



The Essential Guide to Runway Signs

1. Mandatory Instruction Signs

Mandatory instruction signs mark critical areas (such as runways) where aircraft are not allowed to enter without clearance. They also mark areas where aircraft are not allowed to enter at all.

Mandatory instruction signs have the following characteristics:

- Color: They feature white text on a red background.
- Shape: These signs are usually rectangular or square, with the text and symbols properly centered.
- Location: You can find them at taxiway and runway intersections, holding positions, and other critical points on the airport surface.

There are four types of mandatory instruction signs:

- Runway Holding Position Signs
- Runway Approach Area Holding Position Signs
- ILS Critical Area Holding Position Signs
- No Entry Signs

Runway Holding Position Signs

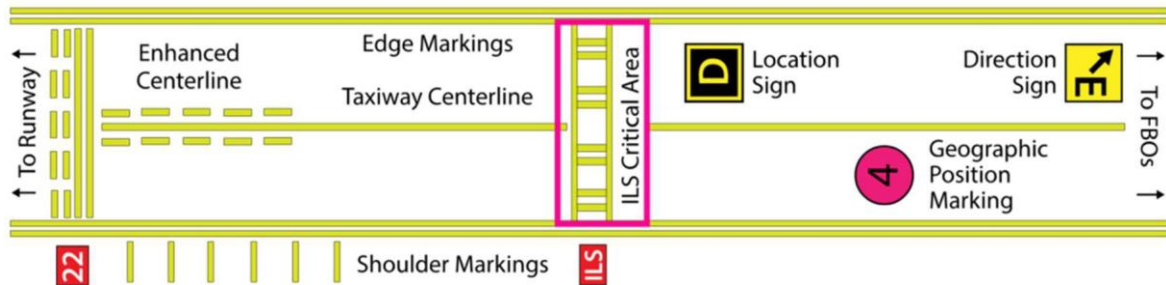


A runway holding position sign marking the entrance to a runway (Runway 4 and Runway 22)

A runway holding position sign indicates where to stop and hold before entering or crossing a runway.

You'll find runway-holding position signs where taxiways intersect with runways.

Accompanying them are painted markings on the taxiway surface, consisting of two solid yellow lines followed by two dashed yellow lines.



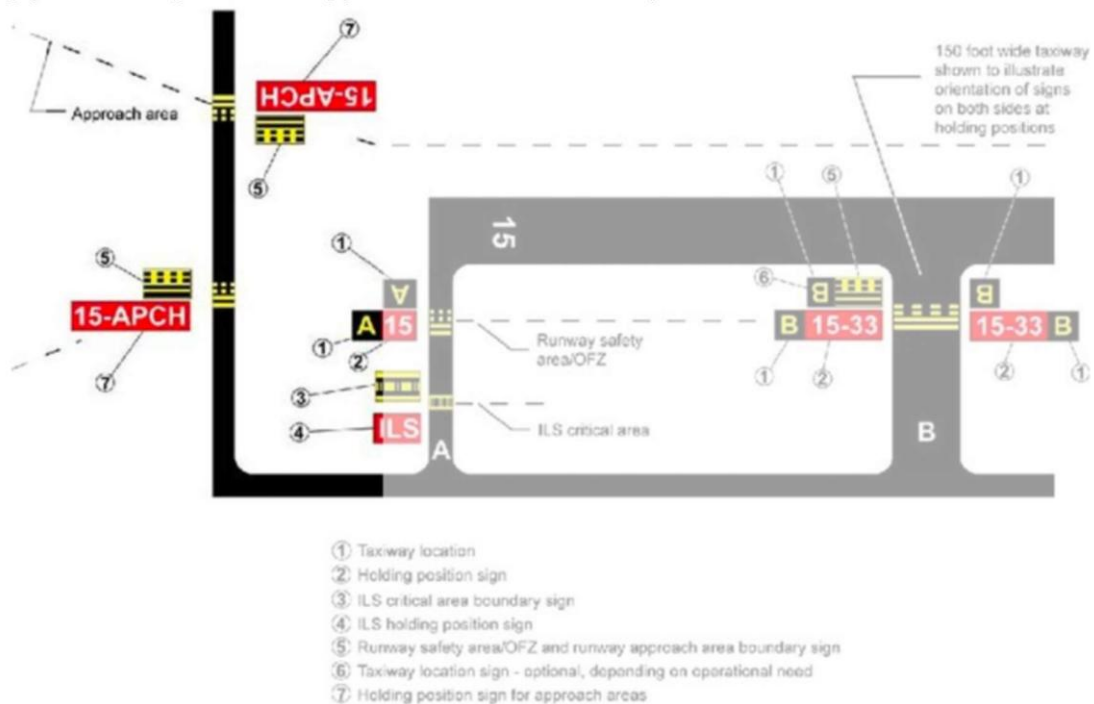
Runway holding point marking on the taxiway

