RUSTY PILOTS
POWERED BY AOPA

RESOURCE GUIDE

CONTENTS

WELCOME TO RUSTY PILOTS!

Your First Step Back into the Left Seat

- We are very excited see that you are returning to the aviation community. It's a huge step you've taken by joining us today and we're glad to have you back. Our Rusty Pilots motto is "Once a Pilot, Always a Pilot," - so let's get started and get you in the air!

Don't Forget that AOPA is Here for You!

- Completed your flight review? We want to know! Plus we'll send you a free Rusty Pilots patch. Just fill out the short online survey that you'll receive by email or contact us at rustypilots@aopa.org
- Medical issues or other aviation questions? Be sure to contact our team of aviation medical specialists and CFIs in AOPA's Pilot Information Center. Call 1-800-USA- AOPA.
- Is your AOPA membership current? We'd love to have you in our family. Plus, you'll be able to enjoy a wealth of aviation resources, award winning magazines, and more! Give our membership team a call at 1-800-USA-AOPA.

REGULATORY REQUIREMENTS

Pilot Documents

- Flight review (14 CFR 61.56)—every 24 calendar months
- Plastic Pilot Certificate (14 CFR 61.19(g))—no more paper certificate
- Government issued photo ID (14 CFR 61.3)
- 90 day landing currency (14 CFR 61.57)
  Day = 3 takeoffs and 3 landings
  Night = 3 takeoffs and landings to a full stop
  (1 hour after sunset and 1 hour before sunrise)
- Medical Certificate (14 CFR 61.23)—Third Class Medical
  Under 40 years old = 60 months
  40 years or older = 24 months

Physical Condition: I'M SAFE Checklist

- **I**llness (14 CFR 61.53)—May not operate an aircraft as PIC or required crewmember if unable to meet requirements of medical certificate or...
- **M**edication (14 CFR 61.53)—See the AOPA Medication Database: http://www.aopa.org/Pilot-Resources/Medical/Medications-Database
- **S**tress
- **A**lcohol (14 CFR 91.17)—At least 8 hours from bottle to throttle
- **F**atigue
- **E**motion

AERONAUTICAL DECISION MAKING

ASI "Do the Right Thing" Course and Safety Advisor

Most accidents that stem from bad decisions include at least one of the following factors.

Utility: Attempting to squeeze too much utility out of the airplane

Ability: Pushing the limits of pilot skill or experience

Fun: Trying to have too much fun in the airplane. This shows up in accident reports as buzzing, low-level flight, improper aerobatics, etc.

Good decision making is about avoiding the circumstances that lead to really tough choices.

Go/No-Go? It may seem obvious, but some of the best aeronautical decisions are made on the ground. A prudent preflight choice can eliminate the need to make a much more difficult in-flight decision.

Beyond Go/No-Go: So you've decided to go. Once in the air, you should enter a continuous decision making cycle. Take the knowledge and information you already have, combine it with the new information you're gathering as you fly, and actively decide how to proceed.

- **Anticipate:** What could go wrong? Effective decision making begins with anticipation—thinking about what could go wrong before it actually does.
- **Recognize:** Has something gone wrong? Avoid problems in flight by paying attention! The sooner you recognize a problem (or potential problem) and start thinking about how to handle it, the better.
- **Act:** Evaluate your options and choose one. Here's where many pilots fail. They recognize the problem, but don't do anything to confront it. Why? It's inconvenient. Be prepared to act without delay, should the situation warrant it. Pilots sometimes tend to enter a state of denial when faced with a problem. At the risk of oversimplifying, the basic options available when a problem arises are as follows:

  1. Continue the flight as planned, paying very close attention to whatever is causing the problem;
  2. Continue the flight, deviating from the plan as necessary; or
  3. Get the airplane on the ground as soon as practical.

ASI VFR PILOT PERSONAL MINIMUMS CONTRACT

Personal minimums and decision-making criteria are best defined on the ground, free of external pressure and the workload of flying the aircraft. Writing them down makes it much easier to resist the temptation to "mentally negotiate" yourself into a tight spot, allowing your decision making to be clouded in the heat of the moment by emotion and hope.

This document defines the contract you make with yourself, your passengers, and your family.

Remember to update your personal minimums regularly to reflect your current proficiency in the aircraft you'll be flying.

Instructions

1. Review all sections and determine your personal minimums specific to the type of aircraft you fly. If you're a new or rusty pilot, considering asking a CFI for help.
2. Fill in the information for each item.
3. Keep this contract with your flight bag for quick reference.
4. For a more detailed assessment of the potential risks before your next flight, take ASI's Flight Risk Evaluator online at www.airsafetyinstitute.org/flightrisk.

PILOT

MIN. HOURS (LAST 30/90 DAYS) _____/_____

MIN. HOURS IN TYPE (LAST 30/90 DAYS) _____/_____

MIN. LANDINGS (LAST 30/90 DAYS) _____/_____

NIGHT HOURS (LAST 30/90 DAYS) _____/_____

VFR INTO IMC TRAINING COMPLETED WITHIN LAST 12 MONTHS

MIN. RECURRENT TRAINING COMPLETED
(circle one) PAST 6 / 12 / 24 MONTHS

ASI recommends recurrent training every 12 months with a CFI who's familiar with the aircraft make, model, and equipment.

AT A MINIMUM, MY OVERALL WELLNESS SHOULD BE

ADEQUATE	OK	WELL	VERY WELL
❑	❑	❑	❑

ASI recommends considering sleep, medications, alcohol, stress, and other factors that could affect the safety of flight.

WEATHER

MAX. WIND VELOCITY AND GUST _____

MAX. CROSSWIND _____

MIN. CEILING DAY _____ NIGHT _____

MIN. VISIBILITY DAY _____ NIGHT _____

AIRPORT

RUNWAY MIN. LENGTH

RUNWAY MIN. WIDTH

Aircraft performance degrades when density altitude is above 1,000 feet. As a result, ASI recommends adding 50 percent to the POH takeoff or landing distance over a 50-foot obstacle.

AIRCRAFT

MIN. FUEL RESERVES (hours : minutes)

DAY ___ : ___ NIGHT ___ : ___

ASI recommends landing with at least one hour of fuel remaining.

