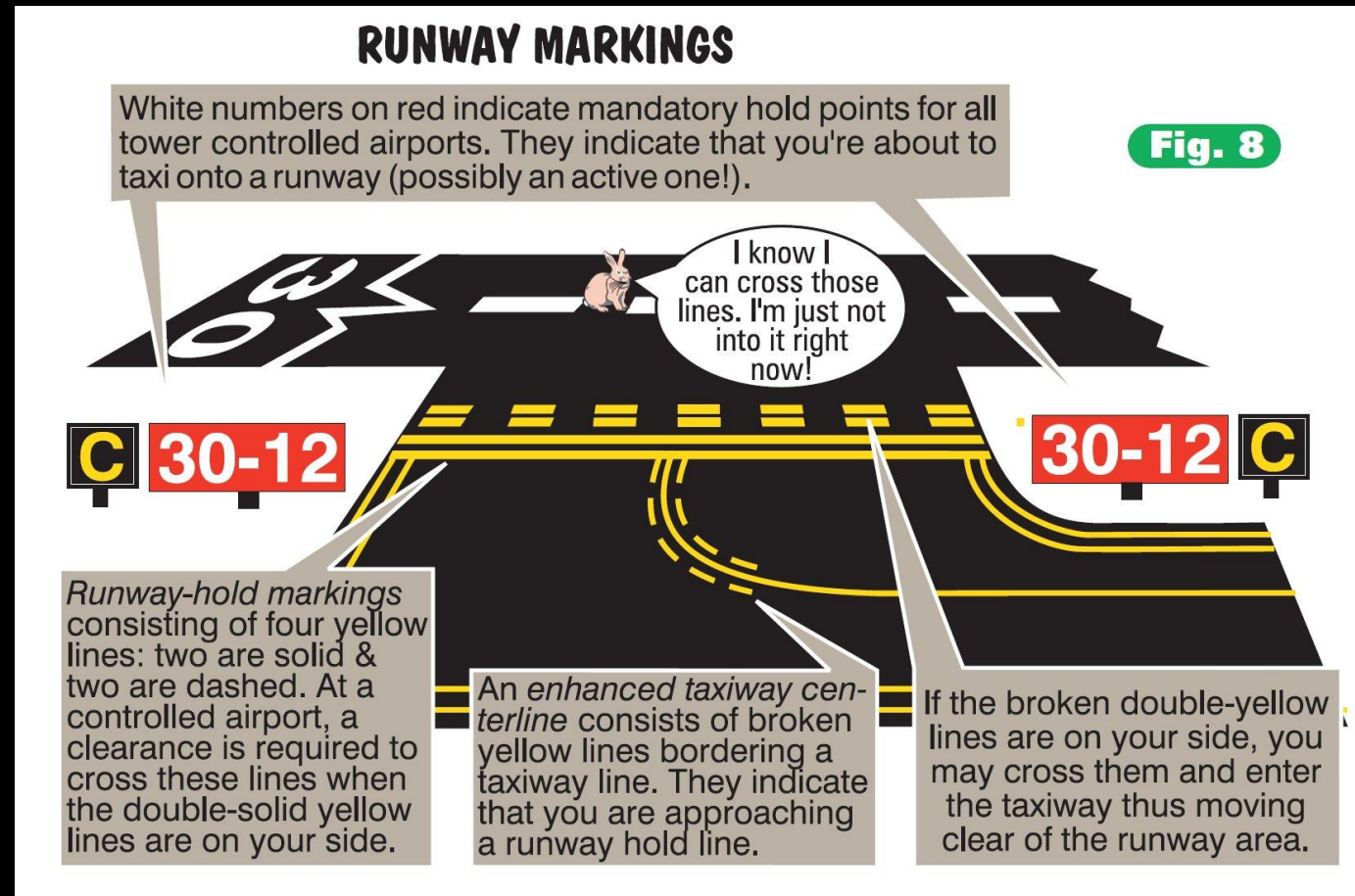
An enhanced taxiway centerline consists of broken yellow lines bordering a taxiway line. They indicate that you are approaching a runway hold line.

If the broken double-yellow lines are on your side, you may cross them and enter the taxiway thus moving clear of the runway area.

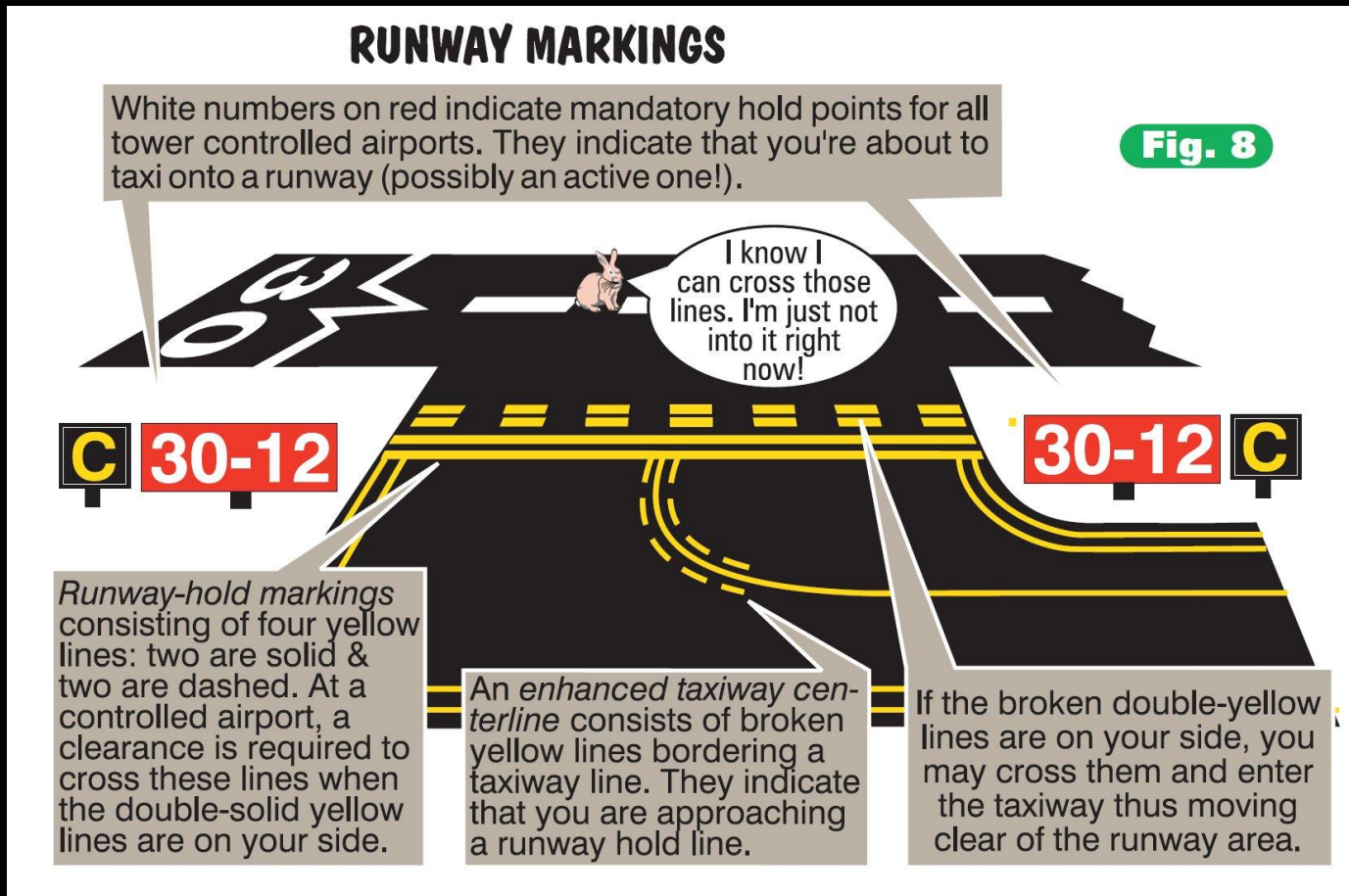
- If the two solid lines are on your side, at a tower-controlled airport a clearance is required to enter the runway
- If the double broken dashed lines are on your side, you must cross those lines to clear the runway and enter the taxiway
- The FAA assumes an airplane hasn't cleared the runway until the entire airplane is on the other side of the broken double solid lines