Runway holding position signs display the runway designation, such as “27” or “9,” indicating the runway you’re about to enter or cross. The inscription might include a letter (e.g., “L” or “R”) to identify parallel runways (e.g., “27L” or “27R”).

Runway Approach Area Holding Position Signs

4 - APCH

A runway approach area holding position sign for the approach area of Runway 4



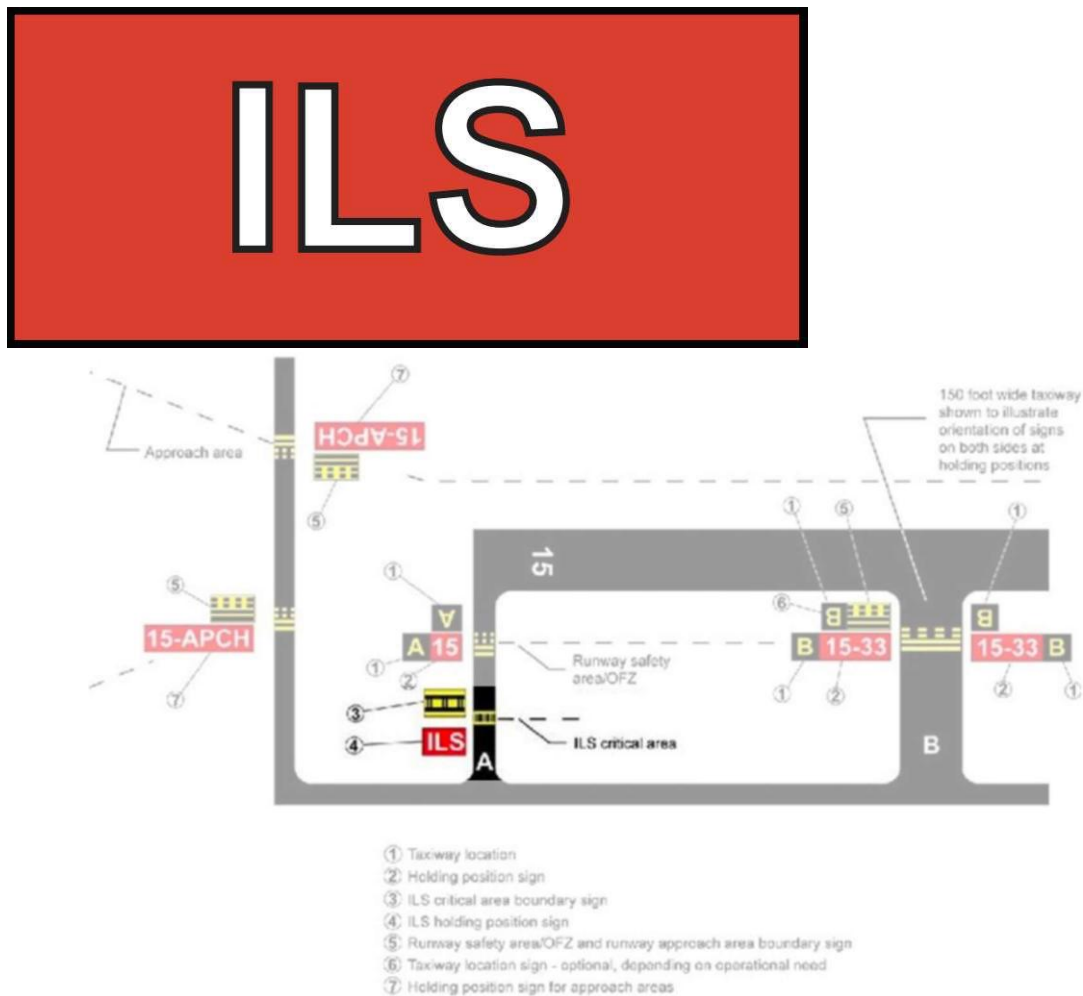
A runway approach area with signs for the approach area of Runway 15