NIGHT FLIGHT IN A SINGLE-ENGINE AIRCRAFT Y / N

IF YES, LIST LIMITATIONS (e.g., no mountainous terrain, no over-water flights, will reach cruise altitude before sunset)

PRE-FLIGHT PREPARATION

I WILL

- Only fly when I am proficient with the aircraft limitations, performance, normal and emergency procedures, systems, and avionics.
- Use precautions when transitioning to different aircraft/ avionics/systems.
- Consider the risks of flying over mountainous terrain.
- Fly with a current GPS database, charts (or EFB), and a backup (as required).
- Consider increasing my personal minimums if friends and family are on board.
- Always get a recorded FAA weather briefing and file/activate a flight plan for flights away from home base.
- Request flight following if services are available
- Fly with a qualified pilot or CFI (or postpone the flight) if my personal minimums are not met.

Pilot signature _____

CFI/witness _____

Last updated _____ /_____ /_____

The IFR PILOT PERSONAL MINIMUMS CONTRACT is available online www.airsafetyinstitute.org/ifrcontract

AIRCRAFT AIRWORTHINESS REQUIREMENTS

Aircraft Documents (ARROW PC)

Airworthiness Cert

Registration Cert (re-registration every 3 years)

Radio Station License (* only for international flights)

Operating Handbook (N# or SN#)

Weight and Balance

Placards

Compass Card

Required Maintenance & Inspections (AVIATE) Note: IFR inspections marked with *

Airworthiness Directives (one time vs. recurring)

VOR Check (every 30 days)*

Inspections (Annual & 100 hour [if rented])

Altimeter/Pitot Static system (every 24 calendar months)*

Transponder (every 24 calendar months)

ELT inspection (12 calendar months; plus half useful life of battery or 1 hour of cumulative use)

Preventive Maintenance

According to 14 CFR Part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration, the holder of a pilot certificate issued under 14 CFR Part 61 may perform specified preventive maintenance on any aircraft owned or operated by that pilot, as long as the aircraft is not used under 14 CFR Part 121, 127, 129, or 135. See FAA pamphlet (FAA-P-8740-15) for more information.

Here are several important points to understand before you attempt to perform your own preventive maintenance:

- You need to understand that authorized preventive maintenance cannot involve complex assembly operations.
- You should carefully review 14 CFR Part 43, Appendix A, Subpart C (Preventive Maintenance), which provides a list of the authorized preventive maintenance work that an owner pilot may perform.
- You should conduct a self-analysis as to whether you have the ability to perform the work satisfactorily and safely.
- If you do any of the preventive maintenance authorized in 14 CFR Part 43, you will need to make an entry in the appropriate logbook or record system in order to document the work done. The entry must include the following information:

  A description of the work performed, or references to data that are acceptable to the Administrator.

  The date of completion.

  The signature, certificate number, and kind of certificate held by the person performing the work. Note that the signature constitutes approval for return to service only for work performed.

14 CFR 91.7 (PIC Responsibility for Airworthiness)

- No person may operate a civil aircraft unless it is in an airworthy condition.
- The pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.

WEATHER: METAR & TAF DECODER

Key to TAF and METAR (Front)

TAF KPIT 091730Z 0918/1024 15005KT 5SM HZ FEW020 WS010/31022KT
FM091930 30015G25KT 3SM SHRA OVC015
TEMPO 0920/0922 1/2SM +TSRA OVC008CB
FM100100 27008KT 5SM SHRA BKN020 OVC040
PROB30 1004/1007 1SM -RA BR
FM101015 18005KT 6SM -SHRA OVC020
BECMG 1013/1015 P6SM NSW SKC

NOTE: Users are cautioned to confirm ***DATE*** and ***TIME*** of the TAF. For example FM**10**0000 is 0000Z on the **10th**. Do not confuse with ***1000Z!***

METAR KPIT 091955Z COR 22015G25KT 3/4SM R28L/2600FT TSRA OVC010CB 18/16 A2992 RMK SLP045 T01820159

Forecast	Explanation	Report
TAF	Message type: TAF-routine or TAF AMD-amended forecast, METAR-hourly, SPECI-special or TESTM-non-commissioned ASOS report	**METAR**
KPIT	ICAO location indicator	**KPIT**
091730Z	Issuance time: ALL times in UTC "Z", 2-digit date, 4-digit time	**091955Z**
0918/1024	Valid period, either 24 hours or 30 hours. The first two digits of EACH four digit number indicate the date of the valid period, the final two digits indicate the time (valid from 18Z on the 9th to 24Z on the 10th).	
	In U.S. METAR: CORrected of; or AUTOmated ob for automated report with no human intervention; omitted when observer logs on.	**COR**
15005KT	Wind: 3 digit true-north direction , nearest 10 degrees (or VaRiaBle); next 2-3 digits for speed and unit, KT (KMH or MPS); as needed, Gust and maximum speed; 00000KT for calm; for METAR, if direction varies 60 degrees or more, Variability appended, e.g., 180V260	**22015G25KT**
5SM	Prevailing visibility; in U.S., Statute Miles & fractions; above 6 miles in TAF Plus6SM. (Or, 4-digit minimum visibility in meters and as required, lowest value with direction)	**3/4SM**
	Runway Visual Range: R; 2-digit runway designator Left, Center, or Right as needed; "/", Minus or Plus in U.S., 4-digit value, FeeT in U.S., (usually meters elsewhere); 4-digit value Variability 4-digit value (and tendency Down, Up or No change)	**R28L/2600FT**
HZ	Significant present, forecast and recent weather: see table (on back)	**TSRA**
FEW020	Cloud amount, height and type: SKy Clear 0/8, FEW >0/8-2/8, SCaTtered 3/8-4/8, BroKeN 5/8-7/8, OVerCast 8/8; 3-digit height in hundreds of ft; Towering CUmulus or CumulonimBus in **METAR**; in **TAF**, only CB. Vertical Visibility for obscured sky and height "VV004". More than 1 layer may be reported or forecast. In automated **METAR** reports only, CLeaR for "clear below 12,000 feet"	**OVC 010CB**
	Temperature: degrees Celsius; first 2 digits, temperature "/" last 2 digits, dew-point temperature; Minus for below zero, e.g., M06	**18/16**
	Altimeter setting: indicator and 4 digits; in U.S., A-inches and hundredths; (Q-hectoPascals, e.g., Q1013)	**A2992**
WS010/ 31022KT	In U.S. **TAF**, non-convective low-level (≤2,000 ft) Wind Shear; 3-digit height (hundreds of ft); "/"; 3-digit wind direction and 2-3 digit wind speed above the indicated height, and unit, KT	

Key to TAF and METAR (Back)