# Runway Hold Markings

- At airports without an operating control tower, entering an active runway is at the discretion of the pilot
- Hold short of the runway, behind the solid runway-hold lines
- Taxi onto the runway only when it's clear of traffic and no airplanes are on a short final



# Runway Holding Signs

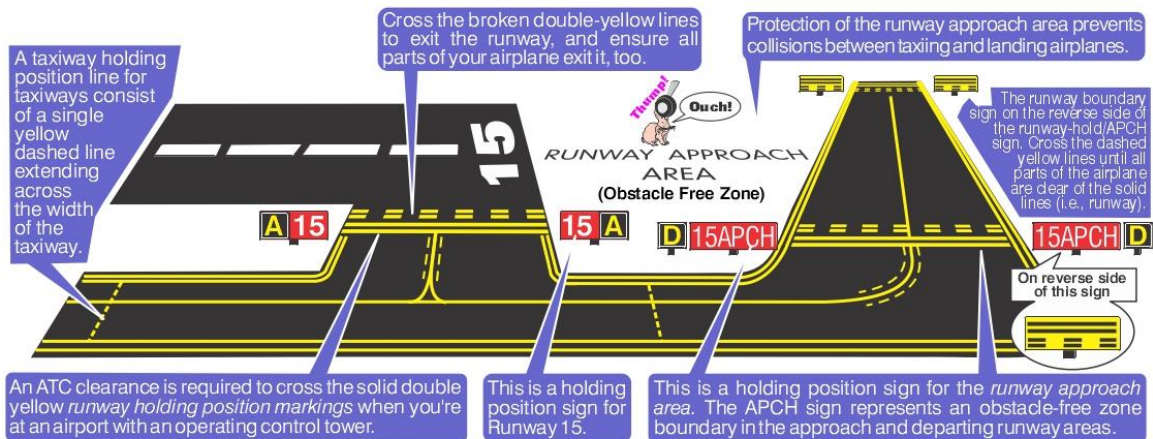


- Another way to identify where the runway begins is the presence of a white-on-red sign next to the dashed and solid double yellow line
- They inform you when you're about to enter an active runway
- Also indicate the runway direction
- Runway 30 is to the left and Runway 12 is to the right



# Runway and Taxiway Hold Sign

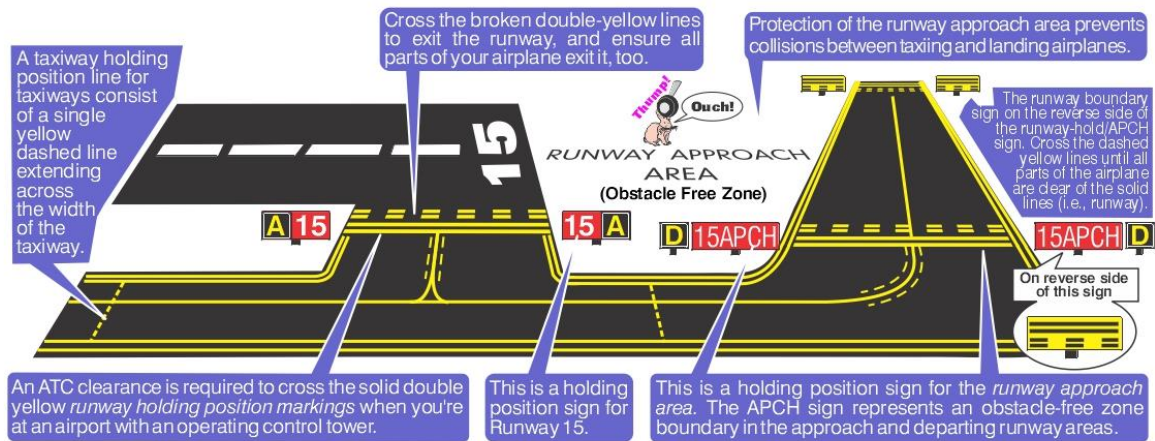
## ADDITIONAL RUNWAY MARKINGS



- Indicates the taxiway intersects the beginning of the takeoff runway
- Holding position markings for a taxiway consisting of a single dashed yellow line
- When tower instructs you to hold short of a taxiway intersection, you must stop short of the dashed yellow line

# Approach Area

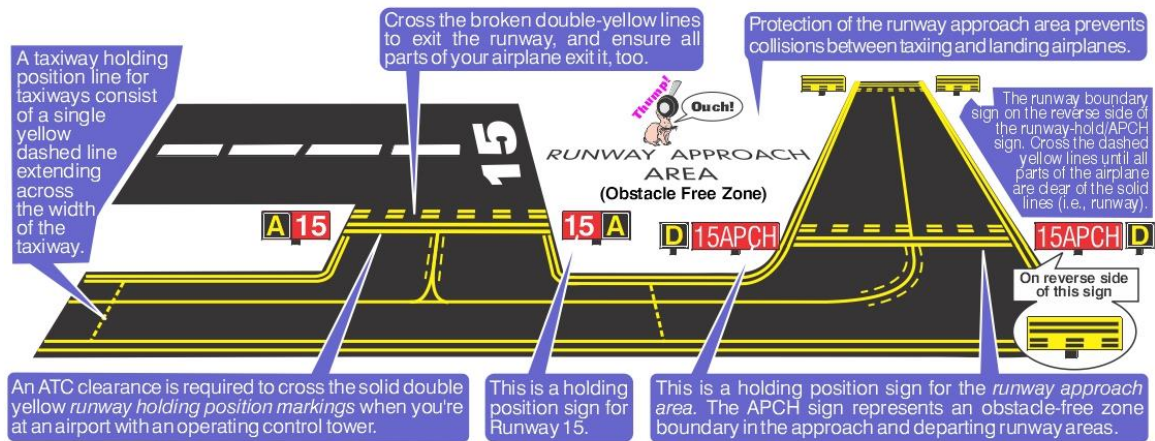
## ADDITIONAL RUNWAY MARKINGS



- Some airports have taxiways that can interfere with the runway approach area
- Airplanes landing on Runway 15 could approach low enough to present a problem to taxiing airplanes in this area
- The 15-APCH (white-on-red lettering) next to the solid double-yellow lines identifies the obstacle free zone area for Runway 15

# Boundary Sign

## ADDITIONAL RUNWAY MARKINGS



- On the opposite side of the runway on taxiway Delta is a runway boundary (or exit) sign
- You'll see double yellow dashed lines and double solid yellow lines
- You must taxi clear of double solid yellow lines to officially exit a runway

# Runway Surface Markings

- Yellow chevrons (A) indicate the surface is unsuitable for either taxiing, taking off, or landing
- Displaced threshold (B) has white arrows pointing in one direction
- This is a runway area that is not to be used for landing, but on which you can taxi, take off, or roll out after landing
- Yellow X indicates closed runway



# Airport Signs and Markings

- Mandatory – A,B,C,D
- Location – E,F
- Information
- Direction – I,J,K
- Destination - I
- Runway Distance Remaining - L















 A	 H
 B	 I
 C	 J
 D	 K
 E	 L
 F	 M
 G	 N

Figure 259. Airport Signs.

