A106 AIRPORT OPERATIONS

References: Aeronautical Information Manual, Chapter 2
FAA-H-8083-25A, Pilot's Handbook of Aeronautical Knowledge, Chapters 8 (pgs 6-9), and 13
Federal Aviation Regulations Parts 1, 61, 91, NTSB 830
IFS Local Flying Procedures, Chapter 2

INTRODUCTION
Safe operations in the airport environment demand knowledge of many things. The airport has extensive markings and signage in order to aid the pilot in maneuvering the aircraft safely about the airport complex. There are many regulations and procedures to be followed. This lesson discusses airport operations and identifies features of an airport complex, as well as provides information on operating on and in the vicinity of an airport. The objectives for this lesson are for the student to learn the airport signs and markings, and to understand the airport traffic pattern and the applicable Federal Aviation Regulations for solo flight.

TOWERED AND NON-TOWERED AIRPORTS
A towered (http://www.aopa.org/asf/publications/sa07.pdf) airport has an operating control tower. Air Traffic Control (ATC) is responsible for providing for the safe, orderly, and expeditious flow of air traffic. Pilots operating from a towered airport are required to maintain two-way radio communications with ATC, and to acknowledge and comply with all instructions. Pilots must advise ATC if they cannot comply with instruction and request amended instructions. Pilots may deviate from an ATC instruction in an emergency, but must advise ATC of the deviation as soon as possible.

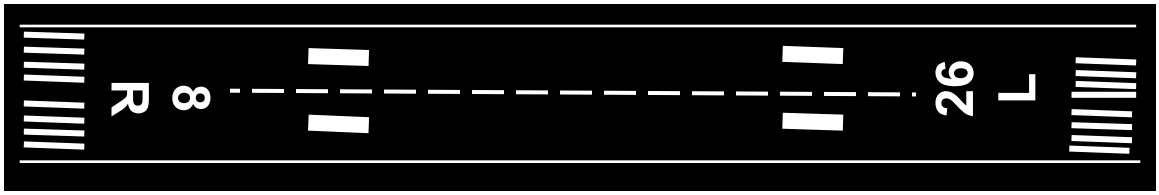
A non-towered airport (http://www.aopa.org/asf/publications/sa08.pdf) does not have an operating control tower. Two-way radio communications are not required, although it is a good operating practice for pilots to transmit their intentions on the specified frequency for the benefit of other pilots in the area. You will use such fields while in the IFS syllabus; Fowler, Bullseye and Fremont County. Some standards and procedures are common at both towered and nontowered airports.

RUNWAY MARKINGS
There are three basic types of runways. There are visual runways, non-precision instrument runways and precision instrument runways.

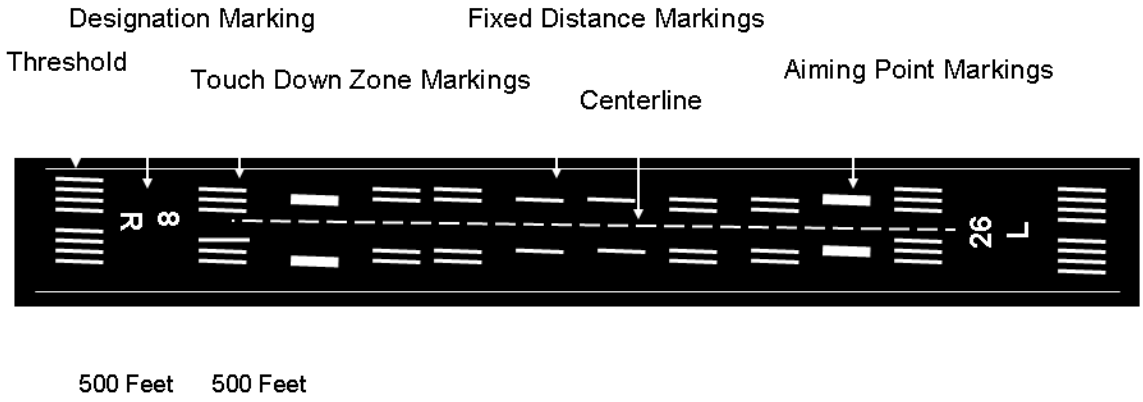
Visual runways have only basic markings and are intended for aircraft conducting a visual approach. Markings include the runway designation, the centerline and may also include aiming points.

The basic VFR runway markings found on a hard surface runway consist of white runway numbers and a centerline.

Nonprecision instrument runways include additional markings as guidance for aircraft on non-precision instrument approaches. They are marked with threshold markings, runway designation, centerlines, and aiming points. Aiming points are located 1,000 feet from the landing threshold.



Precision runways have threshold markings, numbers, centerlines, touchdown zones and aiming points. They provide touchdown guidance for aircraft on precision instrument approaches.

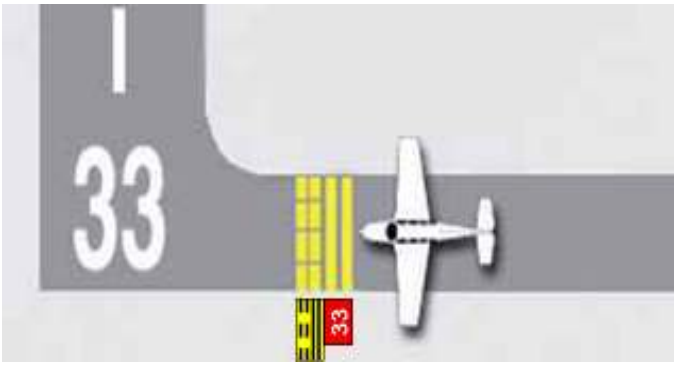


At each end of a runway is a set of numbers painted upright which are viewed by approaching traffic. The numbers represent the approximate magnetic direction of the runway rounded to the nearest 10 degrees, with the last zero omitted. If you were landing on runway 27, the approximate magnetic heading during the landing approach would be 270º.

When the runways are parallel to each other, both will carry the same numerical designation, however, the left runway number will have an “L” while the right runway will have a large white letter “R”. When there are three parallel runways, the letter “C” is added to the center runway number.

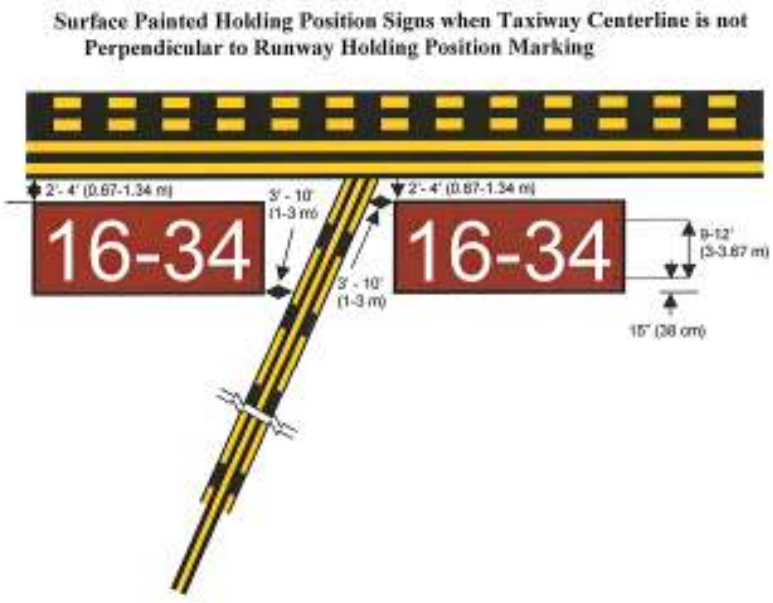
RUNWAY HOLDING POSITION MARKING AND SIGN (Hold Short Line / Sign)
This marks the runway boundary. The Hold Short Line is a *DOUBLE* solid, *DOUBLE* dashed line. The Hold Short Sign is red with white numbers displaying the name of the runway.