Forecast	Explanation	Report
	In **METAR**, ReMarK indicator & remarks. For example: Sea-Level Pressure in hectoPascals & tenths, as shown: 1004.5 hPa; Temp/dew-point in tenths _C, as shown: temp. 18.2_C, dew-point 15.9_C	**RMK SLP045 T01820159**
FM091930	FroM: changes are expected at: 2-digit date, 2-digit hour, and 2-digit minute beginning time: indicates significant change. Each FM starts on a new line, indented 5 spaces	
TEMPO 0920/0922	TEMPOrary: changes expected for <1 hour and in total, < half of the period between the 2-digit date and 2-digit hour beginning, and 2-digit date and 2-digit hour ending time	
PROB30 1004/1007	PROBability and 2-digit percent (30 or 40): probable condition in the period between the 2-digit date & 2-digit hour beginning time, and the 2- digit date and 2-digit hour ending time	
BECMG 1013/1015	BECoMinG: change expected in the period between the 2-digit date and 2-digit hour beginning time, and the 2-digit date and 2-digit hour ending time	

Table of Significant Present, Forecast and Recent Weather - Grouped in categories and used in the order listed below; or as needed in TAF, No Significant Weather.

Qualifiers
Intensity or Proximity

"-" = light	**No sign** = Moderate	**"+"** = Heavy

"VC" = Vicinity, but not at aerodrome. In the US METAR, 5 to 10 SM from the point of observation. In the US TAF, 5 to 10 SM from the center of the runway complex. Elsewhere, within 8000m.

Descriptor

BC – Patches	**BL** – Blowing	**DR** – Drifting	**FZ** – Freezing
MI – Shallow	**PR** – Partial	**SH** – Showers	**TS** – Thunderstorm

Weather Phenomena
Precipitation

DZ – Drizzle	**GR** – Hail	**GS** – Small Hail/Snow Pellets	
IC – Ice Crystals	**PL** – Ice Pellets	**RA** – Rain	**SG** – Snow Grains
SN – Snow	**UP** – Unknown Precipitation in automated observations		

Obscuration

BR – Mist (≥5/8SM)	**DU** – Widespread Dust	**FG** – Fog (≤5/8SM)	**FU** – Smoke
HZ – Haze	**PY** – Spray	**SA** – Sand	**VA** – Volcanic Ash

Other

DS – Dust Storm	**FC** – Funnel Cloud	**+FC** – Tornado or Waterspout
PO – Well developed dust or sand whirls	**SQ** – Squall	**SS** – Sandstorm

Explanations in parentheses "()" indicate different worldwide practices.
Ceiling is not specified; defined as the lowest broken or overcast layer, or the vertical visibility.
NWS TAFs exclude BECMG groups and temperature forecasts, NWS TAFS do not use PROB in the first 9 hours of a TAF; NWS METARs exclude trend forecasts. US Military TAFs include Turbulence and Icing groups.

SUMMARY OF TYPES OF NOTAMS

FDC NOTAMS

Flight Data Center NOTAMS are NOTAMs that are regulatory in nature such as changes to an instrument approach procedure or airway. Temporary Flight Restrictions (TFRs) are also issued as FDC NOTAMs.

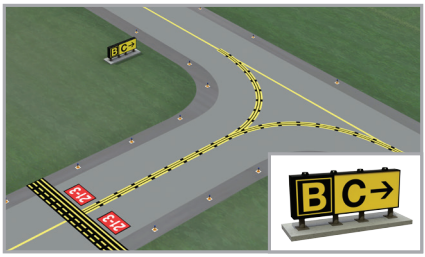
NOTAM (D)

A NOTAM (D) is a NOTAM given (in addition to local dissemination) distant dissemination beyond the area of responsibility of the Flight Service Station. This type of NOTAM now includes (U) NOTAMs and (O) NOTAMs. (U) NOTAMs are unverified NOTAMs which are those that are received from a source other than airport management and have not yet been confirmed by management personnel. This is allowed only at those airports where airport management has authorized it by Letter of Agreement. (O) NOTAMs are other aeronautical information which does not meet NOTAM criteria but may be beneficial to aircraft operations.

AIRPORT SIGNAGE

Adapted from *ASI Runway Safety Flash Cards* Courtesy of the Air Safety Institute & FAA Office of Runway Safety available online.

Taxiway Direction Sign



In many cases, taxiway direction signs are placed next to taxiway location signs. The black sign tells you which taxiway you're on, while the yellow sign identifies an upcoming taxiway.

Ref. AIM Para. 2-3-9/10

Destination Sign

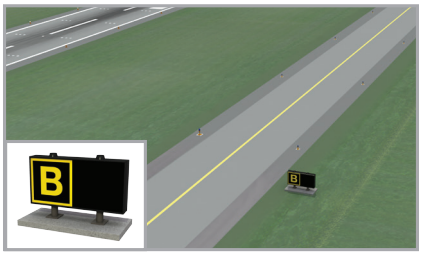
Indicates the direction of a taxi routeto a runway(s) or other location.

Ref. AIM Para. 2-3-11

Taxiway Location Sign

Indicates the taxiway on which the aircraft is located. At larger airports, some taxiways have alphanumeric identifiers (e.g., A3, A4) and some have double-same designators (e.g., AA, BB).

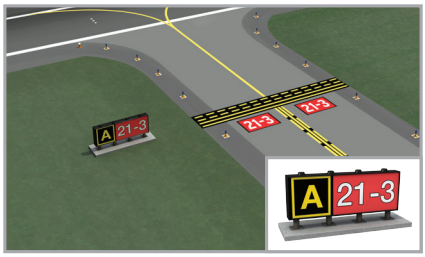
Ref. AIM Para. 2-3-9-a-1



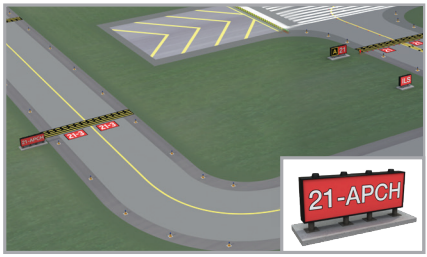
Runway Holding Position Sign (Collocated with Taxiway Location Sign)

Located next to the yellow holding position surface marking on taxiways for taxiway/runway intersections. This sign is often collocated with a taxiway location. In this example, the threshold for Runway 21 is to the left and the threshold for Runway 3 is to the right. Aircraft may not move beyond this sign/marking unless instructed by ATC at towered airports, or by ensuring adequate separation of aircraft at non-towered airports.