# Airport Sign and Marking Quick Reference Guide

- [https://www.faa.gov/airports/runway\\_safety/publications/media/QuickReferenceGuideProof8.pdf](https://www.faa.gov/airports/runway_safety/publications/media/QuickReferenceGuideProof8.pdf)

**AIRPORT SIGN AND MARKING – QUICK REFERENCE GUIDE**

EXAMPLE	TYPE OF SIGN	PURPOSE	LOCATION/CONVENTION
	Mandatory. Holding position for taxiway/runway intersection.	Denotes entrance to runway from a taxiway.	Located <u>side</u> of taxiway within 10 feet of hold position markings.
	Mandatory. Holding position for runway/taxiway intersection.	Denotes intersecting runway.	Located <u>side</u> of way prior to intersection, & <u>side</u> if way more than 150' wide, used as taxiway, or has <u>side</u> & <u>side</u> hold short signs.
	Mandatory. Holding position for runway approach area.	Denotes area to be protected for aircraft approaching or departing a runway.	Located on taxiways crossing thru runway approach areas where an aircraft would enter an RSA or apch'd departure airspace.
	Mandatory. Holding position for ILS critical area/POFZ boundary.	Denotes entrance to area to be protected for an ILS signal or approach airspace.	Located on ways where the ways enter the NAVAID critical area or where aircraft on taxiway would violate ILS approach airspace (including POFZ).
	Mandatory. No entry.	Denotes aircraft entry is prohibited.	Located on paved areas that <u>sign</u> should not enter.
	Taxiway Location.	Identifies taxiway on which the aircraft is located.	Located along taxiway by itself, as part of an array of taxiway direction signs, or combined with a runway/taxiway hold sign.
	Runway Location.	Identifies the runway on which the aircraft is located.	Normally located where the <u>proximity of two ways</u> to one another could cause confusion.
	Runway Safety Area / CFZ and Runway Approach Area Boundary.	Identifies exit boundary for an RSA / CFZ or way approach.	Located on taxiways on <u>back side</u> of certain runway/taxiway holding position signs or runway approach area signs.
	ILS Critical Area/POFZ Boundary.	Identifies ILS critical area exit boundary.	Located on taxiways on <u>back side</u> of ILS critical area signs.
	Direction Taxiway.	Defines designation/direction of intersecting taxiway(s).	Located on <u>side</u> <u>side</u> to intersection with an array L to R as clockwise manner.
	Runway Exit.	Defines designation/direction of exit taxiways from the way.	Located on same side of runway as exit, prior to exit.
	Outbound Destination.	Defines directions to take-off runway(s).	Located on taxi routes to runway(s). <u>side</u> collocated or combined with other signs.
	Inbound Destination.	Defines directions to airport destinations for arriving aircraft.	Located on taxi routes to airport destinations. <u>side</u> collocated or combined with other types of signs.
	Information.	Provides procedural or other specialized information.	Located along taxi routes or aircraft parking/tieing areas. May not be lighted.
	Taxiway Ending Marker.	Indicates taxiway does not continue beyond intersection.	Installed at taxiway end or far side of intersection, if visual cues are inadequate.
	Distance Remaining.	Distance remaining info for take-off/landing.	Located along the sides of runways at 1000' increments.

EXAMPLE	TYPE OF MARKING	PURPOSE	LOCATION/CONVENTION
	Holding Position.	Denotes entrance to runway from a taxiway.	Located across centerline within 10 feet of hold sign on taxiways and on certain runways.
	ILS Critical Area/POFZ Boundary.	Denotes entrance to area to be protected for an ILS signal or approach airspace.	Located on ways where the ways enter the NAVAID critical area or where aircraft on taxiway would violate ILS approach airspace (including POFZ).
	Taxiway/Taxiway Holding Position.	Denotes location on taxiway or apron where aircraft hold short of another taxiway.	Used at ATCT airports where needed to hold traffic at a taxiway intersection. Installed provides wing clearance.
	Non-Movement Area Boundary.	Delineates movement area under control of ATCT, from non-movement area.	Located on boundary between movement and non-movement area. Located to ensure wing clearance for taxing aircraft.
	Taxiway Edge.	Defines edge of usable, full strength taxiway.	Located along way edge where contiguous shoulder or other paved surface NCT intended for use by aircraft.
	Dashed Taxiway Edge.	Defines taxiway edge where adjoining pavement is usable.	Located along way edge where contiguous paved surface or apron is intended for use by aircraft.
	Surface Painted Holding Position.	Denotes entrance to runway from a taxiway.	Supplements elevated holding position signs. Required where hold line exceeds 200'. Also useful at complex intersections.
	Enhanced Taxiway Centerline.	Provides visual cue to help identify location of hold position.	Taxiway centerlines are enhanced 150' prior to a runway holding position marking.
	Surface Painted Taxiway Direction.	Defines designation/direction of intersecting taxiway(s).	Located L side for turns to left. R side for turns to right. Installed prior to intersection.
	Surface Painted Taxiway Location.	Identifies taxiway on which the aircraft is located.	Located R side. Can be installed on L side if combined with surface painted hold sign.

Ref: AC 150/5340-1J Standards for Airport Markings, and AC 150/5340-19C Standards for Airport Signs Systems

Federal Aviation Administration

# Mandatory Instruction Signs

- Red background with white inscription
- Denote an entrance to a runway, critical area, or prohibited area



# Location Signs

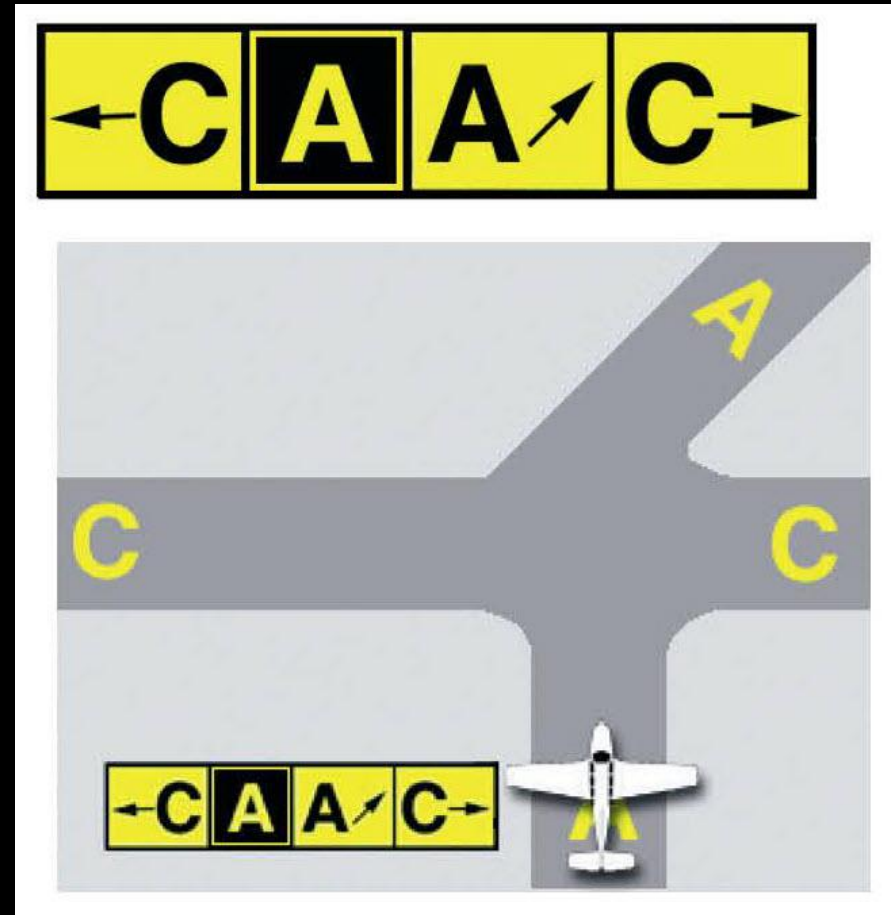
- Black with yellow inscription and a yellow border, no arrows
- Identify a taxiway or runway location, to identify the boundary of the runway, or identify an ILS critical area





# Direction Signs

- Yellow background with black inscription
- Identifies the designation of the intersecting taxiway(s) leading out of an intersection



# Destination Signs

- Yellow background with black inscription and arrows
- Provide information on locating areas, such as runways, terminals, cargo areas, and civil aviation areas



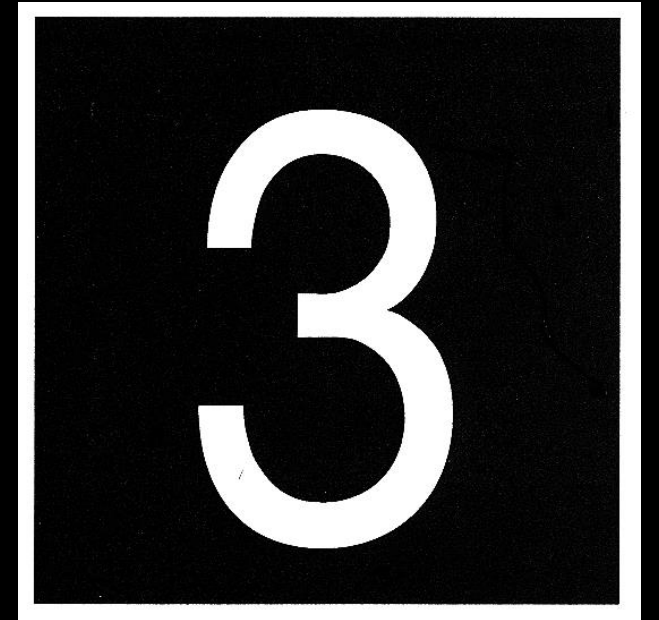
# Information Signs

- Yellow background with black inscription
- Information on areas that cannot be seen from the control tower, applicable radio frequencies, and noise abatement procedures