A runway approach area holding position sign indicates where pilots must stop and hold before entering an area that could interfere with aircraft on the final approach.

You'll find the runway approach area holding position signs on taxiways near approach areas where aircraft are descending for landing. These signs indicate that you are approaching a point where your aircraft may interfere with the safety of the aircraft on the final approach, even if you are not directly entering or crossing the runway.

The sign displays the runway designation with a dash, followed by "APCH" (e.g., "27 - APCH" or "9 - APCH"). This inscription informs you that you are approaching the critical area for the specified runway's approach path.

ILS Critical Area Holding Position Sign



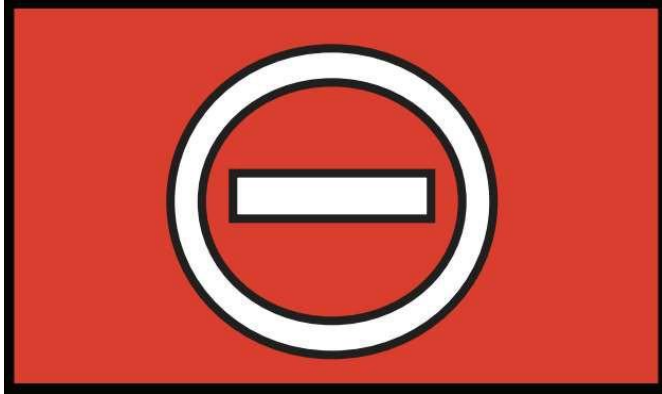
An ILS (Instrument Landing System) critical area holding position sign denotes the ILS critical area. The ILS critical area helps maintain the accuracy and reliability of ILS signals during instrument approaches in low visibility conditions by limiting how close aircraft on the ground get to the ILS equipment (and signals).

You'll find ILS critical area holding position signs on taxiways near the critical areas of ILS, typically close to the runway threshold or glide slope transmitter.

The sign displays the letters "ILS" indicating you're approaching the ILS critical area. Sometimes, it may also include the runway designation. You might hear these ILS holding position markings referred to as "CAT I" or "CAT II" (for example, "Runway 15 CAT I holding point"). The normal holding point closer to the runway is called the "visual holding point."

Remember that entering the ILS critical area without proper clearance may cause signal interference, potentially affecting the safety of aircraft conducting instrument approaches. By staying aware of ILS critical area holding position signs and their purpose, you'll contribute to the safe and efficient operation of the airport.

No Entry Sign



You'll find no entry signs at the entrance of restricted areas, such as one-way taxiways, closed taxiways, or other areas where aircraft are not allowed to enter.

Ignoring a no-entry sign can lead to unsafe situations or violations of airport regulations, which may result in penalties or suspension of your pilot's license. Do not enter areas beyond a no-entry sign unless you have specific permission.

2. Location Signs

Airport location signs are essential for helping pilots navigate the complex network of taxiways, ramps, and other areas while on the ground. These signs also provide valuable information about airport boundaries.