Ref. AIM Para. 2-3-8-b-2



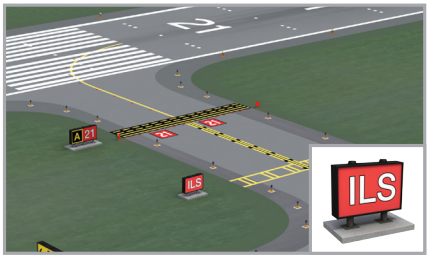
Runway Approach Area Holding Position Sign



Located next to the yellow holding position surface markings. Taxiing past this sign may interfere with arriving or departing aircraft. Hold short of this location when instructed by ATC.

Ref. AIM Para. 2-3-8-b-2; 4-3-18-a-8

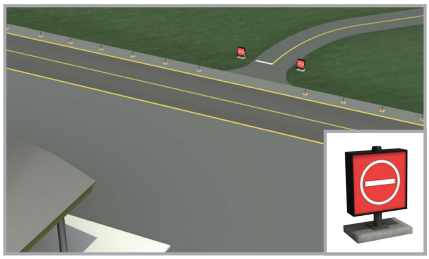
ILS Critical Area Holding Position Sign



Located next to the yellow surface-painted ILS critical area marking. Aircraft taxiing beyond this point may interfere with the ILS signal. Hold short of this location when instructed by ATC.

Ref. AIM Para. 2-3-8-b-3; 4-3-18-a-8

No Entry Sign



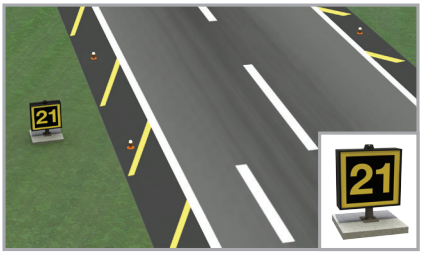
Prohibits an aircraft from entering an area, such as a one-way taxiway or the intersection of a road intended for vehicles.

Ref. AIM Para. 2-3-8-b-4

Runway Location Sign

Identifies the runway on which the aircraft is located.

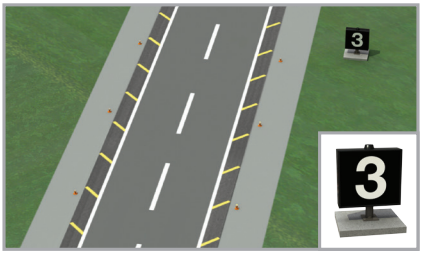
Ref. AIM Para. 2-3-9-a-2



Runway Distance Remaining Sign

Indicates the distance of runway remaining in thousands of feet. In this example, 3,000 feet remain on the landing runway. These are usually seen at larger airports.

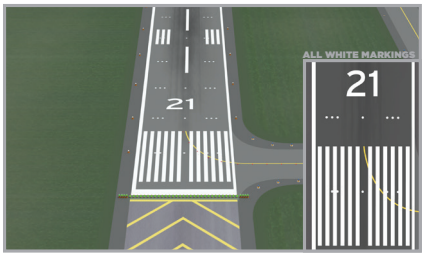
Ref. AIM Para. 2-3-13



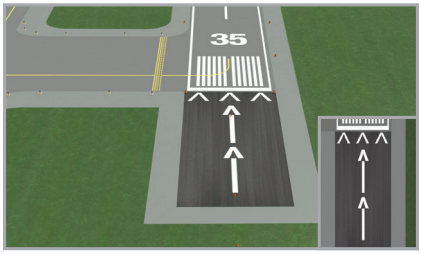
Runway Markings

Runway markings vary with the size and type of runway, but they are always white.

Ref. AIM Para. 2-3-3



Displaced Threshold

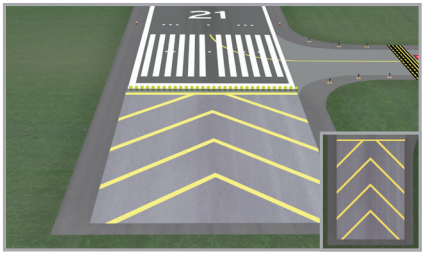


A displaced threshold designates where the runway's landing area starts. White arrows along the centerline of the runway indicate the portion between the beginning of the runway and the displaced threshold. This portion is available for takeoffs in both directions and landings from the opposite direction.

*Unless declared distances are in effect. Consult the FAA U.S. Chart Supplements (formerly, Airport/Facility Directory (A/FD)) to confirm available landing distances in each direction.

Ref. AIM Para. 2-3-3-h-2

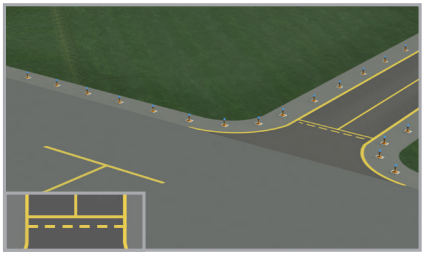
Chevron Markings



Indicate areas of pavement aligned with the runway that are unusable for taxi, takeoff, or landing. Chevrons cover blast pads or stopways, which are constructed to protect areas from erosion caused by jet blast and to provide extra stopping distance for aircraft (stopways).

Ref. AIM Para. 2-3-3-i-1

Nonmovement Area Boundary Markings

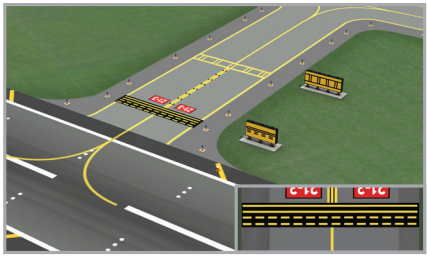


These markings can be seen at towered airports where hangar or apron areas are located adjacent to a taxiway. The dashed side indicates the movement area, which is under ATC control, and the solid line indicates the nonmovement area (e.g., FBO ramps and hangar areas), which is not under ATC control.

Ref. AIM Para. 2-3-6-c

Runway Holding Position Markings on Taxiways (Runway Perspective)

The dashed lines of the holding position marking are always on the runway side. Aircraft exiting the runway are not considered "clear" until they're across the entire marking. From the runway perspective, the pavement markings are mirrored by a runway boundary sign with the same symbol as the pavement markings.