Double solid lines and the red sign mean “**STOP!**” You must get clearance from ATC to cross this line!



The Holding Position Sign will have a Runway Boundary Sign on the opposite side. Aircraft approaching the runway will see the red sign and must stop short of the Hold Short Line until cleared by Tower to enter the runway. Aircraft approaching from the double dashed side will see the Runway Boundary Sign and are automatically cleared to cross the line, thereby exiting the runway, unless instructed otherwise by tower.

Taxiway centerlines are marked with a solid yellow stripe. As a taxiway approaches a runway, dashed yellow lines are painted along the centerline for enhanced visibility. If the taxiway is not perpendicular to the runway, large red runway signs are painted adjacent to the Hold Short Line. Do not cross the Hold Short Line without clearance from ATC at a towered airport. At a non-towered airport, be absolutely certain that no traffic will be affected as you take the runway for takeoff.

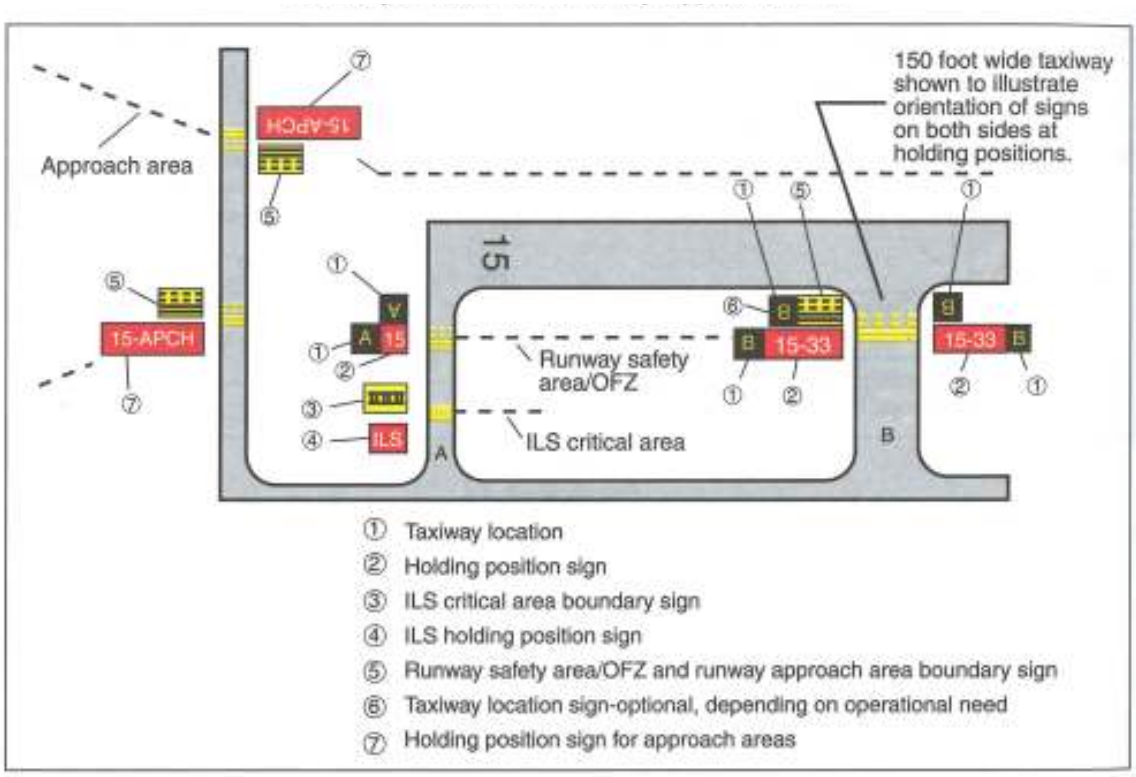


RUNWAY GUARD LIGHTS

These are alternating flashing yellow lights located next to the runway Hold Short Line. Their purpose is to alert the pilot to the location of the runway so that the pilot will not pass beyond the Hold Short Line without a clearance from ATC.

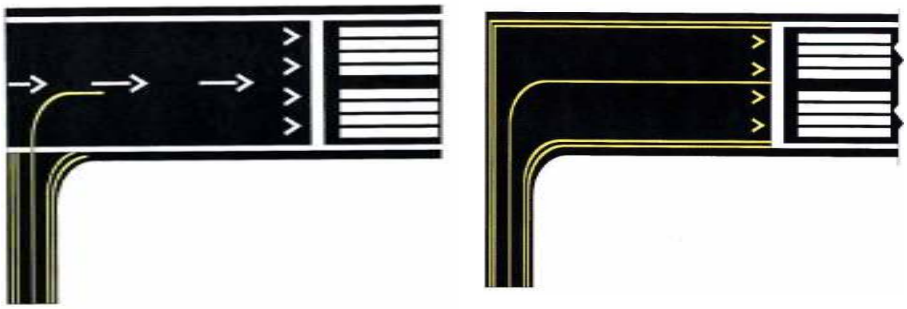
RUNWAY BOUNDARY INDICATORS

Painted markings and signs are used to identify the runway boundaries. Red runway approach signs are used to identify the approach area to a runway that needs to remain clear when aircraft are arriving and departing.



DISPLACED THRESHOLD MARKING

Some runways have displaced thresholds, meaning the end of the runway is not suitable for landing. This is usually because of obstructions near the approach end or the marked portion of the runway is not strong enough for repeated landings. You can identify these portions of the runway by arrows painted down the center pointing to a large white line. This line represents the actual runway threshold. You cannot land on a displaced threshold. However, you can use it for taxiing, takeoff, and landing rollout.

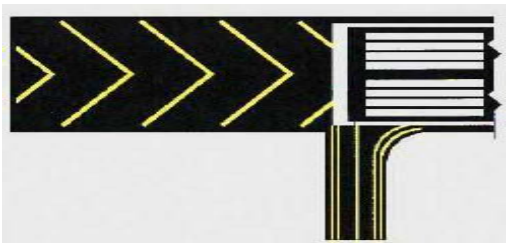


RELOCATED THRESHOLD MARKING

A relocated threshold has a solid yellow taxiway centerline that leads to the runway threshold. This means that only taxiing can be performed in that area. It is not to be used for takeoffs or landings.

BLASTPAD / STOPWAY MARKING

Stop ways or blast pads are all marked with a chevron pattern. These areas are not to be used for aircraft operations. They provide a clearway for jet blast and propwash.



TAXIWAY MARKINGS
Taxiway centerlines are marked with a solid yellow stripe. A double yellow line is used to mark the taxiway edge, differentiating the taxiway from the shoulder or some other paved surface NOT intended for use by aircraft. Thick, yellow hashes may extend out from these taxiway edge lines to identify islands or taxiway curves, preventing confusion as to which side of the line is intended for use by aircraft.

Taxiway reflective markers may also be used to identify the taxiway edge. A dashed double yellow line is used to mark the taxiway edge, differentiating the taxiway from adjoining pavement which IS intended for use by aircraft, such as a runup area or a ramp.

CLOSED RUNWAY AND TAXIWAY MARKINGS
Any runway or taxiway marked with an "**X**" is closed to all operations.

AIRPORT SIGNS
Airport signs are standardized. There are six types of airport signs that provide you with information while taxing.