# Runway Distance Remaining Signs

- Black background with white numbers
- The numbers indicate the distance of the remaining runway in thousands of feet

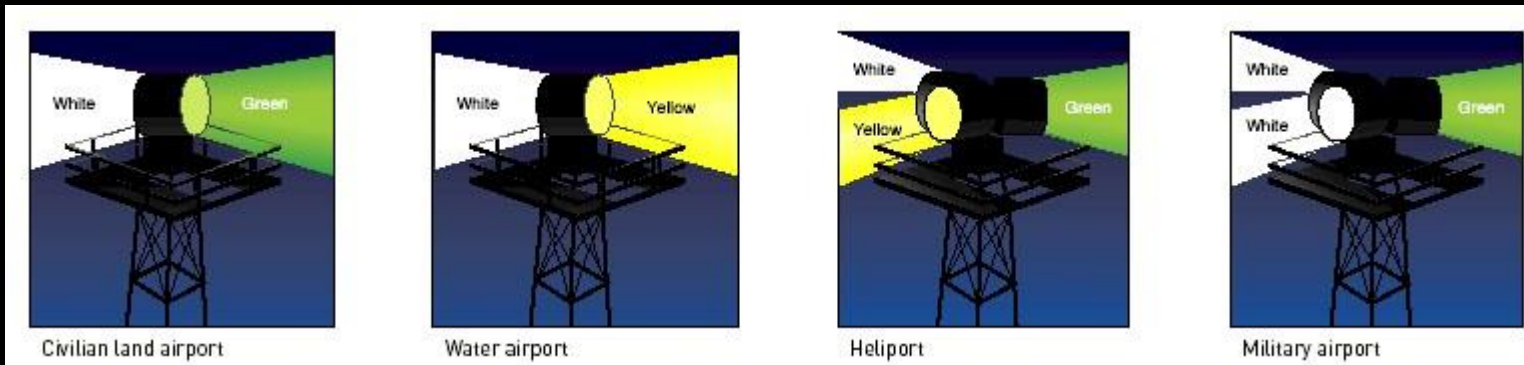


# Airport Lighting

Airport Operations

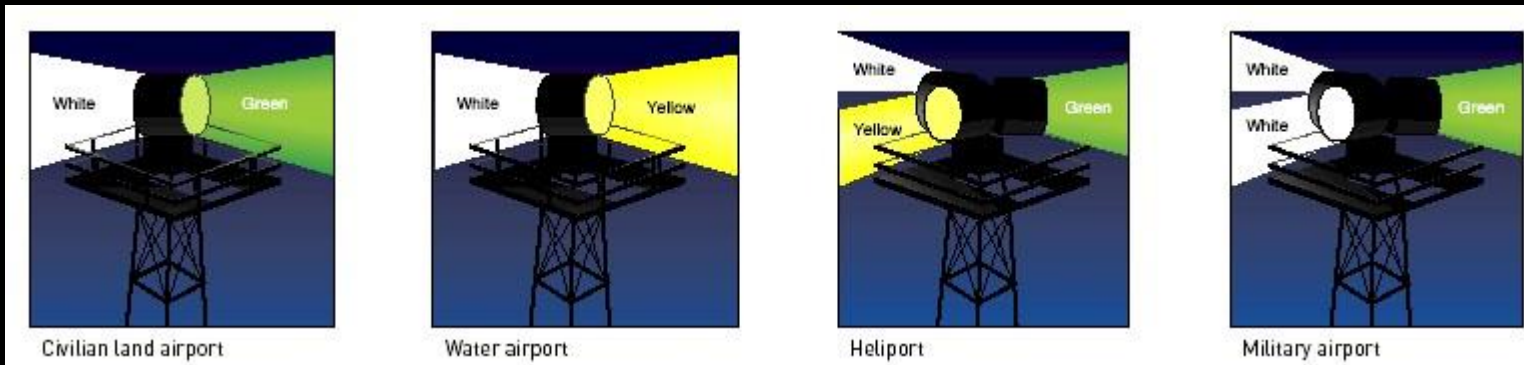
# Airport Beacons

- Airports have rotating beacons to make them easier to find at night
- Civilian airports with runway lights have a two-color rotating beacon that alternately flashes green-white
- Military airports beacons alternately flash green-white-white
- Heliports flash green-yellow-white



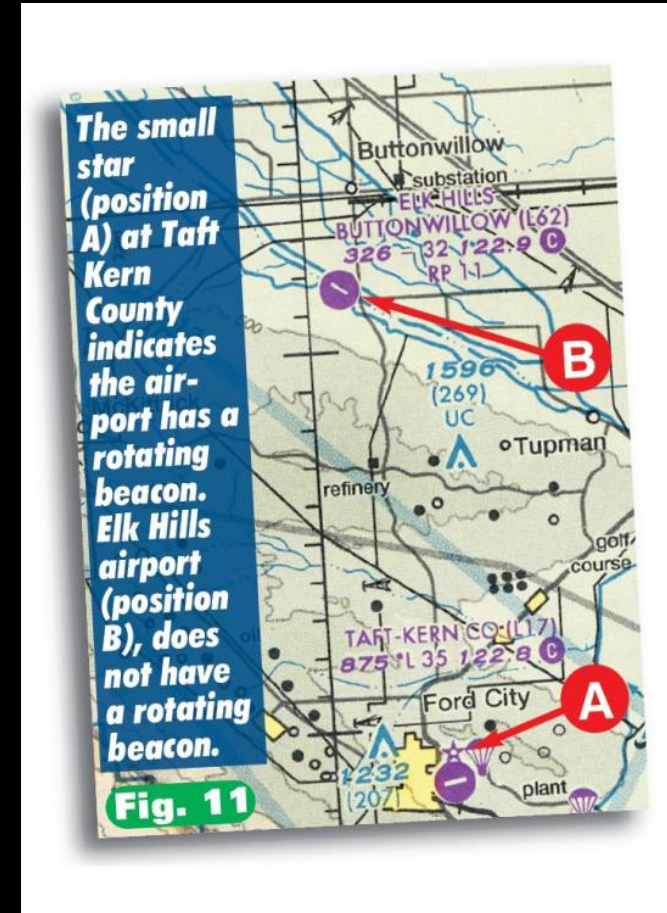
# Airport Beacons

- Rotating beacons are normally on between sunset and sunrise
- If an airport's beacon is running during daylight hours at towered airports, it means that the airport is below basic VFR conditions (ceiling less than 1000 feet AGL and/or visibility less than 3 miles)



# Airport Beacons

- Airport A with a small star near the airport symbol indicates the presence of a rotating beacon at the airport
- Airport B doesn't have a star, so no rotating beacon





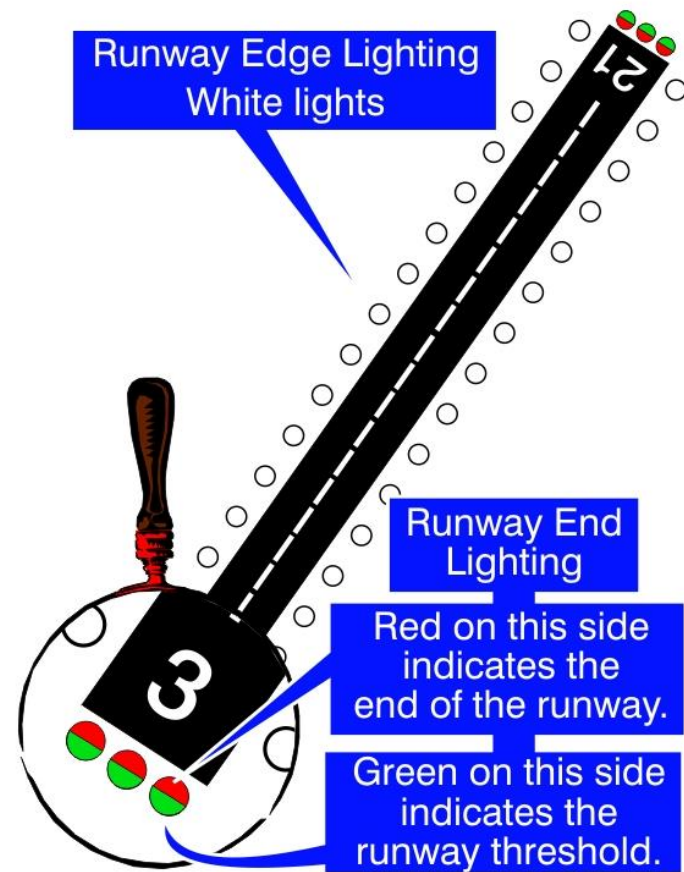
# Airport Obstruction Lights

- Obstructions are marked or lighted to warn pilots of their presence during daytime and nighttime conditions. Obstruction lighting can be found both on and off an airport to identify obstructions
- All structures exceeding 200 feet above ground level (AGL) must be appropriately marked with tower lights or tower paint.