Ref. AIM Para. 2-3-5-a-1

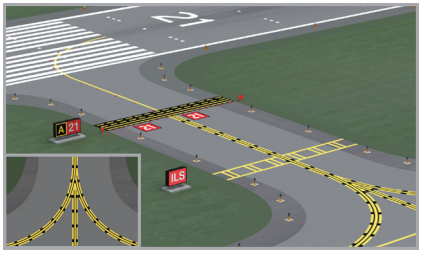
Taxiway Markings

Specific marking styles vary somewhat, but taxiway markings are always yellow.

Ref. AIM Para. 2-3-4

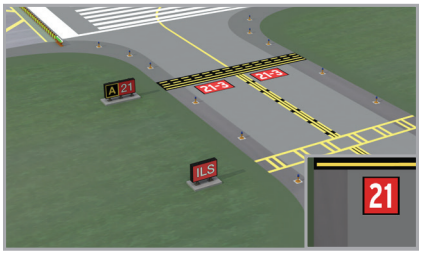
Enhanced Taxiway Centerline Markings

These markings indicate that the aircraft is approaching a runway. Prior to a runway holding position marking, the taxiway centerline will be "enhanced" to include a set of yellow dashed lines. Installed at more than 500 airports throughout the U.S., these dashed yellow markings extend 150 feet from the runway holding position on either side of taxiway centerlines.



Ref. AIM Para. 2-3-4-b-2

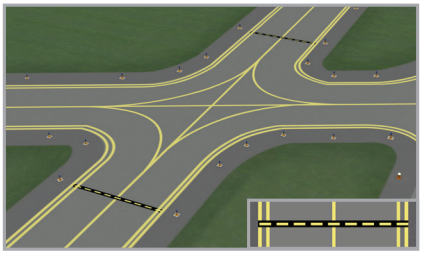
Surface Painted Holding Position Sign



A single surface-painted holding position sign that is centered on the taxiway centerline is used on taxiways that are 35 feet wide or less, one or two signs are used for taxiways wider than 35 feet, and repetitive signs (placed on both sides of the taxiway centerline) are used only on taxiways that are wider than 200 feet.

Ref. AIM Para. 2-3-5-3-d, AC 150/5340

Holding Position Marking for Taxiway/Taxiway Intersections

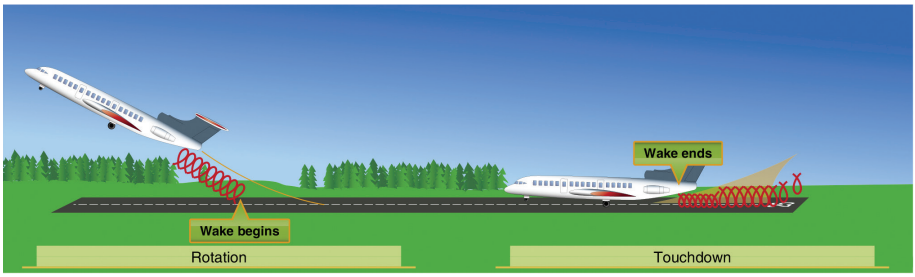


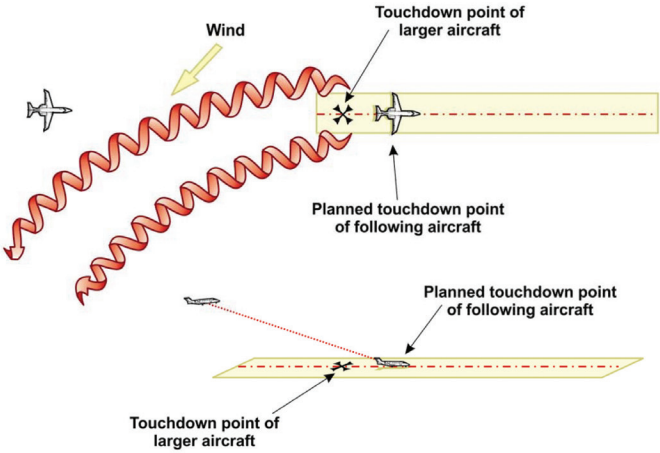
Extending across the width of a taxiway, this yellow dashed line indicates where an aircraft should stop if instructed to do so by ATC. When the marking is not present, stop the aircraft to provide adequate clearance from an aircraft on the intersecting taxiway.

Ref. AIM Para. 2-3-5-c

WAKE TURBULENCE AVOIDANCE

Images adapted from Pilot's Handbook of Aeronautical Knowledge (Chapter 13).





Vortex Avoidance Procedures

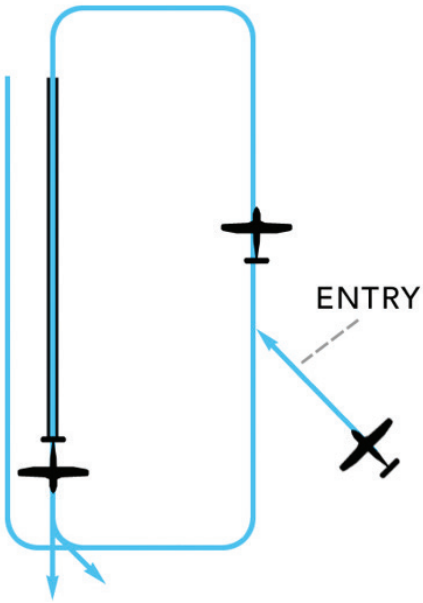
- **Landing behind a larger aircraft on the same runway—**stay at or above the larger aircraft's approach flightpath and land beyond its touchdown point.
- **Landing behind a larger aircraft on a parallel runway closer than 2,500 feet—**consider the possibility of drift and stay at or above the larger aircraft's final approach flightpath and note its touch down point.
- **Landing behind a larger aircraft on crossing runway—**cross above the larger aircraft's flightpath.

- **Landing behind a departing aircraft on the same runway—**land prior to the departing aircraft's rotating point.
- **Landing behind a larger aircraft on a crossing runway—** note the aircraft's rotation point and, if that point is past the intersection, continue and land prior to the intersection. If the larger aircraft rotates prior to the intersection, avoid flight below its flightpath. Abandon the approach unless a landing is ensured well before reaching the intersection.
- **Departing behind a large aircraft—**rotate prior to the large aircraft's rotation point and climb above its climb path until turning clear of the wake.
- **For intersection takeoffs on the same runway—**be alert to adjacent larger aircraft operations, particularly upwind of the runway of intended use. If an intersection takeoff clearance is received, avoid headings that cross below the larger aircraft's path.
- If departing or landing after a large aircraft executing a low approach, missed approach, or touch and go landing (since vortices settle and move laterally near the ground, the vortex hazard may exist along the runway and in the flightpath, particularly in a quartering tailwind), it is prudent to wait at least 2 minutes prior to a takeoff or landing.
- En route it is advisable to avoid a path below and behind a large aircraft, and if a large aircraft is observed above on the same track, change the aircraft position laterally and preferably upwind.
- See Pilot's Handbook of Aeronautical Knowledge and AC 90-23G for full description.

