Following Airport Signs and Markings

Various airport signs and pavement markings help pilots taxi to the correct locations. All but the smallest airports have them. They are lighted at night. Use them to find your way around the airport.

- **Taxiway Signs.** Signs designating taxiways and identifying their names have yellow letters on black backgrounds. Some have arrows pointing in the direction of the designated taxiway.

- **Runway Signs.** Signs designating runways have white letters on red backgrounds. They often have arrows pointing toward the designated runway.

- **Pavement Markings.** Taxiways, ramps/aprons, and holding-area pavements are marked with various types of yellow lines.

  - Edges of taxiways and ramps/aprons are marked by double continuous yellow lines.

  - Centers of taxiways are marked with single continuous yellow lines.

  - Taxiway center lines extend onto runways as guides.

  - Holding areas are marked with double yellow lines that are solid on the holding side and broken on the nonholding side.

  - Service lanes on ramps/aprons are marked by white lines. These lanes are used by airport vehicles such as maintenance and fuel trucks.

  - Runway pavement markings are white. They have various lengths and widths to show the runway edges, centerlines, thresholds, and touchdown areas.

If you see yellow lines ahead, you are on a taxiway or ramp/apron. If you see lots of bold white lines, you are likely on a runway.

Airport Surface Lighting

Many pavement markings are lighted at night. Blue lights identify taxiway edges, and green lights identify taxiway centerlines. White lights mark runway edges. Various assortments of yellow and red lights identify sections of runways.

☞ Airport markings, signs, and lighting are explained in detail and at length in my *Flight-sim Pilot's Information Manual.*
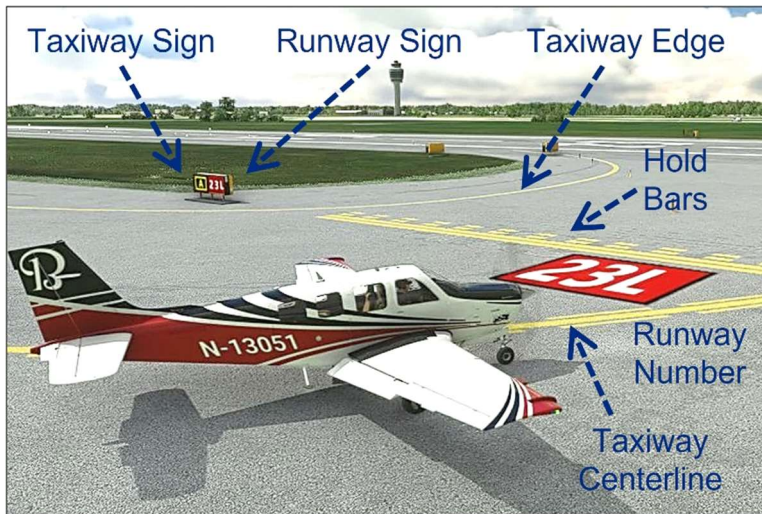
Figure 6-A: Airport signs and marks

Taxiing at Controlled Airports

All ground movements at controlled airports (towered) are directed and cleared by Air Traffic Control (ATC). It is the Tower at most airports. It is Ground Control at busy airports, which is a distinct operation from the Tower. No aircraft may move anywhere on controlled (towered) airports without clearance from them. Pilots using these airports contact ATC on a dedicated frequency and request clearances to move about. Charts for these airports show frequencies for Towers and Ground Control. Charts for large busy airports show multiple frequencies for such.

Procedures for using traffic control at any controlled airport are the same regardless of which entity has jurisdiction or what it is called. The following explanations are generalizations. Slight differences might be encountered at various airports, and all would be consistent with overall airport-traffic-control procedure.

Clearance to Taxi. Pilots must contact respective ATC and request clearance to taxi from a parking area, ramp, apron, or gate to other places at the airport such as runways, parking areas, and gates. The Tower or Ground Control clears pilots to taxi to the holding area of the active runway or elsewhere on the airport grounds. Ground Control at large airports gives pilots specific directions for reaching the runways they will use.

Instructions to Hold. Towers and Ground Control often instruct aircraft to hold at designated positions on taxiways so other aircraft can use the runways and/or taxiways. The term *hold* in aviation means "stop and wait for further instructions." These instructions are issued without requests from pilots.