1. Mandatory Instruction signs have white lettering on a red background. They are used to identify entrances to a runway or critical areas and to areas where aircraft are not prohibited from entering. These signs usually indicate the holding position for these areas. Runway boundary and Instrument Landing System critical area boundary signs have black markings on a yellow background. Aircraft are required to hold-short of the affected runway at this sign when in effect, vice the regular hold short sign, to keep aircraft on the ground from interfering with Instrument Landing System (ILS) signals.

2. Informational signs have black lettering on a yellow background. They give nice-to-know information.

3. Location signs have yellow lettering on a black background. They identify either a runway or a taxiway.

4. Distance Remaining signs have a white number on a black background. They are located along the side of the runway. The number indicates the distance remaining in thousands of feet.

5. Direction signs have a black arrow on a yellow background. They indicate the direction of taxiways or runways leading from an intersection.

6. Destination signs have black lettering on a yellow background. They indicate the general direction to remote locations such as runways, terminals, military areas, civil aviation terminals and fixed base operators.

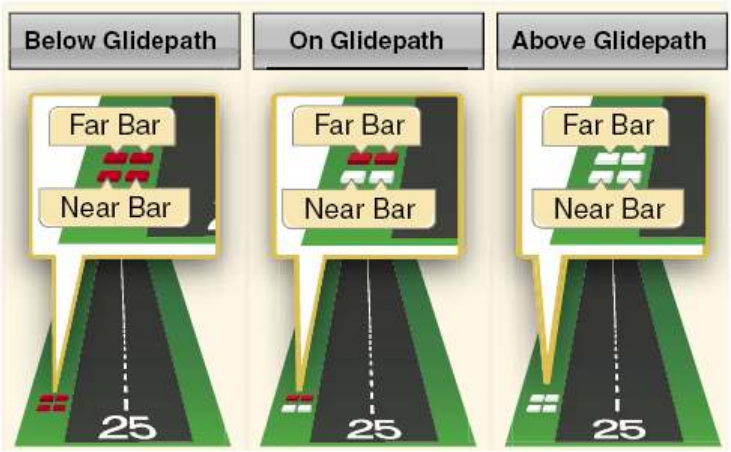
Type of Sign	Action or Purpose	Type of Sign	Action or Purpose
4-22	Taxiway/Runway Hold Position: Hold short of runway on taxiway		Runway Safety Area/Obstacle Free Zone Boundary: Exit boundary of runway protected areas
26-8	Runway/Runway Hold Position: Hold short of intersecting runway		ILS Critical Area Boundary: Exit boundary of ILS critical area
8-APCH	Runway Approach Hold Position: Hold short of aircraft on approach	J→	Taxiway Direction: Defines direction & designation of intersecting taxiway(s)
ILS	ILS Critical Area Hold Position: Hold short of ILS approach critical area	↙L	Runway Exit: Defines direction & designation of exit taxiway from runway
⊖	No Entry: Identifies paved areas where aircraft entry is prohibited	22↑	Outbound Destination: Defines directions to takeoff runways
B	Taxiway Location: Identifies taxiway on which aircraft is located	↖MIL	Inbound Destination: Defines directions for arriving aircraft
22	Runway Location: Identifies runway on which aircraft is located		Taxiway Ending Marker: Indicates taxiway does not continue
4	Runway Distance Remaining: Provides remaining runway length in 1,000 feet increments	↙A G L→	Direction Sign Array: Identifies location in conjunction with multiple intersecting taxiways

NON-MOVEMENT AREA BOUNDARY MARKING

A single solid yellow line and a single dashed yellow line mark the boundary between the *Non-movement Area* (the area NOT controlled by ATC) and the *Movement Area* (the area that is controlled by ATC).

The solid line means "**STOP!**" You must get clearance from ATC (usually Ground Control) to cross this line! If on the dashed side, you are automatically cleared to cross to the solid side, exiting the real estate controlled by ATC.

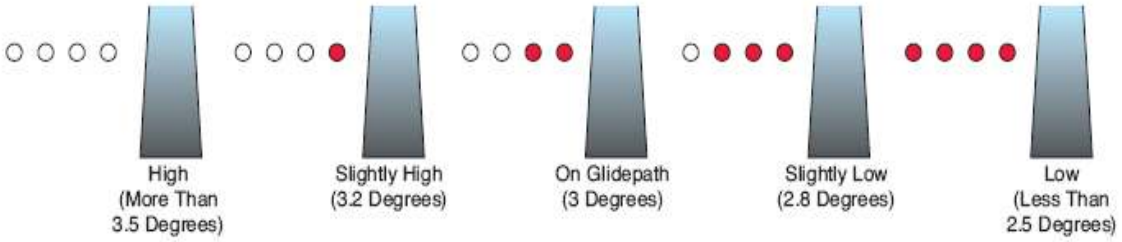
VASI LIGHTS



Visual Approach Slope Indicator (VASI) lights display a safe glide path to the runway. This system contains two separate bars of lights, which normally represent a 3º glide slope. When the near or lower bar is seen as white and the second or far bar, displayed as red, the aircraft is on the VASI glide path.

PAPI LIGHTS

Another type of approach system is the Precision Approach Path Indicator (PAPI). With this system, you compare lights on the same bar. When you are above the glide path, all four lights will be white. As your aircraft descends and begins to intercept the glide path, the lights on the right will turn to red. As the aircraft intercepts the glide path, the two lights on the right will show red and the two on the left will be white. When three or more lights show red, you are too low.



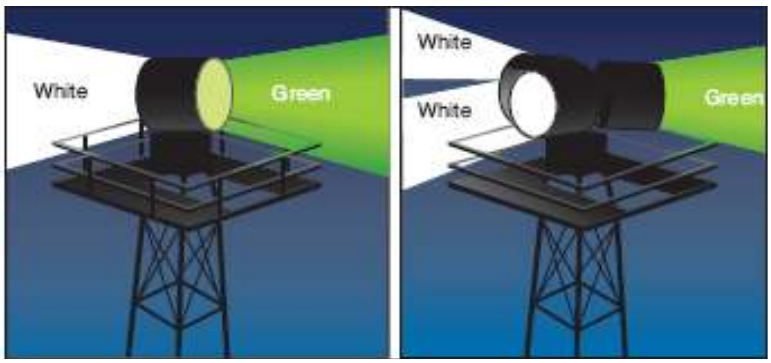
AIRPORT LIGHTING

During periods of limited visibility, or at night, many airports are lighted to make operations safer. The amount of lighting varies depending on the size of the airport.

All taxiways are outlined in blue lights or blue reflectors. Runways are outlined by white lights. On runways used for instrument approaches, amber lights are used to mark visual caution zones for landings on either the last 2000 feet or half the runway length, whichever is less. Some runways have flush mounted centerline lights. To mark the end of the runway, the last 3000 feet and first 1000 feet are alternating red and white. The last 1000 feet of lights are red. To mark the beginning of a runway, green lights are placed at the threshold. These same lights when viewed from the opposite direction will be red, indicating the end of the runway. Sometimes white strobe lights accompany the threshold lights. At some airports, you can turn the runway lights on or adjust their intensity by keying the microphone a specific number of times within a certain period. At some airports, you can have the intensity of the lighting adjusted by requesting the tower to do it for you.

AIRPORT BEACON

The airport rotating beacon aids pilots in locating the airport from several miles away. It is in operation from sunset to sunrise and during periods of IFR conditions. Civil airports for land aircraft display an alternating green and white flashing light. Beacons at military airfields display two white flashes alternating with a green flash.



If used at airports in Class B, C, D or E airspace during the day, the beacon signifies that the ground visibility is less than 3 sm and/or the ceiling is less than 1,000 feet, conditions which prohibit VFR flight.