# Basic Runway Lighting

## BASIC RUNWAY LIGHTING



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- White lights border both sides of the runway
- Called runway edge lighting, these lights are spaced 200 feet apart
- Tower controllers turn these lights on between sunset and sunrise or when the visibility is poor
- Lighting can also be pilot controlled
- Beginning of the runway has green threshold lights, while the far end of the runway is lit in red

# Runway Lighting - RCLS



- They are located along the runway centerline and are spaced at 50-foot intervals.
- When viewed from the landing threshold, the runway centerline lights are white until the last 3,000 feet of the runway. The white lights begin to alternate with red for the next 2,000 feet. For the remaining 1,000 feet of the runway, all centerline lights are red.

# Runway Lighting - TDZL



- They consist of two rows of transverse light bars disposed symmetrically about the runway centerline.
- The system consists of steady burning white lights that start 100 feet beyond the landing threshold and extend to 3,000 feet beyond the landing threshold or to the midpoint of the runway, whichever is less.

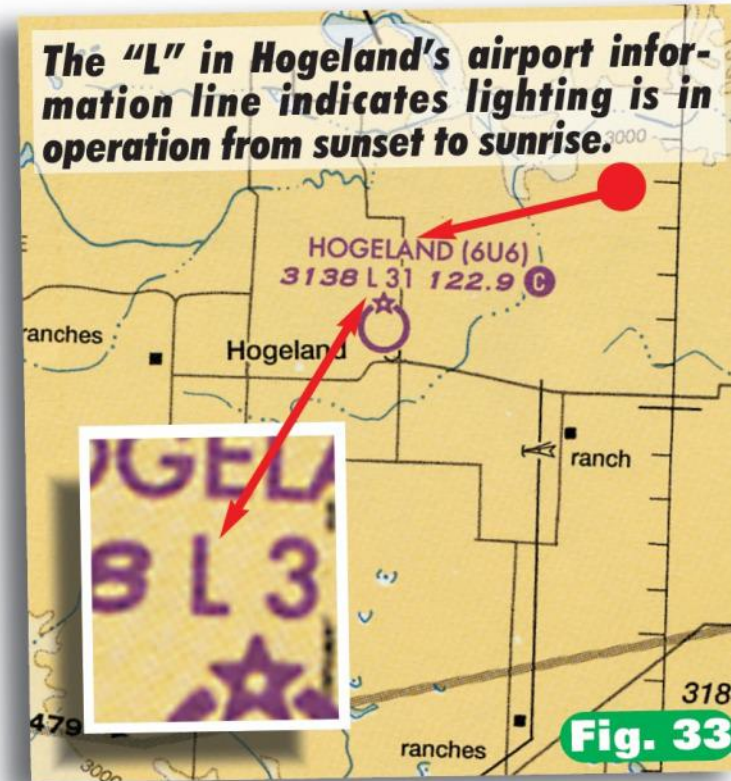
# Runway Lighting – Runway Guard Lights



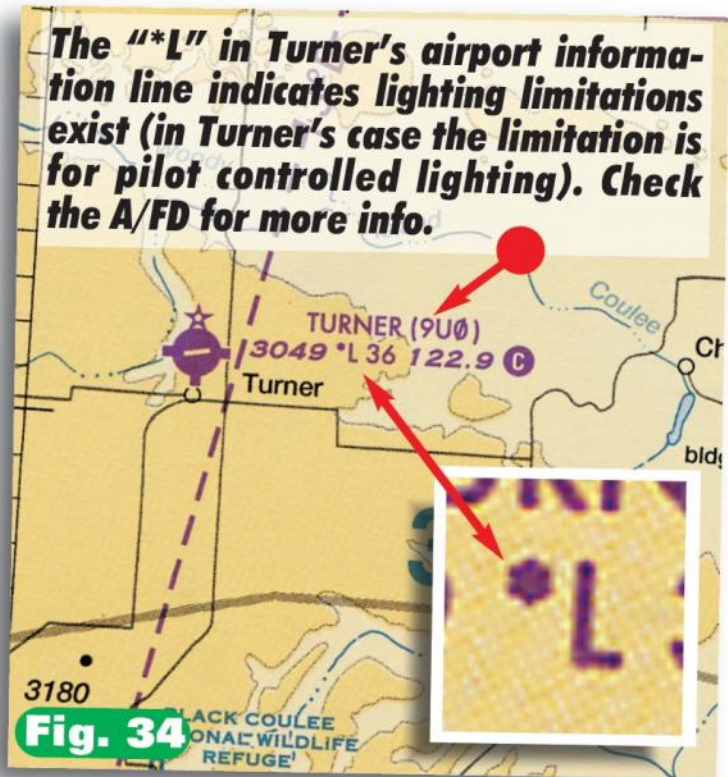
- They are primarily used to enhance the conspicuity of taxiway/runway intersections during low visibility conditions but may be used in all weather conditions.
- Runway guard lights consist of either a pair of elevated flashing yellow lights installed on either side of the taxiway, or a row of in-pavement yellow lights installed across the entire taxiway, at the runway holding position marking.

# Airport Lighting

- At busy airports the runway edge lights are kept on from sunset to sunrise
- Next to the numbers "3138" the letter "L"
- Indicates that lighting is in operation from sunset to sunrise



# Pilot Control Of Airport Lighting



- An asterisk (\*) next to the lighting symbol (the “L”) on the sectional chart means lighting limitations exist
- In this instance, the limitation refers to the fact that “pilot control” of airport lighting is in use (available) at this airport

# Pilot Controlled Lighting

- The d-CS (not the sectional chart), is where the appropriate frequency for lighting activation is found
- The “\*L” symbol may also mean lighting is available on request or the lighting is part time
- If it’s available on request, the d-CS will identify who to contact for light activation

**The word *ACTIVATE* in the d-CS excerpt for Turner indicates MIRL (Medium Intensity Runway Lighting) is available (point A). The PAPI (Precision Approach Path Indicator) is also wired into the pilot controlled lighting circuitry (point B).**

TURNER (9UØ) 1 NE UTC 7( 6DT) N48°51.25 W108°24.50 BILLINGS  
L-13D

3049 B

RWY 07-25: H3612X60 (ASPH) S-12.5 MIRL

RWY 07: Road.

RWY 25: PAPI(P2L)-GA 3.0° TCH 38 . Antenna.

RWY 10-28: 2190X90 (TURF)

RWY 10: Fence. RWY 28: Fence.

AIRPORT REMARKS: Attended dawn -dusk Mon-Fri. Rwy 10-28 marked with white cones full length thlds marked with red cones. MIRL Rwy 07-25 and PAPI Rwy 25 opr dusk-0500Z‡, after 0500Z‡ ACTIVATE MIRL Rwy 07-25 and PAPI Rwy 25-CTAF.

COMMUNICATIONS: CTAF 122.9

GREAT FALLS FSS (GTF) TF 1-800-WX-BRIEF. NOTAM FILE GTF.