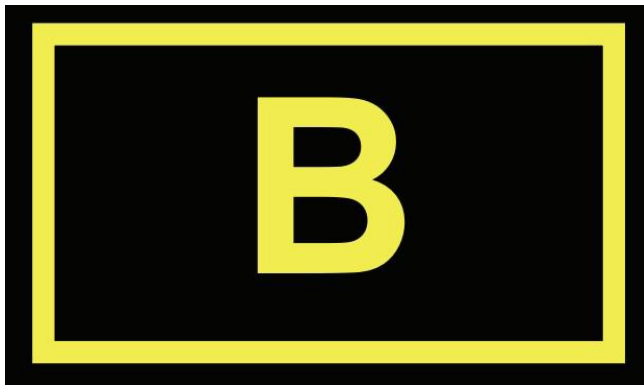
Location signs have the following characteristics:

- Colors: Location signs have yellow inscriptions on a black background.
- Location: You'll find location signs along taxiways, ramps, and aprons. They are often placed next to directions or mandatory instruction signs to help pilots identify their position on the airport surface.
- Content: The sign displays an alphanumeric code, such as "A," "B," or "1," which corresponds to the designation of the taxiway or area you're on. Sometimes, a location sign may include two or more designations, such as "A-B," indicating that you are at the intersection of Taxiways A and B.

There are four types of location signs:

- Taxiway Location Signs
- Runway Location Signs
- Runway Boundary Signs
- ILS Critical Area Boundary Signs

Taxiway Location Signs



Taxiway location signs are used to identify the current taxiway that the aircraft is on.

You'll find taxiway location signs along taxiways, often near intersections or at points where taxiways meet ramps or aprons. You'll sometimes find them next to directions or mandatory instruction signs to provide context for your current location.

The sign displays a letter or a combination of letters and numbers (e.g., "A" or "B1"), which correspond to the designation of the taxiway you're on. Sometimes, a location sign may include two or more designations (e.g., "A-B") to indicate that you are at the intersection of two taxiways.

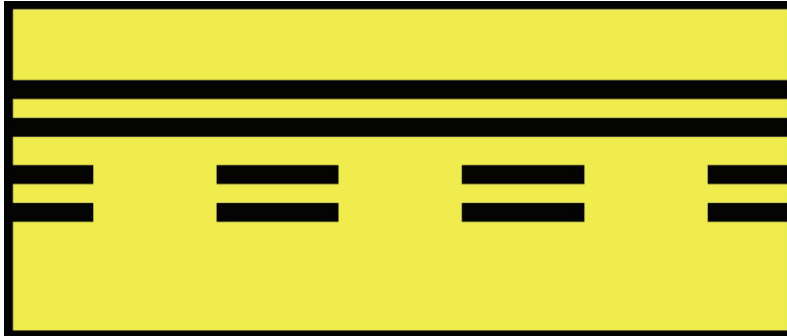
Runway Location Sign



You'll find runway location signs near runway holding positions or intersections where taxiways meet runways. They are often placed with mandatory instruction signs, such as Runway Holding Position Signs, to provide context for your current location.

A runway location sign displays the runway designation (e.g., "09/27" or "18L/36R"), which corresponds to the runway you are currently near or adjacent to. The runway numbers represent the magnetic heading of the runway rounded to the nearest 10 degrees, while the letters "L" and "R" indicate left or right for parallel runways.

Runway Boundary Sign



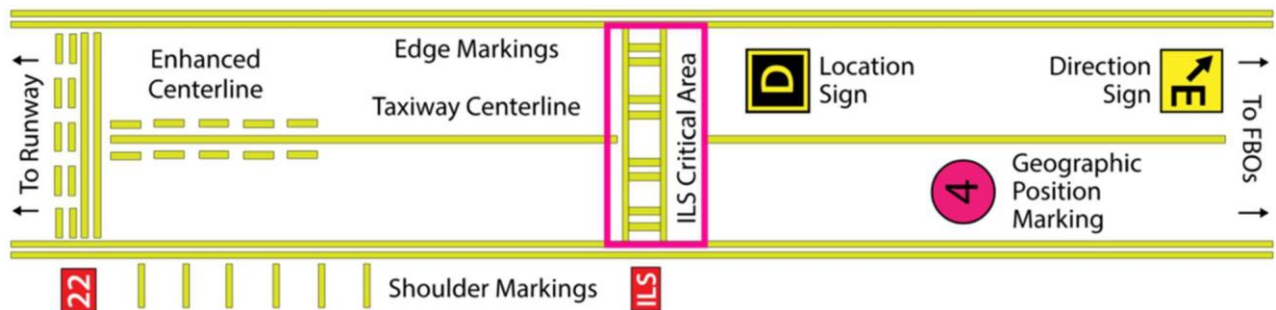
Does this sign mean you are clear of the runway safety area?