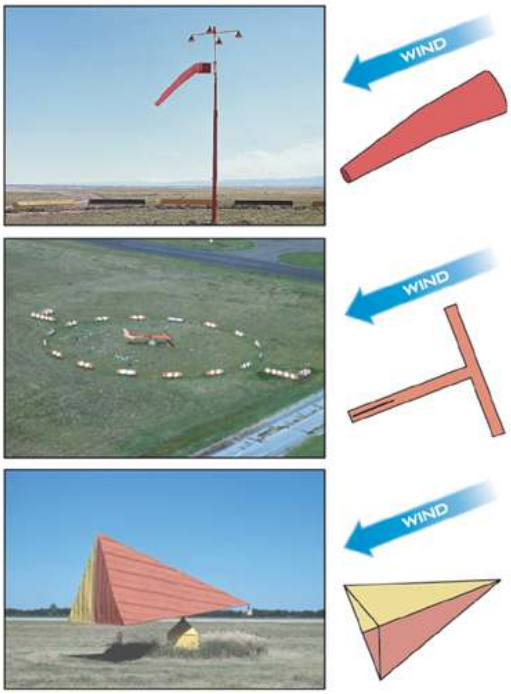
Lights located on obstructions, such as towers, tall buildings, can be either white or red, and some may be marked with flashing or strobe lights.

WIND DIRECTION INDICATORS

Wind is an important factor in determining takeoff and landing performance. If you have a headwind, for any given indicated airspeed, your groundspeed will be less. Hence, with a

headwind of 20 knots, and an indicated takeoff rotation speed of 55 knots, your effective speed on and over the ground is only 35 knots. A headwind reduces the amount of distance required for takeoffs and landings. A tailwind will increase your distances in both cases. For example, if your approach speed is 60 knots, with a tailwind of 10 knots, you are doing 70 knots over the ground and your landing distance will be longer.

Most airports have installed some type of wind direction indicator so that the pilot can decide which runway is best aligned with the wind. When installed at nontowered airports, the wind and landing direction indicators are usually placed in a segmented circle. The segmented circle displays the direction for the traffic patterns (left or right) for the runways as well as the wind direction indicator. Several types of wind indicators used are the windsock, the wind tee and the wind tetrahedron. These align into the wind and show the pilot the direction that the wind is coming from. This way, the pilot selects the runway that is best for the takeoff/landing.



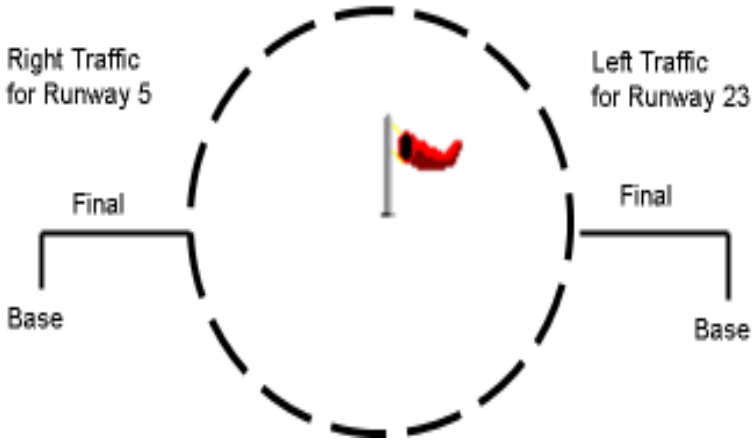
Wind Sock – Indicates the wind direction and intensity by straightness of the sock.

Wind Tee – Indicates wind direction but not the intensity. It is sometimes locked in place to show the active runway.

Tetrahedron – Indicates wind direction but not the intensity. It is sometimes locked in place to show the active runway.

SEGMENTED CIRCLE

This is usually located near the center of the airport with a wind indicator in the center of the circle.



The Ls that extend from the segmented circle display the direction that the turns in the traffic pattern are made.

LIGHT GUN SIGNALS

When you experience a loss of radio communications with a control tower, the tower can provide light gun signals to inform you of what you are to do. The tower controller aims a light gun at your aircraft and shines the appropriate light at you. You must interpret the meaning correctly and then proceed as directed. The pilot should acknowledge the signal by either rocking the wings or flashing the landing light on and off.

International Standard Traffic Signal Light Patterns

Color and Type of Signal	Movement of Vehicles, Equipment and Personnel	Aircraft on the Ground	Aircraft in Flight
Steady Green	Cleared to cross, proceed or go	Cleared for takeoff	Cleared to land
Flashing Green	Not applicable	Cleared for taxi	Return for landing (followed by steady green)
Steady Red	STOP	STOP	Give way to other aircraft and continue circling
Flashing Red	Clear the taxiway/runway	Taxi clear of the runway in use	Airport unsafe, do not land
Flashing White	Return to starting point on airport	Return to starting point on airport	Not applicable
Alternating Red and Green	Exercise Extreme Caution	Exercise Extreme Caution	Exercise Extreme Caution

FEDERAL AVIATION REGULATIONS (FAR)

These are regulations that apply to any facet of aviation including flight operations, airports, airspace, construction of aircraft, training and pilot certificates.

FARs are rules contained in Title 14 of the Code of Federal Regulations (CFR).
FARs contain many Parts, however the parts most relevant to pilots are

- 14 CFR Part 1 - Definitions
- 14 CFR Part 61 – Certification (how to get a pilot license)
- 14 CFR Part 91 – Operating rules (how to lose a pilot license)
- 49 CFR Part 830 – Incident/Accident reporting

The following are specific FARs that are applicable to flight at IFS:

FAR Part 1 – Definitions

These definitions cover a variety of terms that have a specific meaning in the FARs.

- Category (for Airmen)
  - Broad classification of aircraft
    - Airplane
    - Rotorcraft
    - Glider
    - Lighter-than-air
- Class (for Airmen)
  - Classification of aircraft within a category with similar operating characteristics
    - Single-engine land

        - Single-engine sea
        - Multi-engine land
        - Multi-engine sea
- Type -required for:
        - Large Aircraft (greater than 12,500 lbs gross weight)
        - Turbojet powered airplanes
        - Other aircraft specified by the FAA Administrator
- Category (for Aircraft)
    - Based on aircraft use
        - Transport
        - Normal
        - Utility
        - Acrobatic
- Class (for Aircraft)
    - Similar to airmen categories
        - Airplane
        - Rotorcraft
        - Glider
        - Lighter-than-air

FAR 61.3 - REQUIRED PILOT DOCUMENTS

A pilot must have these documents in his/her personal possession while piloting an aircraft.
-Pilot Certificate
-Medical Certificate
-Government issued photo ID

FAR 61.23 – MEDICAL CERTIFICATES

All FAA rated pilots must have a current FAA medical certificate.
First Class:
-Required for Airline Transport Pilot privileges
-Valid for 12 calendar months for pilots under 40
-Valid for 6 calendar months for pilots 40 and over
-After 12 months becomes Second Class
Second Class:
-Required for Commercial Pilot Privileges
-Valid for 12 calendar months
-After 12 calendar months becomes Third Class
Third Class:
-Required for Student (Solo), Recreational, and Private Pilot privileges
-Valid for 24 calendar months for pilots 40 and over
-Valid for 60 calendar months for pilots under 40

FAR 61.25 – CHANGE OF NAME

If you change your name, send an application to the FAA accompanied by:
-Current airman certificate
-Copy of marriage license, court order or other document verifying name change

FAR 61.60 – CHANGE OF ADDRESS

Pilot, flight instructor, or ground instructor may not exercise certificate privileges unless the FAA is notified in writing within 30 days of address change.