**Fig. 35**



# Light Activation

- To activate runway lighting from the cockpit, key the microphone button on the appropriate CTAF frequency
- If all three intensities of lighting exist at an airport, click the mike 7 times within 5 seconds for the high intensity runway lighting (HIRL)
- 5 times within 5 seconds for the medium intensity runway lighting (MIRL)
- 3 times in 5 seconds for the low intensity runway lighting (LIRL)
- Once activated the lights will stay on for 15 minutes

# Visual Approach Slope Indicator (VASI)

- Under poor visibility conditions or at night, the lack of outside visual clues sometimes makes a determination of the proper landing glidepath difficult
- VASI provides you with a visual clue as to the proper glidepath to fly

# 2-Bar VASI

- Consists of two pairs of lightbars along the side of the runway
- These lights project either a red or white color, depending on your altitude

## THE 2-BAR VASI (Visual Approach Slope Indicator)



A *red over red* indication on the VASI means you're below glide path. Think, "red over red, you'll soon conk your head."



A *red over white* indication on the VASI means you're on the proper glide path. Think, "red over white, you'll be all right."

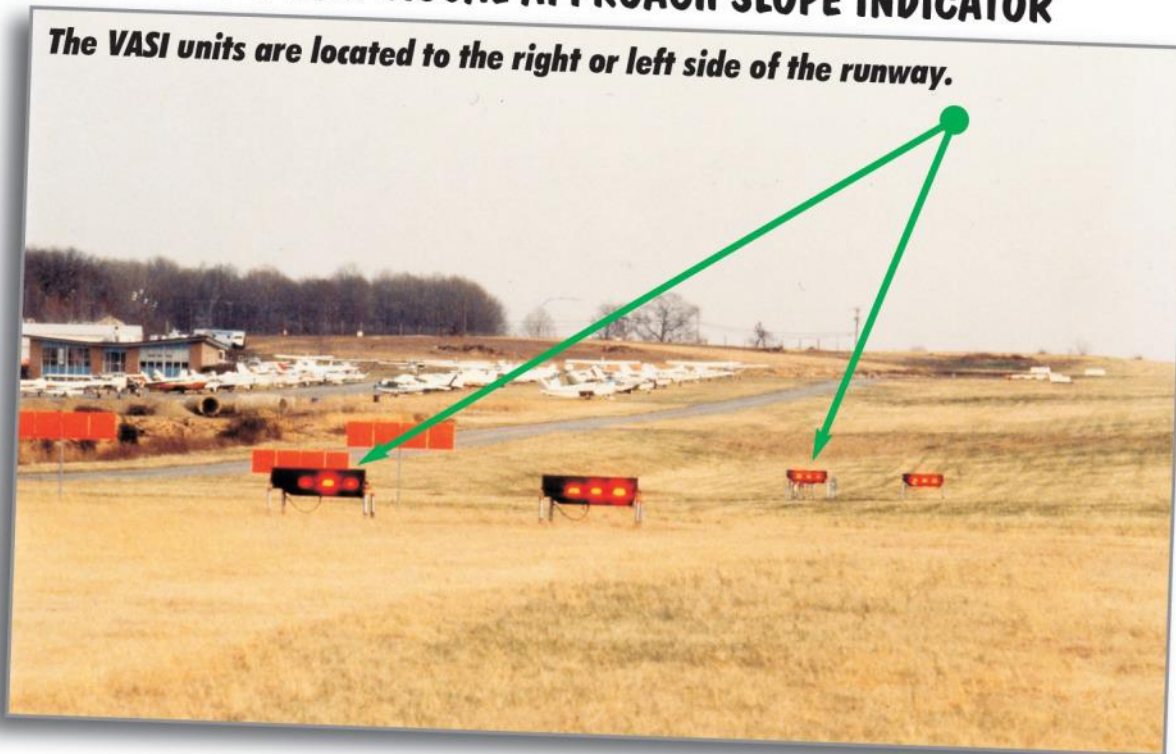


A *white over white* indication on the VASI means that you're above the proper glide path. Think, "white over white you'll soon be out of sight."

# 2-Bar VASI

## THE 2-BAR VISUAL APPROACH SLOPE INDICATOR

*The VASI units are located to the right or left side of the runway.*

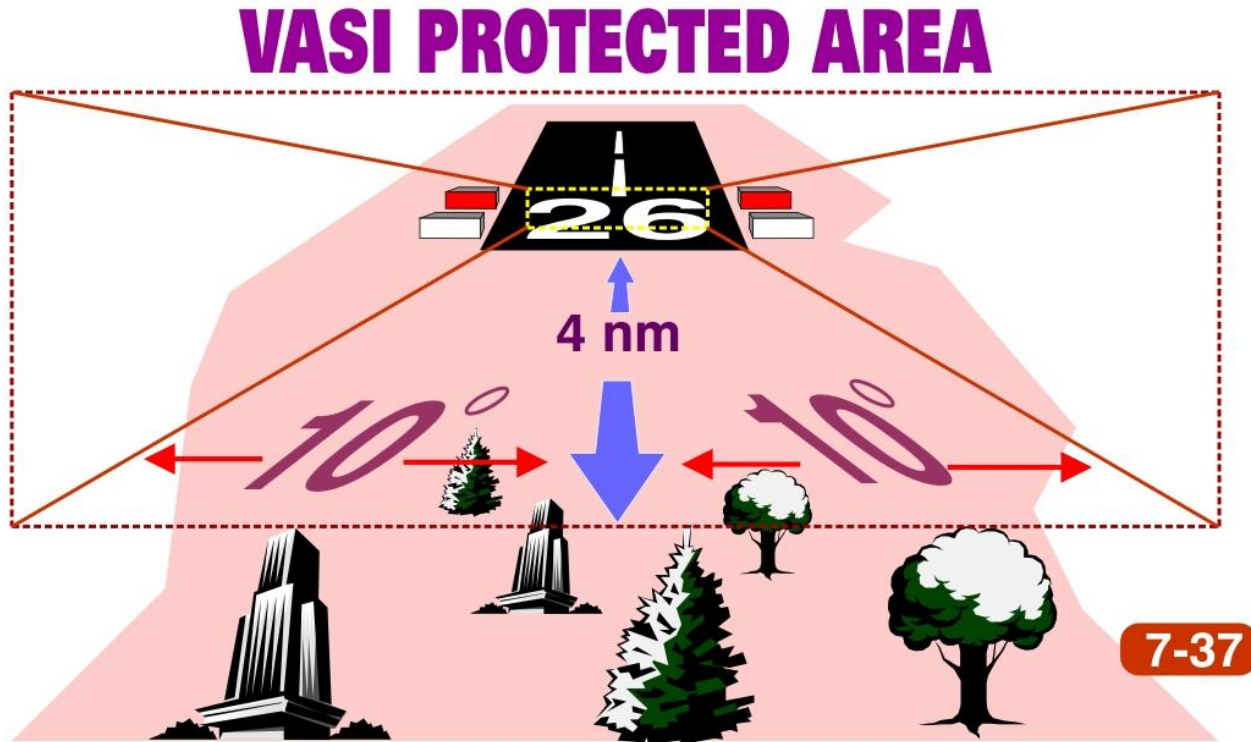


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- The two VASI bars are usually 500 to 1,000 feet from the approach threshold
- Regulations require you to fly at or above the glideslope when approaching a runway equipped with a VASI in Class B, C and D airspace

# Protected Area

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The VASI provides you with obstacle clearance for plus or minus 10 degrees either side of the runway centerline for 4 nautical miles.