Boundary Sign

Runway

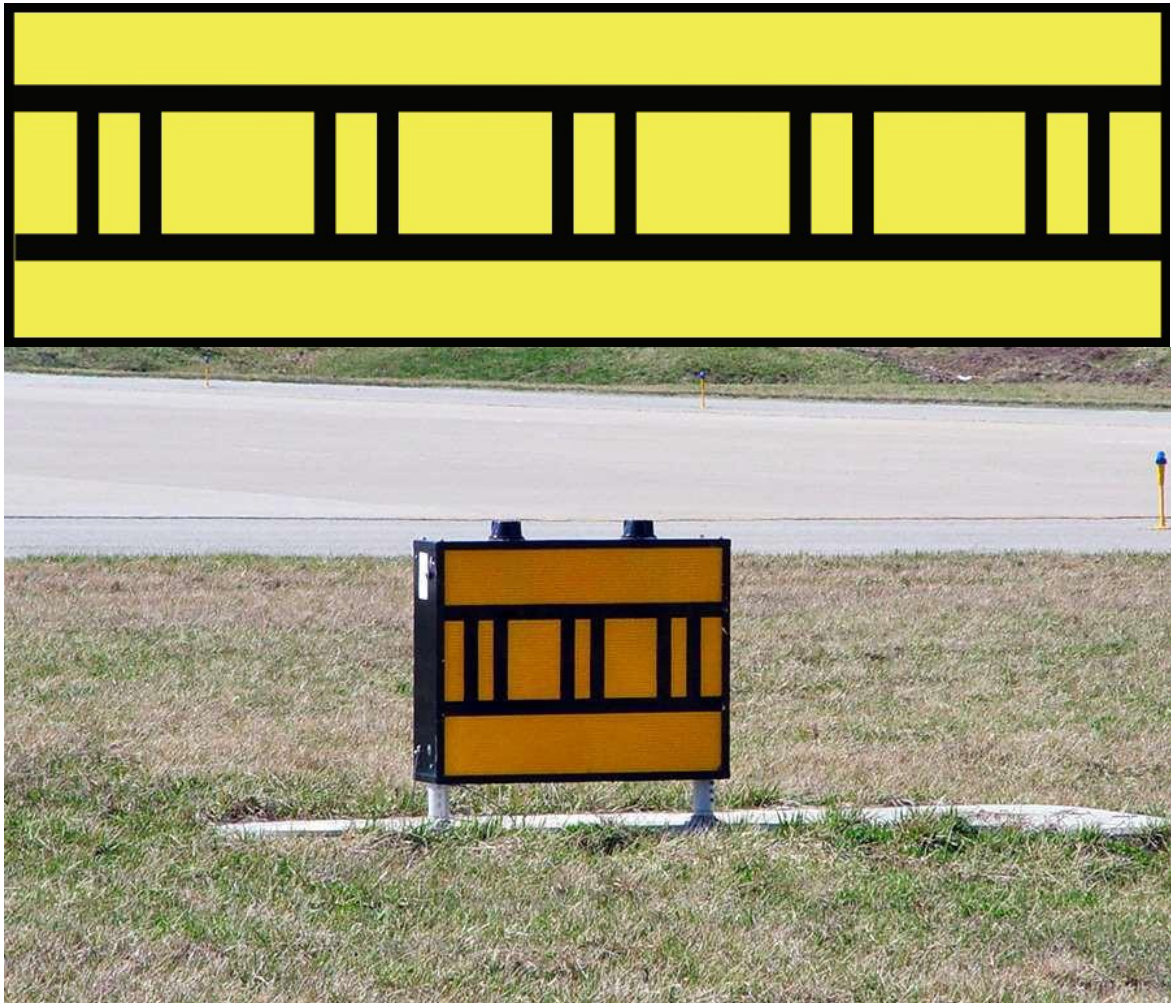
Runway boundary signs are less common compared to other airport signs. They look the same as the runway holding point markings on the taxiway:



Runway holding point marking on the taxiway

Runway holding position signs denote the intersection between the taxiway and the runway where aircraft must stop if they do not have clearance to enter the runway. It is effectively where the runway begins, and the taxiway ends.