FAR 61.51 – PILOT LOGBOOKS

The purpose of a logbook is to demonstrate currency and qualification for additional certificates/ratings.

Presentation of documents for inspection
- Logbook, pilot certificate, medical certificate, or other
- Upon reasonable request from Administrator, authorized NTSB agent, federal, state, or local law enforcement officer

FAR 61.56 – FLIGHT REVIEWS

No person may act as Pilot in Command unless
- They have accomplished a flight review in the preceding 24 calendar months.
- They have a logbook endorsement from the authorized flight instructor who gave the review, certifying that the person has satisfactorily completed the review.

Flight Review Syllabus
- Minimum of one hour of flight instruction on maneuvers that the CFI feels are appropriate for the certificate privileges being exercised.
- Minimum of one hour of ground instruction on Part 91 of the FARs.

FAR 61.57 – RECENT FLIGHT EXPERIENCE

General Experience for Carrying Passengers
- Three takeoffs and landings within the preceding 90 days in the same category and class of aircraft.
- The landings must be to a full stop if in a tailwheel airplane.

Night Experience for Carrying Passengers
- Three takeoffs and landings to a full stop within the preceding 90 days in the same category and class of aircraft.

FAR 91.3 - PIC RESPONSIBILITY

The PIC is directly responsible for, and the final authority as to the operation of the aircraft. In an emergency, the PIC may deviate from any stated rule to meet that emergency. A written report of any deviations from FARs should be filed with the FAA upon request.

FAR 91.7 – AIRCRAFT AIRWORTHINESS

The pilot in command is responsible for determining that the airplane is airworthy prior to every flight.

FAR 91.15 - DROPPING OF OBJECTS

No PIC may allow an object to drop from an aircraft that creates a hazard to persons or property. An object may be dropped if reasonable precautions are taken to avoid injury or damage to persons or property.

FAR 91.17 – ALCOHOL AND DRUGS
- No person may act as a crewmember
  - Within 8 hours of drinking alcoholic beverages
  - While under the influence of alcohol or drugs
  - While having 0.04% (by weight) alcohol level in blood
- Pilots may not allow a person who is obviously intoxicated or under the influence of drugs to be carried in an airplane unless he/she is a medical patient under proper care or in an emergency.
- Crewmembers must submit to drug/alcohol testing if requested to do so by a law enforcement officer
- AF regulations (AFI 11-102, V3, para 5.1.4) are more restrictive. Aircrew shall not consume alcohol within 12 hours of takeoff and cannot be under the influence of alcohol or its after effects.

FAR 91.103 - PREFLIGHT ACTION
- Each PIC shall, before beginning a flight, become familiar with all available information about the flight including:

- Weather reports
- Fuel requirements
- Alternates
- Traffic delays
- Runway lengths at airports of intended use
- Takeoff and landing information in POH

FAR 91.105 – FLIGHT CREW

During takeoff and landing, and while enroute, each required flight crewmember shall keep his/her safety belt fastened while at his/her station.

FAR 91.107 - USE OF SEAT BELTS

- No PIC may take off unless he/she ensures that each person on board is briefed on how to fasten and unfasten that person's safety belt and, if installed, their shoulder harness.

- No PIC may move on the surface, take off, or land unless PIC ensures that each person on board has been notified to fasten that person's safety belt and, if installed, their shoulder harness.

FAR 91.111 - OPERATING NEAR OTHER AIRCRAFT

- No person may operate an aircraft so close to another aircraft as to create a collision hazard. (DOSS IFS – Minimum distance is 500 feet.)
- No formation flight - except by pre-arrangement of PICs.
- No formation flight with passengers for hire.

FAR 91.113 – RIGHT OF WAY RULES

- An aircraft in distress has right of way over all other aircraft.
- The least maneuverable aircraft normally has the right of way: balloon over glider over aircraft refueling in flight over airship over airplane over rotorcraft.
- An aircraft being overtaken has the right of way and must be passed on the right.
- When two aircraft of the same category are converging, but not head-on, the aircraft to the left shall give way.
- When two aircraft of the same category are converging on a head-on collision course, both aircraft shall give way to the right.

FAR 91.117 - AIRCRAFT SPEED

- Below 10,000' MSL: 250 knots or less.
- Within 4 NM of the primary airport in Class C or Class D airspace at or below 2500' AGL : 200 knots or less
- Below airspace underlying Class B airspace: 200 knots or less

FAR 91.119 - MINIMUM SAFE ALTITUDES

- The minimum safe altitude anywhere must allow an emergency landing, following an engine failure, without undue hazard to persons or property on the surface.
- Congested area – 1,000 ft. above the highest obstacle within a 2,000 ft. radius of the aircraft
- Uncongested area - 500 ft. above the surface
- Over sparsely populated areas or open water – within 500 ft. of any person, vessel, vehicle, or structure.

FAR 91.123 - ATC CLEARANCES

- ATC Clearance – Authorization to proceed under specific traffic conditions in controlled airspace.
- When an ATC clearance has been obtained, no PIC may deviate from that clearance unless:
  An amended clearance is obtained

An emergency exists
Deviation is in response to a traffic alert and collision avoidance system resolution advisory

- When PIC is uncertain of an ATC clearance, PIC should request clarification
- ATC clearances are not authorization to deviate from the rules

FAR 91.151 - FUEL REQUIREMENTS

Day time - Must have enough fuel on board to fly to original intended point of landing and 30 minutes at normal cruise airspeed beyond that point

FAR 91.203 - REQUIRED AIRCRAFT DOCUMENTS

- Use the Mnemonic **A-R-O-W**
  - **A**irworthiness certificate
  - **R**egistration certificate
  - **O**perating handbook (POH)
  - **W**eight and Balance data

FAR 91.205 - REQUIRED AIRCRAFT INSTRUMENTS - DAY VFR

- **TOMATO FLAMES**
  - **T**achometer
  - **O**il pressure gauge
  - **M**anifold pressure gauge for altitude engine
  - **A**ltimeter
  - **T**emperature gauge for liquid-cooled engine
  - **O**il temperature gauge for air-cooled engine
  - **F**uel gauge
  - **L**anding gear position indicator (if applicable)
  - **A**irspeed indicator
  - **M**agnetic direction indicator
  - **E**LT
  - **S**afety Belts

FAR 91.207 - ELTs

- Emergency Locator Transmitter
- Operates on 121.5 MHz
- May only be tested on the ground during the first 5 minutes after the hour.
- ELT radios are inspected every 12 calendar months.
- ELT batteries must be replaced:
  - after one hour of continuous use
  - or after 50% of useful life has expired.

FAR 91.409 AIRFRAME AND POWERPLANT INSPECTIONS

- Every 12 calendar months (annual)
- Every 100 hrs for aircraft used for hire

FAR 91.413 TRANSPONDER TESTS AND INSPECTION

- Every 24 calendar months

COCKPIT MANAGEMENT

Before entering the airplane, the pilot should first ensure that all necessary equipment, documents, checklists, and navigation charts appropriate for the flight are onboard. It is up to the individual desires of the pilot as to how to organize the information that is brought along on the flight. The information needs to be readily accessible and well organized.

The following Airport Operations material is specific to maneuvering the DA20-C1 at the Pueblo Airport. This utilizes the Normal Procedures checklist.

ENGINE STARTING

When ready to start the engine, the pilot looks in the vicinity of the propeller and behind the aircraft. All persons and aircraft that could be struck by the propeller blast or the debris it might pick up from the ground must be clear.

The strobe lights are turned on prior to engine start. This warns everyone visually that the engine is ready to be started. The pilot yells “CLEAR” out of the side window. This is a loud command, not a whispered question.