- Visible from 3 to 5 miles during the day and up to 20 miles or more at night
- You can count on safe obstruction clearance for 10° either side of the runway centerline when using the VASI
- Obstruction clearance is guaranteed for a distance up to 4 miles out along the centerline of the runway

# 3-Bar VASI

- Some larger air carrier airports have a 3-bar VASI
- These serve long-bodied aircraft

## THE 3-BAR VASI (Visual Approach Slope Indicator)

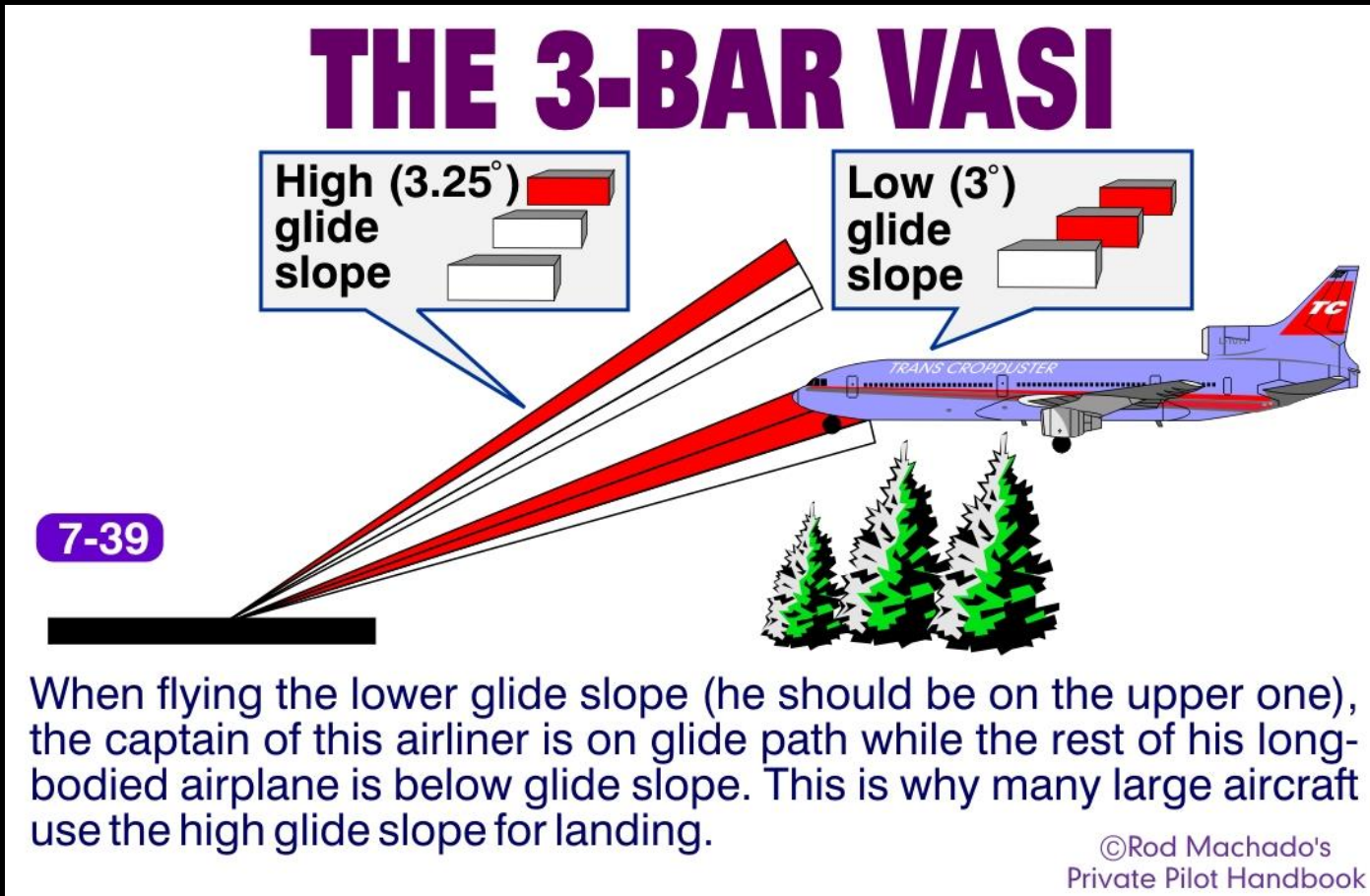


Smaller aircraft use the lower glide path giving them a 3 degree glide slope.



Larger aircraft use the higher glide path giving them a 3.25 degree (or higher) glide slope.

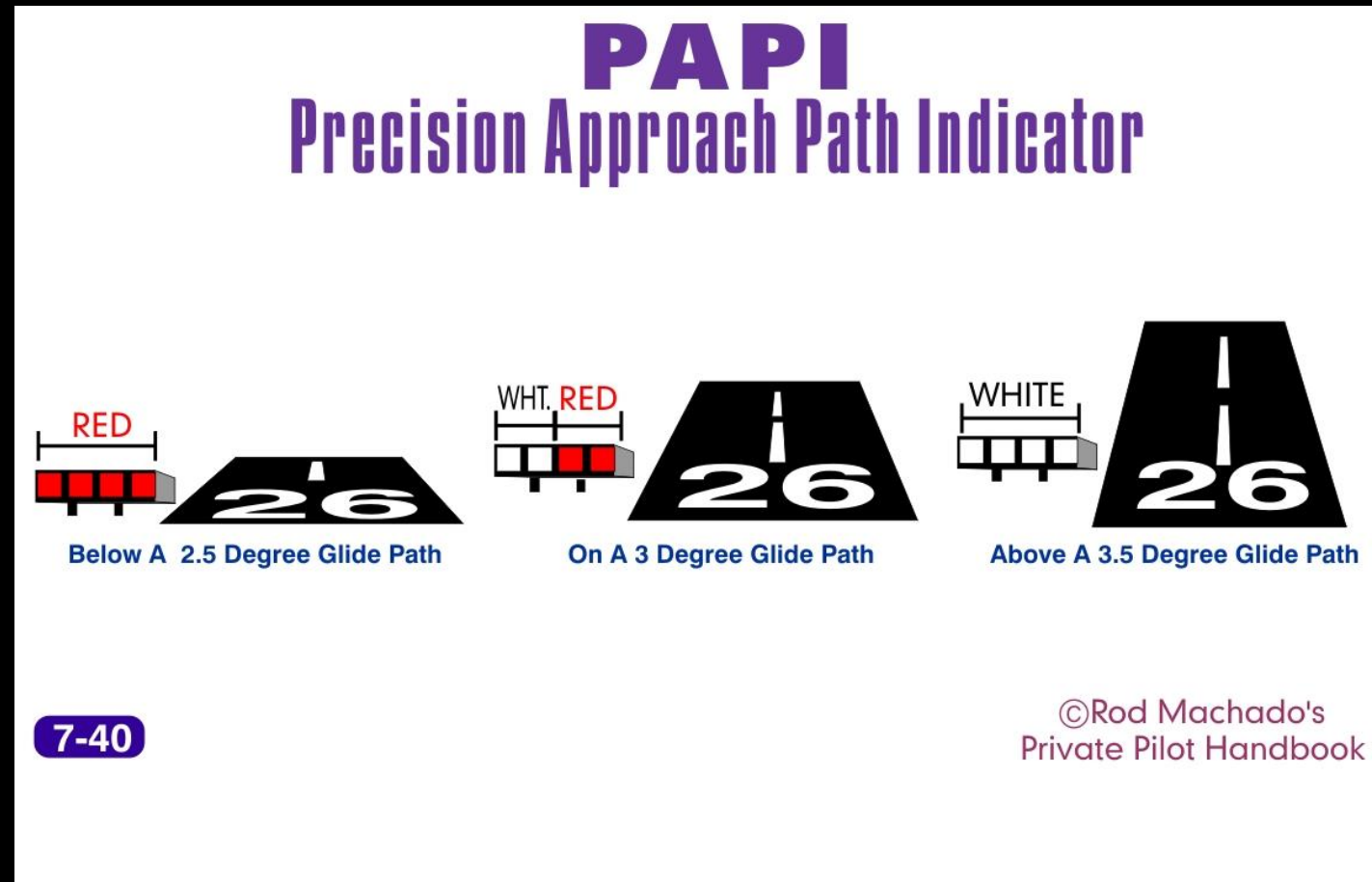
# 3-Bar VASI



- Three-bar VASI's have two glideslopes
- One is angled at 3° and identified by a bar combination of red/red over white
- The higher glideslope is angled at 3.25°
- VASI glideslope angles vary depending on the obstructions located along the approach path