ILS Critical Area Boundary Sign



ILS critical area boundary sign

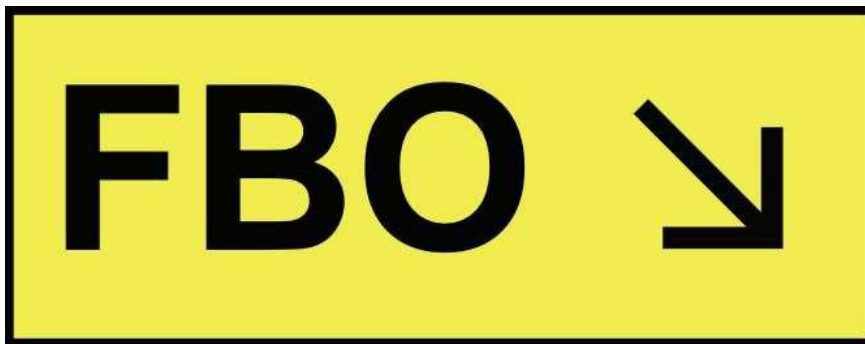
The ILS critical area boundary signs denote the holding position for ILS critical areas.

Similar to the runway boundary sign, the ILS critical area boundary sign looks the same as its marked counterpart. It is also not commonly used.

Direction signs have the following characteristics:

- Colors: Direction signs have black inscriptions on a yellow background.
- Location: You'll find direction signs along taxiways, ramps, and aprons, typically at intersections or junctions where pilots may need guidance to follow the correct path.
- Content: The sign displays an arrow pointing in the direction of the turn, followed by an alphanumeric code, such as "A," "B," or "1." This code corresponds to the designation of the taxiway, runway, or area, in the direction of the arrow. Multiple arrows and designations may sometimes be displayed on the same sign.

4. Destination Signs



Examples of a destination sign for a Fixed Base Operator (FBO)

Destination signs are similar to direction signs and share the same colors and shapes.

There is one critical difference, though.

Destination signs mark the direction that an aircraft needs to go to arrive at the destination depicted on the sign (such as the FBO in the example). *Directional* signs mark the *direction* of a particular runway or taxiway at an intersection.

5. Information Signs



Information signs feature black inscriptions on a yellow background. These inscriptions are usually pieces of text containing important information.

These signs are found anywhere at the airport where necessary

6. Runway Distance Remaining Signs



Runway distance remaining sign indicating 7000ft of available runway remaining

Runway distance remaining signs are essential for providing pilots with information about the remaining usable distance of a runway for takeoff or landing. These signs help pilots assess if they have enough runway available to complete their takeoff or landing safely.

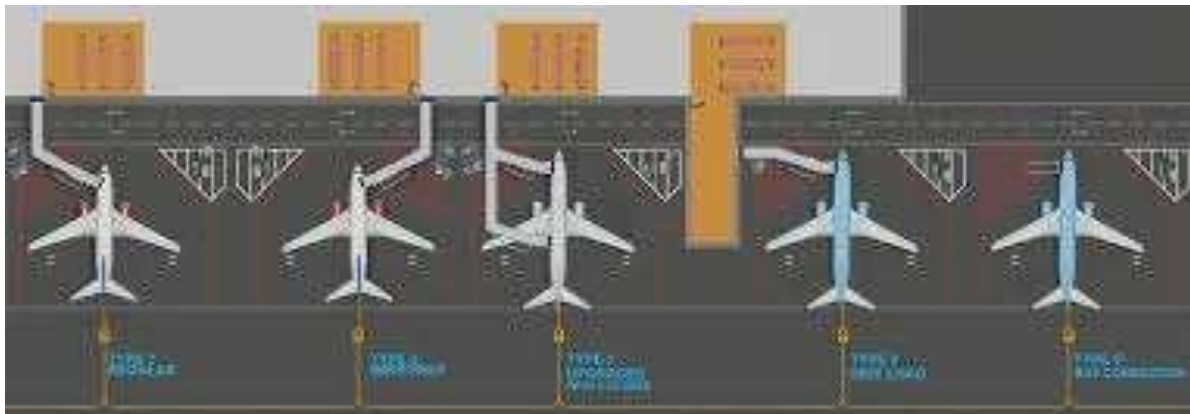
Here's an overview of runway distance remaining signs:

- Colors: Runway distance remaining signs have white inscriptions on a black background.
- Content: The sign displays a number, usually representing the remaining distance in thousands of feet (e.g., "5" for 5,000 feet).
- Location: You'll find these signs alongside runways, typically installed at regular intervals, such as every 1,000 feet.

STANDS

What does stand mean in aviation?

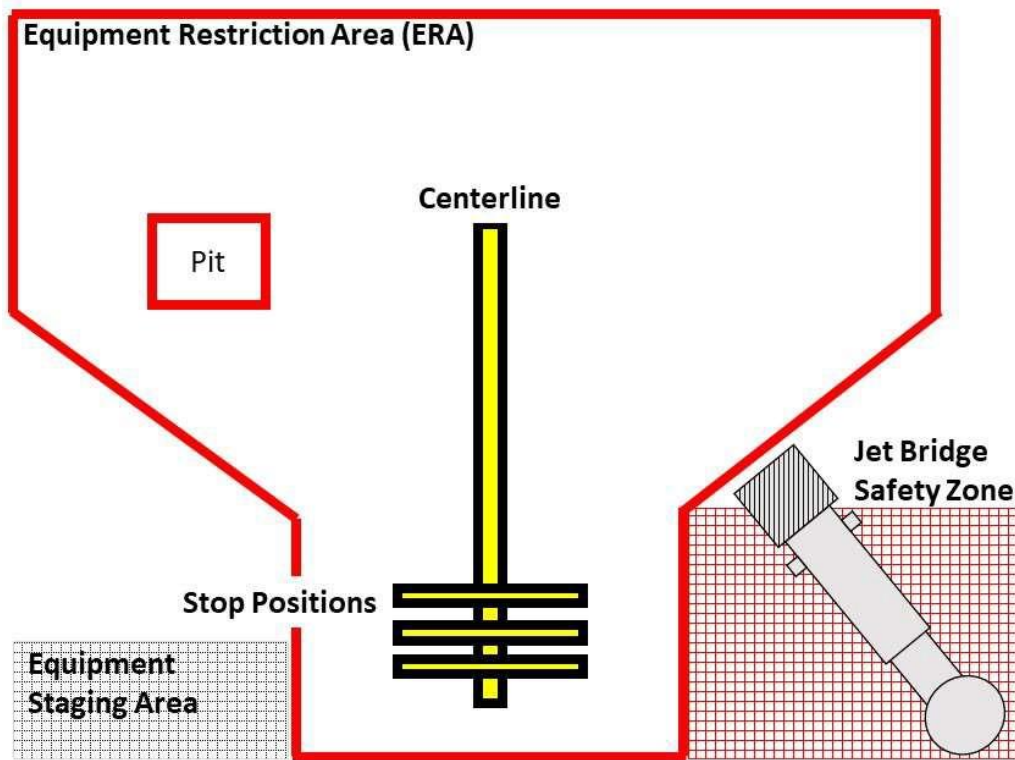
aircraft stand means **a designated area on the apron intended for the parking of an aircraft for the purpose of emplaning and deplaning passengers, and providing requisite ground services;** (“poste de stationnement”)



APRON OR RAMP

Apron or Ramp is **a designated area of an airport where aircraft are parked, unloaded, loaded, refueled, and boarded by passengers.** The apron is typically located adjacent to the terminal building.

Basic Ramp Layout



The Basic Layout of a Ramp (Aircraft Stand)

The line running along the length of the ramp and symmetrically dividing the ramp into two halves is the **aircraft or ramp centerline**. The centerline is meant for pilots to keep the nosewheel of the aircraft over it while the aircraft is rolling on the ramp for parking. This line is marked on ground with a reflective paint for ensuring high visibility for the pilots as well as the ground handling staff.