Before engaging the Ignition Switch Start, visually identify the nearest fire bottle and confirm that the propeller area is clear. Say, "**FIRE BOTTLE, PROP CLEAR"** before turning the key. All persons and aircraft that could be struck by the propeller blast or the debris it might pick up from the ground must be clear. Then turn the Ignition Switch to Start. The key is completely released as the engine fires.

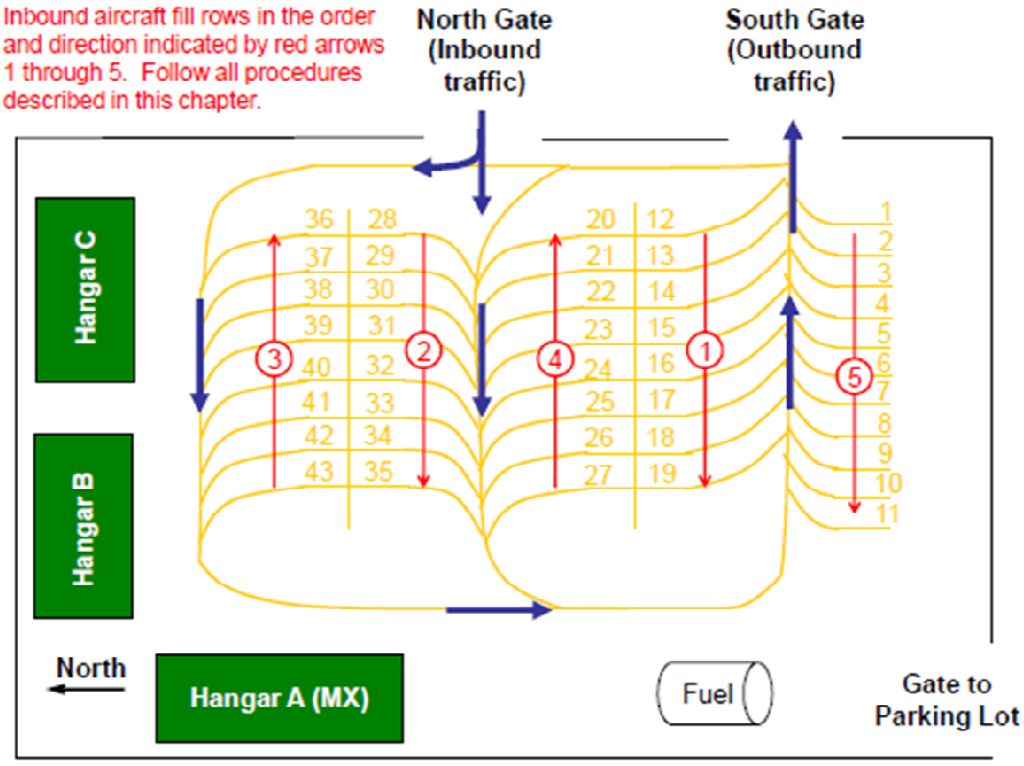
After completing the engine start but before commencing the taxi, the pilot calls: “AIRSPEED, ALTIMETER, VSI CHECK.” This signifies that these three instruments have been checked for accuracy and found acceptable for flight. The Airspeed Indicator should be reading “0” if the wind is calm. The Altimeter should be reading 4645’ ± 75’ while on the Doss Ramp with the correct barometric pressure set in the Kollsman window on the Altimeter. The VSI (Vertical Speed Indicator) should be reading “0” or adjusted.

DOSS RAMP

The Doss Parking Ramp is laid out to accommodate 43 parked aircraft. The procedure to efficiently fill the ramp when returning from a sortie is as follows: Aircrew should fill available south-facing parking spots from east to west first by taxiing straight ahead into these spots. Fill the south line (spots 12 to 19) then north line (spots 28 to 35). Once these are full, aircraft should be backed into the north-facing spots from west to east, filling the north line (spots 43 to 36) and then the south line (spots 27 to 20). Fill spots 1- 11 from east to west last. The parking spots along the fence should only be used when other lines are full in order to minimize interference with aircraft taxiing outbound.

NOTE: shut down and move the aircraft into the parking spot without delay to avoid obstructing the movement of aircraft on the ramp.

When departing the ramp for a sortie, closely follow the taxi lines in order to obtain the proper clearance from all other aircraft and vehicles on the ramp.



It is important to memorize the following frequencies and runway lengths because you need to utilize this information frequently.

Radio Frequencies

Tiger Ops/SOF	123.3
Fur Ball	122.775
Pueblo Ground	121.9
Pueblo Tower	119.1 and 123.675
Denver Approach/Departure	120.1
Fowler	123.075
Pueblo ATIS	125.25
Emergency	121.5

Runway lengths

8L/26R:	10,496 feet
8R/26L:	3,767 feet
17/35:	8,308 feet

FLIGHT INSTRUMENT CHECK

During taxi turns (not on the Doss Ramp or while crossing runways), perform the flight instrument check as follows: This verifies that the flight instruments are performing properly.

"LEFT TURN, RIGHT BALL, HEADING DECREASING ON TWO, ATTITUDE INDICATOR CHECK."

"RIGHT TURN, LEFT BALL, HEADING INCREASING ON TWO, ATTITUDE INDICATOR CHECK."

NOTE: no more than 5° of pitch or bank should be indicated on the attitude indicator.

TAXI SPEED
Always use a taxi speed that results in positive control of the aircraft. Use minimum power needed for forward movement - 1000 RPM. Up to 1500 RPM may be needed to start motion, make tight turns, or taxi uphill. Use 3 to 5 knots groundspeed on the Doss ramp. Use 5 to 20 knots on the taxiway. Reduce speed by reducing throttle. Use brakes for deceleration only if the throttle is at IDLE.

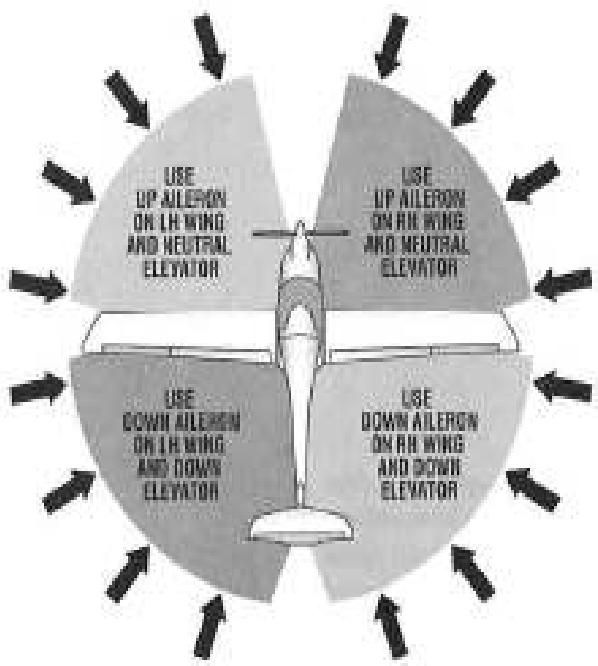
BRAKING
Excessive braking may result in overheated or damaged brakes. Do not ride the brakes. Consciously remove pressure from the toe-brake pedals while taxiing. Failure to do so may result in excessive heat buildup, premature brake wear, and increased possibility of brake failure or fire.

TAXI TURNS
At normal taxi speeds, most turns can be accomplished by using rudder deflection without braking. At slow speeds, there is little positive airflow over the rudder and light braking on the inside wheel can help turn the airplane. A slight addition of power may also be required to avoid decelerating to a stop in slow, tight turns.