Permanent holding positions on taxiways are marked with distinctive signs and pavement markings. Red signs with white letters to the left and right

of the taxiway/runway intersection indicate runways. Yellow stop bars are painted on taxiways where they intersect with runways. Aircraft must have ATC clearance to cross a solid yellow stop bar. Aircraft may cross a broken yellow stop bar from the runway to the taxiway without ATC clearance.

☞ Realistic simulating requires proper management of ground movements at all airports.

Using Standard ATC Procedure

Pilots and controllers use standard procedures. When contacting ATC, pilots address the facility, identify themselves, and then state their message.

"Tower, Cessna N-13051, request clearance to taxi to Runway 21."

When responding, the facility addresses the aircraft and states their message:

"Cessna N-13051, cleared to Runway 21 via Taxiways A, B, and C."

MSFS 2020 phrases the communications properly so that the simulation pilot merely operates the ATC menus.

Pilots should never taxi onto a runway at a controlled airport without receiving ATC clearance. Moreover, they should not taxi past the yellow hold bars in the holding area of the taxiway without take-off clearance.

Similarly, pilots should be ready to take off when requesting take-off clearance, and then they must take off immediately upon receiving that clearance. They should never dawdle in the holding area or on the runway after receiving take-off clearance.

Instruction to Clear a Runway. When an aircraft has successfully landed and is rolling down the runway, the Tower instructs to exit the runway at

"the nearest taxiway." The pilot does not need to acknowledge this instruction because the Tower or Ground Control will see the aircraft exiting the runway.

Clearance to Taxi to Apron or Gates. After a landing aircraft has exited the runway, the Tower hands off to Ground Control. Pilots tune the assigned frequency and request clearance to taxi to the parking apron, the terminal, or other legitimate location on the airport grounds.

Taxiing at Uncontrolled Airports

At uncontrolled (nontowered) airports, pilots are generally on their own to respect other pilots and avoid collisions with other aircraft. Landing aircraft have priority over other aircraft. Pilots are further expected not to taxi into the path of any other taxiing aircraft and to be sure the way is clear before taxiing onto or across any runway.

Runways as Taxiways

At airports lacking taxiways to runway take-off areas, the runway itself serves as a taxiway. Taxi onto it only after receiving clearance at controlled airports or announcing at uncontrolled airports. Use it quickly because other aircraft might want to take off or land on it.
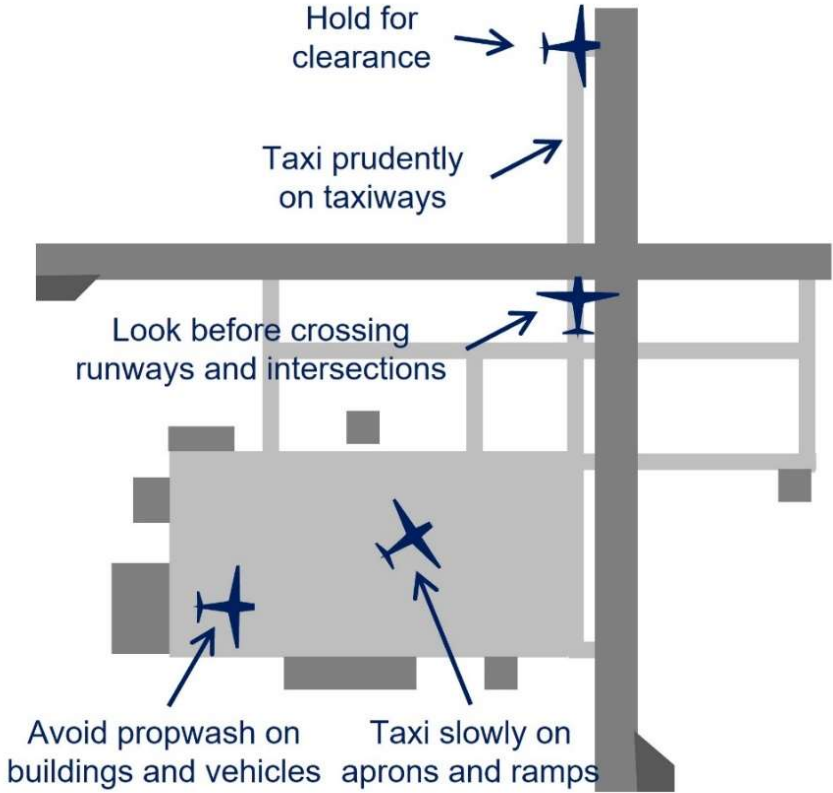
Figure 6-B: Airport procedures