# PAPI

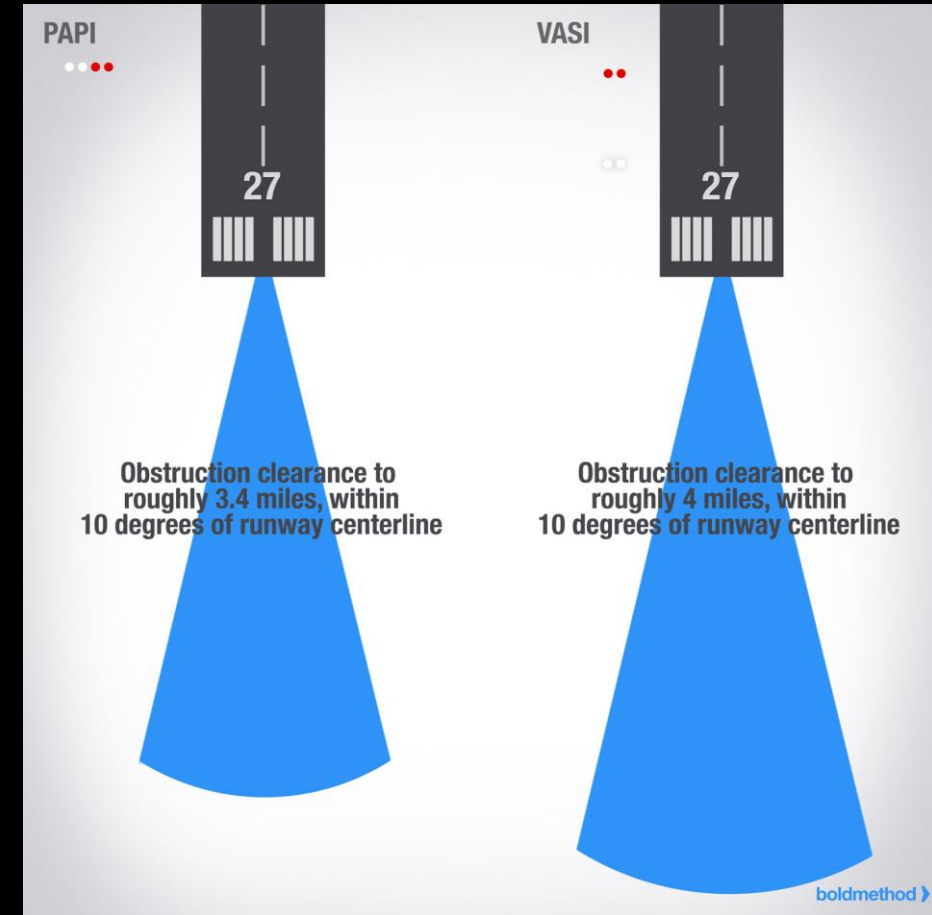
- Uses red and white signaling colors in an arrangement of four horizontal lights to identify the correct glidepath
- These four horizontal light units appear to change color as your glidepath varies





# PAPI Protected Area

- You can count on safe obstruction clearance for 10° either side of the runway centerline when using the PAPI
- Obstruction clearance is guaranteed for a distance up to 3.4 NM out along the centerline of the runway

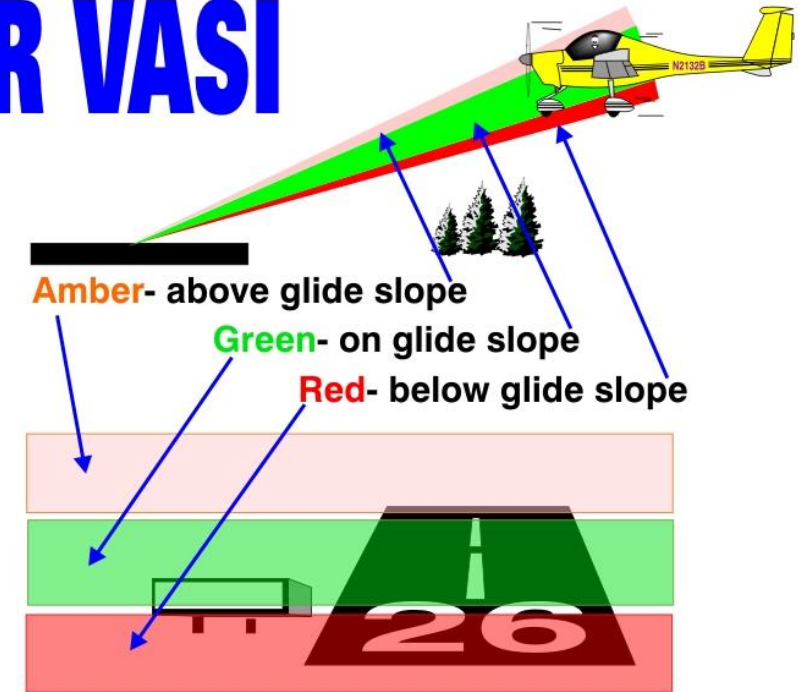


# Tricolor VASI

- Not as common as the two- and three-bar VASIs
- Single light unit projecting a three-color visual approach path into the final approach area of the runway
- Have a useful range of one-half to one mile during the day and up to five miles at night

## TRI-COLOR VASI

The Tri-Color VASI is a single-light unit whose projected colors change in appearance based on your relation to the glide slope.

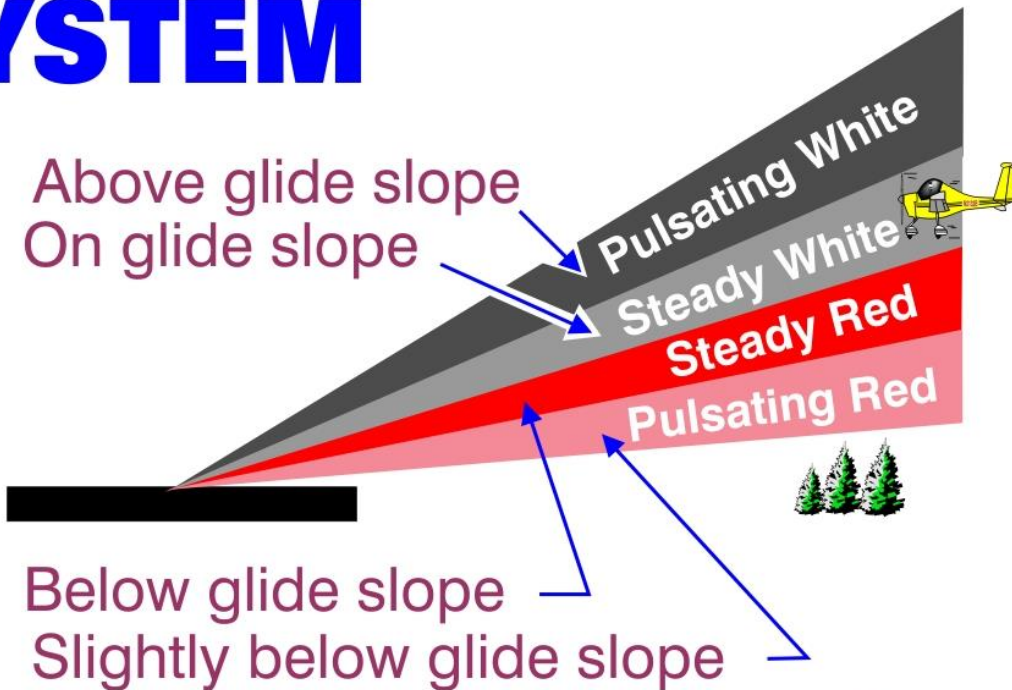


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# Pulsating VASI

## PULSATING VASI SYSTEM



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- Single light unit projecting a two-color signal to pilots in the final approach area
- The pulsating rate increases the further the airplane is above or below the desired glide slope

# Knowledge Check

This sign indicates?

- A. Current runway you are on
- B. Current taxiway you are on
- C. Distance remaining on the runway
- D. Distance remaining on taxiway



# Knowledge Check

This sign indicates?

- A. ~~Current runway you are on~~
- B. ~~Current taxiway you are on~~
- C. Distance remaining on the runway
- D. ~~Distance remaining on taxiway~~



# Knowledge Check

What type of NOTAM would cover a taxiway closure?

- A. NOTAM D
- B. SAA NOTAM
- C. NOTAM U
- D. NOTAM O

# Knowledge Check

What type of NOTAM would cover a taxiway closure?

- A. NOTAM D
- ~~B. SAA NOTAM~~
- ~~C. NOTAM U~~
- ~~D. NOTAM O~~

# Knowledge Check

Under what condition can you land at a private airport?

- A. Emergency
- B. With airport managers approval
- C. All of the above
- D. None of the above



# Knowledge Check

Under what condition can you land at a private airport?

- A. ~~Emergency~~
- B. ~~With airport managers approval~~
- C. All of the above
- D. ~~None of the above~~

# Knowledge Check

These signs is an example of what type of sign?

- A. Directional
- B. Informational
- C. Destination
- D. Mandatory



# Knowledge Check

These signs is an example of what type of sign?

- A. ~~Directional~~
- B. ~~Informational~~
- C. ~~Destination~~
- D. **Mandatory**