Pilots should maximize their attention outside the cockpit while taxiing. In order to enhance safe operations, a pilot's full attention must be applied to taxiing the aircraft. Cockpit tasks such as tuning radio frequencies should be accomplished when the aircraft is at a full stop. Cockpit tasks that must be accomplished during taxi (e.g., checking the gyroscopic flight instruments) shall not be performed in congested locations such as the Doss Ramp or runup areas.

Wingtip Spacing - Do not park with less than 25 feet of wingtip clearance from any obstacle or aircraft unless using a marshaller. The 25-foot rule is waived for operations in designated ramp and runup areas. CAUTION: exercise precise taxiway centerline control when passing through the gate to the DOSS Ramp.

Taxi Interval - Maintain at least 50 feet of separation when taxiing behind another aircraft. This separation may be reduced to 25 feet when holding in sequence for the active runway.



When taxiing with a quartering headwind, the wing on the upwind side will tend to be lifted by the wind unless the aileron control is held in that direction (upwind aileron UP) with the elevator NEUTRAL. This control movement will also cause the downwind aileron to be placed in the DOWN position, further reducing the tendency of the upwind wing to rise.

When taxiing with a quartering tailwind, the elevator should be held in the DOWN position, and the upwind aileron, DOWN. Since the wind is striking the aircraft from behind, these control positions reduce the tendency of the wind to get under the tail and the wing and to flip the aircraft over.

AIRPORT TRAFFIC PATTERNS
The airport traffic patterns provide specific routes for takeoffs, departures, arrivals, and landings.

STANDARDS
Establish and maintain appropriate groundtrack.
Maintain proper spacing from other aircraft (no closer than 3,000 ft horizontally.)
Maintain airspeed ±10 KIAS.
Maintain altitude ±100 feet.
Configure the aircraft as appropriate for the approach.

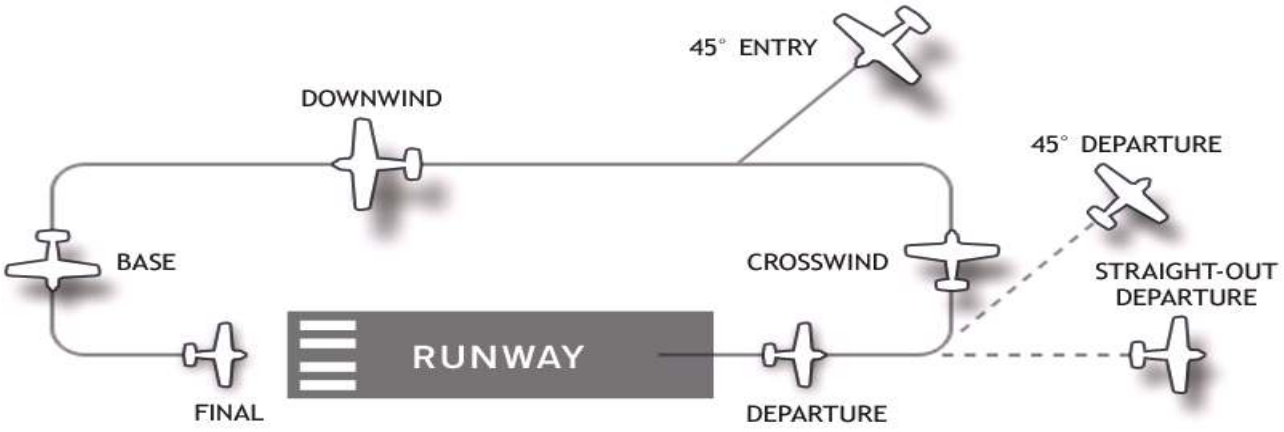
Civilian airports use rectangular traffic patterns with turns made to the left. To assure that air traffic flows into and out of an airport in an orderly manner, an airport traffic pattern is established appropriate to the local conditions.

Traffic pattern altitudes for propeller-driven aircraft generally extend from 600 feet to as high as 1,500 feet above the ground.

The airport may display approved visual markings indicating that turns should be made to the right. At towered airports, ATC may direct right traffic patterns. When parallel runway operations are in effect, both left and right turns are used.

The speed limit at the primary airport in Class C and Class D airspace is 200 knots. At all airports, the speed should be adjusted, when practicable, so that it is compatible with the speed of other aircraft in the traffic pattern.

TRAFFIC PATTERN



When approaching an airport for landing, the traffic pattern should be entered at a 45° angle to the downwind leg, headed toward a point abeam the midpoint of the runway to be used for landing.

The downwind leg is a course flown parallel to the landing runway, but in a direction opposite to the intended landing direction. This leg should be approximately 1/2 mile from the landing runway and at the specified traffic pattern altitude.

The base leg turn is initiated 45° from the aiming point on the runway.

The final approach leg is a descending flight path starting at the completion of the base-to-final turn and extending to the point of touchdown.

The upwind leg maintains the extended runway centerline until the crosswind turn or for a straight-out departure. On this leg, the pilot should continue climbing straight ahead, and, if remaining in the traffic pattern, commence a turn to the crosswind leg beyond the departure end of the runway and within 300 feet of pattern altitude.

The crosswind leg is perpendicular to the extended centerline of the runway and is entered by making a 90° turn from the upwind leg.

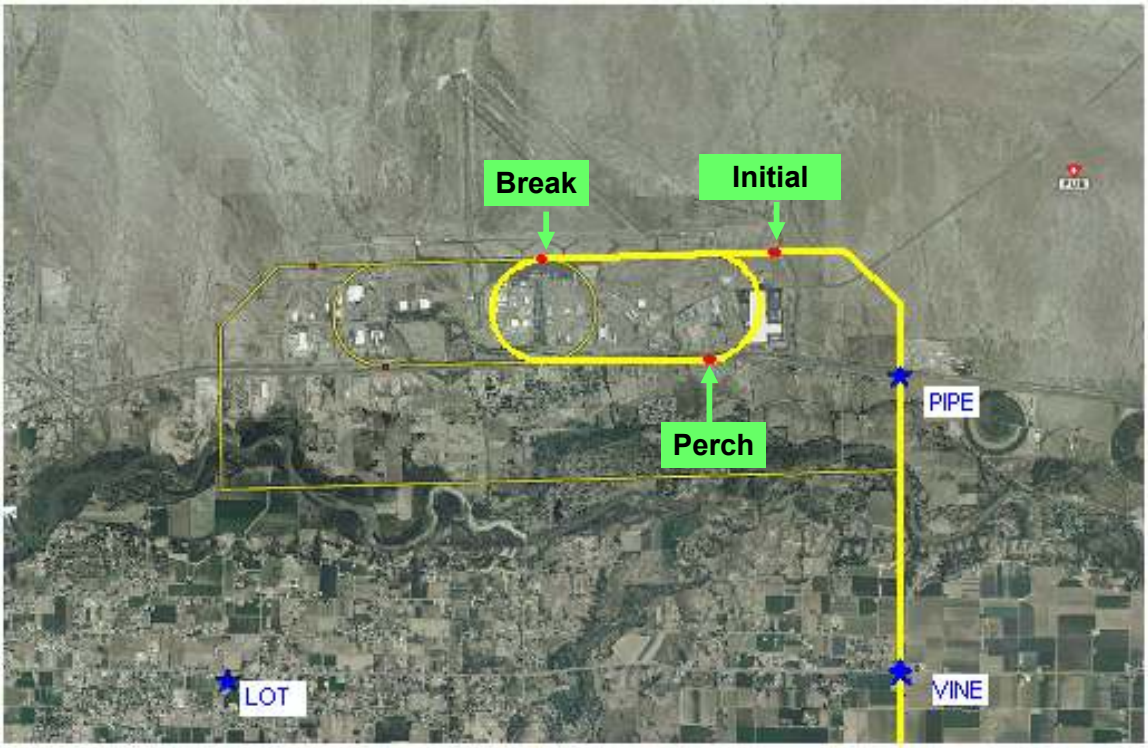
RIGHT-OF-WAY RULES
As stipulated in 14 CFR Part 91.113, aircraft on final approach to land or while landing, have the right-of-way over other aircraft in flight or operating on the surface. When two or more aircraft are approaching an airport for the purpose of landing, the aircraft at the lower altitude has the right-of-way. Pilots should not take advantage of this rule to cut in front of another aircraft that is on final approach to land, or to overtake that aircraft.