Safe Taxiing Practices

To taxi safely at any controlled or uncontrolled airport, follow these prudent practices:

Before Taxiing

- **Tidy Your Cockpit.** Stow charts, books and other items you will not need during taxi and take-off. Maintain a neat and orderly area around your flight simulator so you can easily find charts and other tools you need. Keep drinks and food away from your keyboard, joystick, and mouse, which are your pilot controls, because spills and crumbs can hinder their operation.

- **Look for People and Other Aircraft.** Area around the aircraft should be clear before taxiing from the ramp or apron.

- **Straighten Your Nose Wheel.** Be sure your nose wheel is straight before you begin taxiing. If it points to left or right, your aircraft will turn to left or right as soon as you advance your throttle. If you are close to other aircraft in the parking area, you could strike one of them with your wings.

- **Raise Your Flaps.** Flaps on low-wing aircraft should be fully raised when taxiing to prevent damage from rocks and other projectiles thrown up by the wheels as your aircraft taxis along.

While Taxiing

- **Use Charts and Maps.** Use an official airport diagram or on-screen maps to help you navigate the airport in addition to airport-directional

signs. Taxiing around flight-simulation airports is much more difficult than taxiing around real airports because the simulated peripheral view is poor. Some sceneries lack airport markings and signs that guide real pilots around airports. Moving maps and synthetic vision in modern glass cockpits are very helpful in this regard.

- **Use Synthetic Vision.** Synthetic vision is a marvelous device for taxiing around airports – especially simulation airports. But it does not show buildings, other aircraft, airport vehicles, or people. Keep watch outside as well.

- **Apply Appropriate Power.** All vehicles require more power to move from a fixed position than to keep moving afterward. Apply enough power to move forward, and then reduce power to control speed. Use minimal power when you are close to buildings, aircraft, ground equipment, and people avoid damaging anything with your prop wash.

- **Avoid Obstacles.** Avoid striking other aircraft and ground equipment. (Ramp agents and vehicles in MSFS 2020 cannot be moved, and they will not get out of the way voluntarily. Taxiing right through them is the only option.)

- **Taxi at Safe Speeds.** Safe speeds allow good positive control of the aircraft. Positive control means you can turn without losing control and stop where needed without excessive braking. As a general guide, taxi no faster than 10 knots while near buildings and other aircraft and no faster than 20 knots on taxiways away from structures. Reduce power and speed to between 10 and 15 knots when rounding corners and 10 knots when approaching hold bars and runways.

- **Use Ground Speed.** Some airspeed indicators do not show speeds slower than 30 knots. The ground-speed reading in GPS devices is a suitable substitute.

- **Control Speed With Throttle.** Conserve fuel and preserve your engine and brakes by maintaining control of your speed with throttle control. Apply brakes when power reduction is not enough to slow or stop your aircraft. Some training manuals advise pilots to develop better throttle control by assuming the brakes are inoperative.

- **Follow Markings, Lights, and Signs.** Steer with ailerons and rudder to follow yellow pavement lines on parking areas and taxiways and blue and green lights at night. (See Figure 6-C.)

- **Make Gradual Changes.** Gradual changes enable you to retain control of your aircraft. Abrupt starts, accelerations, turns, and stops can damage the aircraft, jostle the occupants, and scatter charts and other flight implements about the cockpit. Sharp turns can allow the aircraft's inertia to grab control of your aircraft and spin it out of control. Advance and retract your throttle smoothly, apply brakes gently, and turn slowly.

- **Adapt to Wind Effects.** Taxi at slower speeds when winds are high. Use ailerons to lower the upwind wing slightly to prevent the wind from destabilizing the aircraft.

- **Avoid Other Aircraft.** Take whatever measures are necessary to avoid other aircraft using the airport. Order at controlled airports is maintained by the tower, and you are allowed to taxi only with proper clearances. You are on your own to avoid accidents at uncontrolled airports.