"Line Up and Wait"

"Line Up and Wait" is the old Position and Hold; Query ATC if on the runway for more than 1 minute

Recommended Traffic Pattern Procedures



Example: Key to traffic pattern operations (from AIM 4-3-3)

1. Enter pattern in level flight, abeam the midpoint of the runway, at pattern altitude. (1,000' AGL is recommended pattern altitude unless established otherwise. . .)
2. Maintain pattern altitude until abeam approach end of the landing runway on downwind leg.
3. Complete turn to final at least 1/4 mile from the runway.
4. Continue straight ahead until beyond departure end of runway.
5. If remaining in the traffic pattern, commence turn to crosswind leg beyond the departure end of the runway within 300 feet of pattern altitude.
6. If departing the traffic pattern, continue straight out, or exit with a 45 degree turn (to the left when in a left–hand traffic pattern; to the right when in a right–hand traffic pattern) beyond the departure end of the runway, after reaching pattern altitude.

CLEARANCE COMPONENTS

Most IFR clearances consist of five basic components ("CRAFT"):

Clearance limit: Your destination airport or an intermediate fix.

Route of flight: Hopefully the route you filed, unless traffic conditions dictate otherwise.

Altitude: If not as requested, typically followed by when to expect climb or descent clearance.

Frequency: The radio frequency for departure control.

Transponder: Your four-digit squawk code.

SAMPLE RADIO CALLS

The following sample communications will help you frame various types of radio calls.

When in doubt, remember the four Ws:

- **Who** you're calling
- **Who** you are
- **Where** you are
- **What** you want

Communications at a Non-Towered Airport

Be Specific. When you transmit, begin by stating:

- the name of the airport,
- followed by the model of your aircraft (Skyhawk, Cherokee, Bonanza, etc.) and the last three alphanumerics of the aircraft N number.
- State your intentions, and
- end by repeating the name of the airport

Example: *Frederick traffic, Warrior Five-Four Charlie entering downwind Runway Two-Three, Frederick.*

Class D Airspace

Departing: When ready to taxi

Pilot: *Lancaster Ground, Cherokee 8121K, west ramp, VFR, 4,500 to Frederick with [information] Sierra.*

Ground: *Cherokee 8121K, Lancaster Ground, taxi to Runway 26.*

Pilot: *Taxi to Runway 26, Cherokee 8121K.*

Departing: When ready for takeoff

Pilot: *Lancaster Tower, Cherokee 8121K, Runway 26, ready for takeoff.*

Tower: *Cherokee 8121K, Runway 26, cleared for takeoff.*

Pilot: *Cleared for takeoff Runway 26, Cherokee 8121K.*

Arriving

Pilot: *Lancaster Tower, Cherokee 8121K, 10 [miles] southwest at 2,500, inbound for landing with [information] Sierra.*

Tower: *Cherokee 8121K, Lancaster Tower, report entering left downwind Runway 31.*

Pilot: *Report entering left downwind, Cherokee 8121K.*

. . . . .

Pilot: *Cherokee 8121K entering left downwind Runway 31.*

Tower: *Cherokee 21K, cleared to land Runway 31.*

Pilot: *Cleared to land Runway 31, Cherokee 21K.*

Class D Lost Communications Procedure

- Squawk 7600
- Remain outside or above the Class D
- Determine the traffic flow and operation
- Enter the pattern and look for light signals from the tower

ATC LIGHT GUN SIGNALS

COLOR AND TYPE OF SIGNAL	MEANING		
	AIRCRAFT ON THE GROUND	AIRCRAFT IN FLIGHT	MOVEMENT OF VEHICLES, EQUIPMENT AND PERSONNEL
STEADY GREEN	Cleared for takeoff	Cleared to land	Cleared to cross; proceed; go
FLASHING GREEN	cleared to taxi	return for landing (followed by steady green)	not applicable
STEADY RED	stop	give way to other aircraft and continue circling	stop
FLASHING RED	taxi clear of landing area of runway in use	airport unsafe - do not land	clear the taxiway/ runway
FLASHING WHITE	return to starting point on airport	not applicable	return to starting point on airport
ALTERNATING RED AND GREEN	general warning signal - exercise extreme caution	general warning signal - exercise extreme caution	general warning signal - exercise extreme caution

Class C or TRSA Airspace

Departing: When ready to taxi

Pilot: *Greensboro Ground, Cherokee 8121K, general aviation ramp, VFR, 5,500 to Raleigh with [information] Sierra.*

Ground: *Cherokee 8121K, Greensboro Ground, cleared to Raleigh, maintain VFR at or below 3,000, departure frequency 118.5, squawk 4234, advise when ready to taxi.*

Pilot: *Cherokee 8121K is cleared to Raleigh, maintain VFR at or below 3,000, departure frequency 118.5, squawk 4234, we're ready to taxi.*

Ground: *Cherokee 21K, taxi to Runway 23.*

Pilot: *Taxi to Runway 23, Cherokee 21K.*

Departing: When ready for takeoff

Pilot: *Greensboro Tower, Cherokee 8121K, Runway 23, ready for takeoff.*

Tower: *Cherokee 8121K, Runway 23, cleared for takeoff.*

Pilot: *Cleared for takeoff, Runway 23, Cherokee 8121K.*

Arriving

Pilot: *Greensboro Approach, Cherokee 8121K, 20 [miles] west at 5,500, landing with [information] Foxtrot.*

ATC: *Cherokee 8121K, Greensboro Approach, squawk 2150 and ident.*

Pilot: *Squawk 2150, Cherokee 8121K.*

ATC: *Cherokee 21K, radar contact, fly heading 110, descend and maintain 4,500, maintain VFR.*

Pilot: *Fly heading 110, descend and maintain 4,500, maintain VFR, Cherokee 21K.*

Class B Airspace

Departing

Class B departure calls follow the same format as Class C or TRSA airspace. However, you may need to contact Clearance Delivery prior to calling Ground and provide them the four Ws.