PUEBLO AIRPORT TRAFFIC PATTERN
At the Pueblo Airport, we are authorized to use the Initial Approach with the oval traffic pattern. This is the same type of traffic pattern that is used by the Air Force.

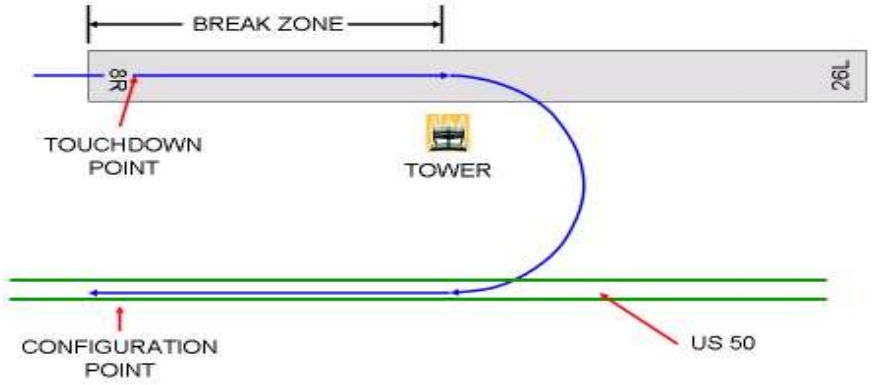
This photo depicts the normal ground track for the KPUB pattern. Inside downwind: 0.6 nm over US 50. The outside downwind leg is 1.2 nm from the runway and just north of the Arkansas River.

In order to be the proper distance (1/2 mile) from the runway on the downwind leg, use this:
-Visual displacement for the right seat for runway 8R: The runway should appear to cross under the wing approximately 2/3 to 3/4 of the wing length toward the wingtip.
-Visual displacement for the right seat 26L: The runway would appear just above the canopy rail approximately ½ the distance between the rail and stall strip.

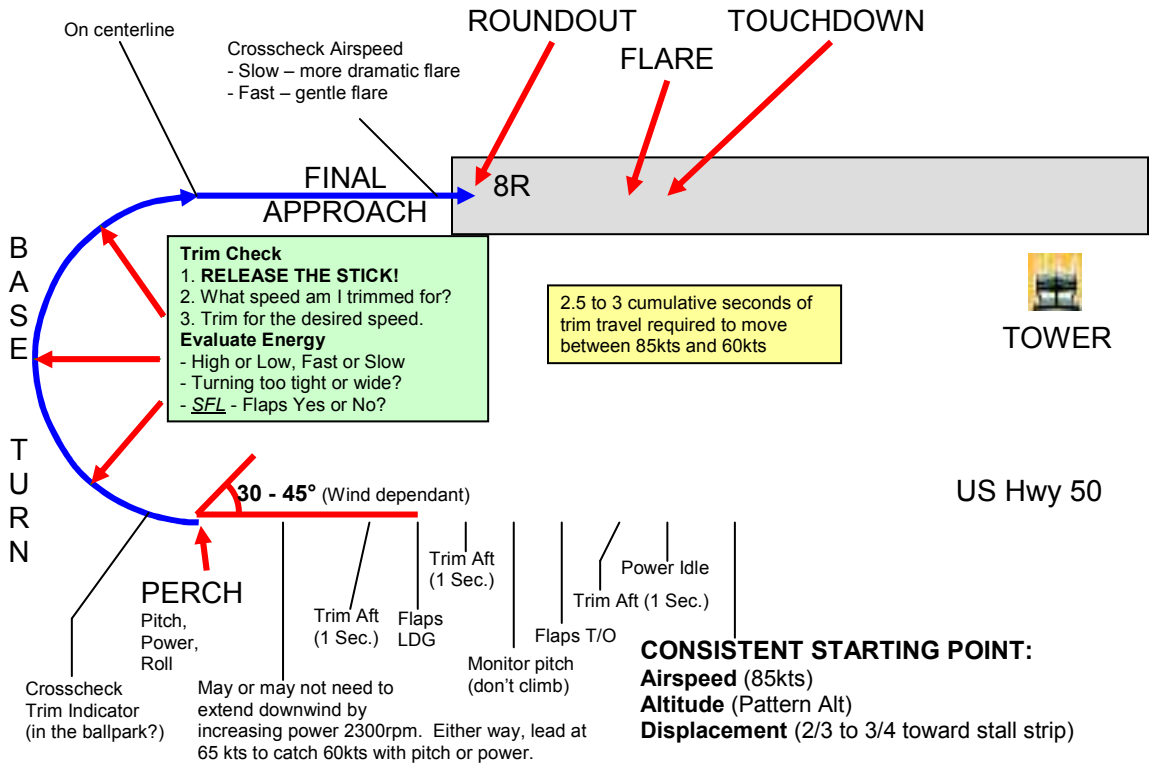
Initial at KPUB is 6,000’ MSL, which is 500’ above inside downwind altitude. Report a one-mile Initial, request descent and descend to 5,500’ MSL prior to the break, if able.



At 5,500', the standard break point for overhead pattern entries is any point within the first 2000' of the runway. ATC may direct the pilot to break at other specific locations including during the descent from Initial.

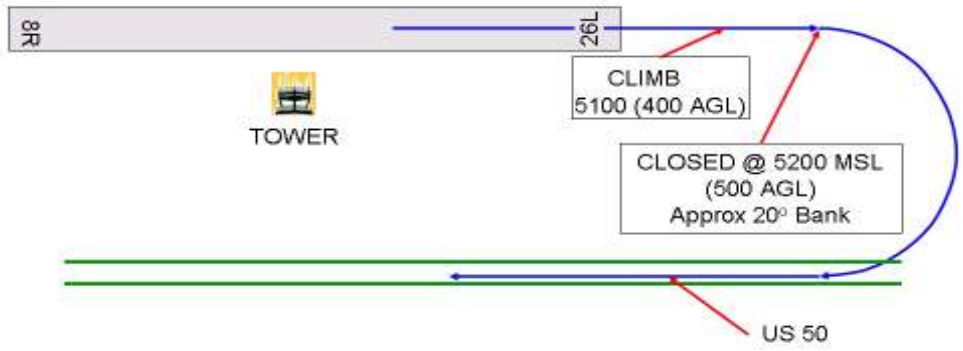


For normal landings, begin the descending 180° base turn to final when the desired aim point for the approach is 45° behind the aircraft.



Begin the Closed turn when these 4 conditions are complete:

- You are beyond the departure end of the runway
- After the Climb checklist is complete
- Within 300 feet of the Traffic Pattern Altitude
- Traffic spacing is sufficient



Pilots must use breakout or go-around procedures when adequate separation cannot be maintained with preceding aircraft in the traffic pattern. The preferred method to increase spacing between your aircraft and preceding aircraft in closed traffic is to extend your departure or upwind leg. Aircraft spacing on the runway must be at least 3000 feet.