Arriving

Pilot: *Charlotte Approach, Cherokee 8121K, 20 [miles] southwest at 7,500, landing Charlotte with [information] Charlie.*

ATC: *Cherokee 8121K, Charlotte Approach, squawk 4323 and ident.*

Pilot: *Squawk 4323, Cherokee 8121K.*

ATC: *Cherokee 21K, radar contact, cleared to enter Class Bravo airspace, fly heading 020, descend and maintain 3,000, maintain VFR.*

Pilot: *Cleared to enter Class Bravo airspace, fly heading 020, descend and maintain 3,000, maintain VFR, Cherokee 21K.*

Transiting

Pilot: *Seattle Approach, Cherokee 8121K, 20 [miles] southwest of Seattle VOR at 7,500, en route Arlington, request transit Class Bravo airspace.*

ATC: *Cherokee 8121K, Seattle Approach, squawk 3121 and ident.*

Pilot: *Squawk 3121, Cherokee 8121K.*

ATC: *Cherokee 21K, radar contact 18 miles southwest of SeaTac, Seattle altimeter 29.88, cleared through Class Bravo direct Arlington, descend and maintain 5,500, maintain VFR.*

Pilot: *Cleared through Class Bravo direct Arlington, descend and maintain 5,500, maintain VFR, Cherokee 21K.*

Opening a VFR Flight Plan

Pilot: *Raleigh Radio, Cherokee 8121K on 122.2.*

Flight Service: *Cherokee 8121K, Raleigh Radio, go ahead.*

Pilot: *Raleigh Radio, open flight plan for Cherokee 8121K from Greensboro to Knoxville at 1835 Zulu.*

Flight Service: *Cherokee 21K, flight plan activated at 1835 Zulu,Greensboro altimeter 30.02. We'd appreciate any pilot reports.*

Requesting/Canceling Flight Following

Requesting

Pilot: *Manchester Approach, Cherokee 8121K.*

ATC: *Cherokee 8121K, Manchester Approach.*

Pilot: *Cherokee 8121K over Concord VOR at 6,500, en route Trenton Mercer, request flight following.*

ATC: *Cherokee 21K, squawk 3314.*

Pilot: *Squawk 3314, Cherokee 21K.*

Canceling

Pilot: *Manchester Approach, Cherokee 8121K would like to cancel flight following.*

ATC: *Cherokee 8121K, radar service terminated, squawk VFR, frequency change approved.*

Pilot: *Squawk VFR, Cherokee 8121K.*

Traffic Advisory Calls (while on VFR Flight Following)

ATC: *Cessna 14GA, Traffic 1 o'clock, 6 miles opposite direction, altitude indicates 4,500.*

ASI's Say It Right course recommends saying either "Traffic in sight" or "Negative contact." "Looking for traffic" is not found in the Pilot/Controller Glossary.

If traffic not in sight:

Pilot: *Negative contact, 14GA.*

If traffic in sight:

Pilot: *14GA, Traffic in sight.*

ATC: *14GA, Roger.*


Airspace-at-a-Glance
FL 600
Class A
18,000 msl
AOPA Air Safety Institute • 800-USA-AOPA • airsafetyinstitute.org
14,500 msl
Class G
Class E
1200 agl
700 agl
Class D
Class C
Class B
Class G

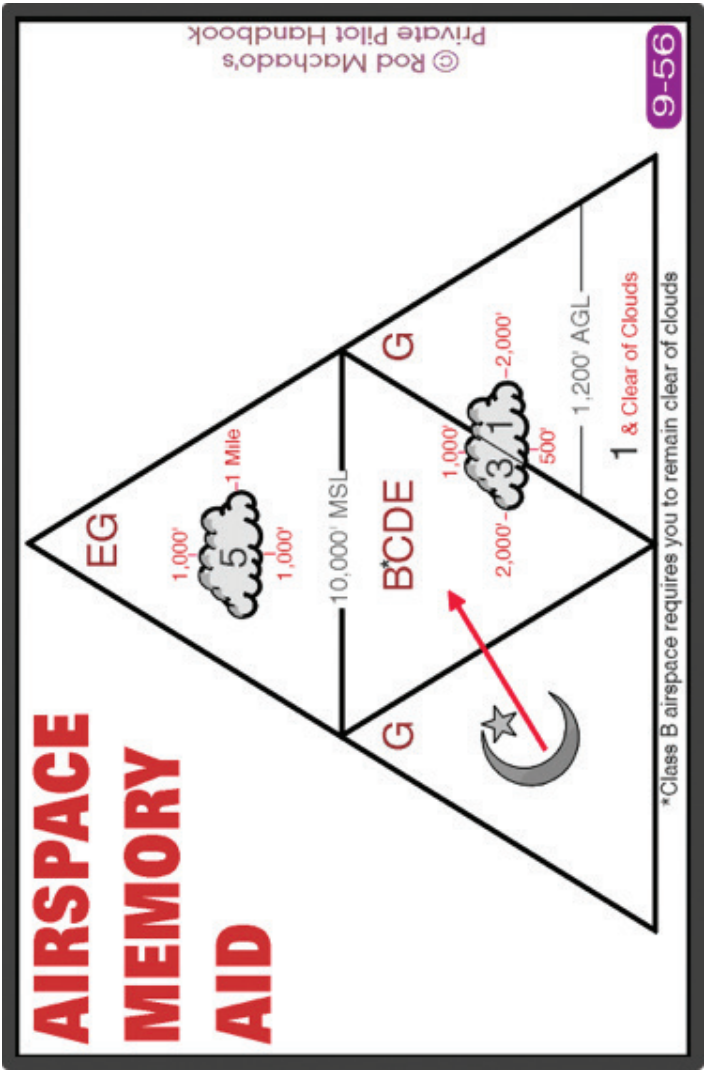
Communication Requirements and Weather Minimums

Features	Class A	Class B	Class C	Class D	Class E	Class G
Minimum Pilot Qualifications	Instrument Rating	Student*	Student*	Student*	Student*	Student
Entry Requirements	IFR: ATC Clearance VFR: Operations Prohibited	ATC Clearance	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: None	None
Equipment Requirements	IFR Equipped	Two-Way Radio, Transponder w/ Mode C	Two-Way Radio, Transponder w/ Mode C	Two-Way Radio	No Specific Requirement	No Specific Requirement
VFR Visibility Below 10,000 msl**	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	3 Statute Miles	Day: 1 Statute Mile Night: 3 Statute Miles
VFR Cloud Clearance Below 10,000 msl***	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below*** 1,000 Above*** 2,000 Horizontal***
VFR Visibility 10,000 msl and Above**	N/A	N/A	N/A	N/A	5 Statute Miles	5 Statute Miles
VFR Cloud Clearance 10,000 msl and Above	N/A	N/A	N/A	N/A	1,000 Below 1,000 Above 1 Statute Mile Horizontal	1,000 Below 1,000 Above 1 Statute Mile Horizontal

* Prior to operating within Class B, C, or D airspace (or Class E airspace with an operating control tower), student, sport, and recreational pilots must meet the applicable FAR Part 61 training and endorsement requirements. Solo student, sport, and recreational pilot operations are prohibited at those airports listed in FAR Part 91, appendix D, section 4.
** Student pilot operations require at least 3 statute miles during the day and 5 statute miles visibility at night.
*** Class G VFR cloud clearance at 1,200 agl and below (day): clear of clouds. Refer to 91.155(b) through (e) for additional regulations.

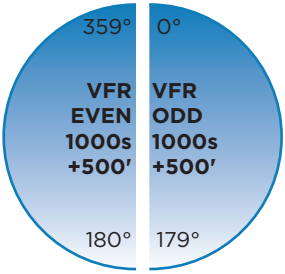
Airspace Memory Aid (Copyright Rod Machado 2016)

Source: Rod Machado's Private Pilot Handbook
www.rodmachado.com



VFR Cruising Altitudes

MAGNETIC TRACK ABOVE 3000′ AGL



Military Training Routes (e.g. VR123 or IR1234)

- VR = Visual operations
- IR = Instrument operations
- Altitudes of operations
  3 Digits = higher than 1500’ AGL
  4 Digits = at or below 1500’ AGL
- Best practices to avoid conflicting with military traffic
- Cross the MTR at a 90˚ angle to minimize conflicts
- Be extra vigilant due to high speeds

Military Operations Areas (MOAs)

- Marked by magenta hashed lines and labeled as MOA preceded by the name, these areas separate high speed military traffic from commercial and general aviation.
- Refer to the side panel of the sectional chart for applicable altitudes, effective times, and contact information for controlling agencies.
- While VFR pilots are not prohibited from entering MOAs, they are cautioned to keep a watchful eye out for military operations such as aerial refueling, air combat training, and formation flying.

- A pilot may contact a flight service station or ATC center within 100 miles of the MOA to determine if it is active and, if so, may request traffic advisories from the controlling agency prior to entry

Restricted Areas

- These are marked by blue hashed lines and are identified on charts with a “R” followed by a number.
- Though not entirely prohibited to flight activity, are areas in which unauthorized penetration is not only illegal, but also extremely dangerous.
- Altitudes and times differ for each restricted area and can be determined by consulting sectional chart legends.
- Restricted areas generally contain operations that do not mix well with aircraft such as artillery firing, guided missiles, or aerial gunnery.
- Permission to fly in restricted areas can be given by ATC.

Prohibited Areas

- These are marked by blue hashed lines and are identified on charts with a “P” followed by a number.
- They are established for security reasons or for national welfare.
- Prohibited areas are for all intents and purposes permanently off limits.
- An example of a prohibited area is the White House or Camp David.
- Although these areas are charted, it is imperative to check notices to airmen (notams) before you fly since some can change in size.

Temporary Flight Restrictions (TFRs)

- **What is a TFR?**

  A type of Notices to Airmen (NOTAM). A TFR defines an area restricted to air travel due to a hazardous condition, a special event, or a general warning for the entire FAA airspace. The text of the actual TFR contains the fine points of the restriction.

  It is an area where the FAA has determined that in the interest of safety or national security, aircraft should not be flying.

- **TFRs are established by NOTAM**

  For natural or manmade disasters & relief operations, Presidential or other VIPs, space operations, and other events that could draw a lot of public attention for sightseeing (sporting events, amusement parks, etc).

- **"How do I find out about them?"**

  ONLY OFFICIAL SOURCE: Pre-flight weather briefing (phone or online)

  FAA's TFR site: tfr.faa.gov

  Inflight talk to ATC or FSS for possible pop-up TFRs

  AOPA's TFR Map: http://www.aopa.org/Flight-Planning/Tfrs or web search for "AOPA TFRs"

- **"You are responsible for avoiding TFRs!"**

  Remember that TFRs over areas like sporting events are under a published TFR and each individual game is not included in your briefing. You need to be aware of the game schedule or just avoid the area—these TFRs go from the surface to 3000 AGL out to 3 nm radius.

  Many of the EFB products will highlight these for the games (check your software to see)

- **"If it's a TFR, how can you fly through it?"**

  ATC can authorize you to fly through most TFRs (if written in NOTAM)

BONUS! Air Safety Institute's Airspace Online Resources:

- Airspace Flash cards
- "Know Before You Go" online course
- See the Rusty Pilots Safety Spotlight on aopa.org

RUSTY PILOTS RESOURCE LIST

- ASI Rusty Pilot Safety Spotlight

  http://www.aopa.org/Pilot-Resources/Air-Safety- Institute/Safety-Spotlights/Rusty-Pilots

- FAA Safety Team (www.faasafety.gov)

  Tons of free online courses and resources. Also your HQ for Wings credit.

- Aircraft Spruce (www.aircraftspruce.com)

  Everything your airplane might need.

  Check out their Flight Training section for review materials.

- ASA (www.asa2fly.com)

  Offers mobile and online courses and has a huge selection of aviation books and training materials.

- Gleim (www.gleim.com)

  Has an online flight review refresher course.

  Multiple online ground schools and online courses.

- King Schools (www.kingschools.com)

  Check out their Return to Flying series with both VFR and IFR reviews

- Jeppesen (www.jeppesen.com)

  Offers a series of e-books, online and mobile training.

- MZeroA.com (www.m0a.com)

  Check out the Flying Again video and book made about Rusty Pilots.

  Offers online ground schools and great instructional videos.

- PilotWorkshop.com (www.pilotworkshop.com)

  Sign up for their free Tip of the Week series. A weekly quick review of some great flying tips.

  Check out their Real World VFR and IFR series of videos.

- Rod Machado's Aviation Learning Center (www.rodmachado.com)

  Excellent learning materials with a fun sense of humor

  Features some of the best aviation education graphics in the industry

- Sporty's (www.sportys.com)

  Stocks everything you need for the cockpit.

  Offers mobile and online ground school and training courses.

NOTES