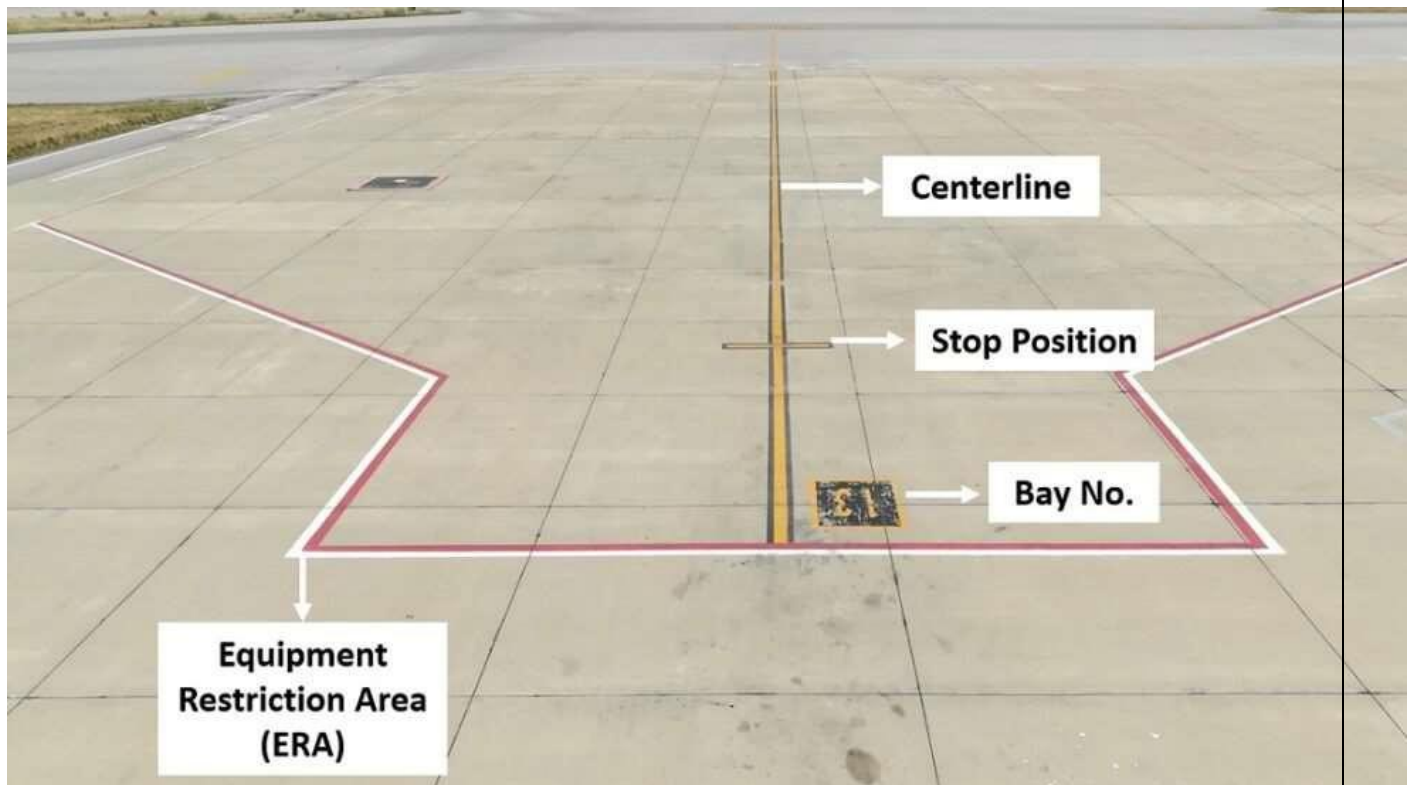
The set of lines marked perpendicular to the centerline towards its end are called **aircraft stop positions**. The stop positions (as the name implies) are meant for pilots to apply brakes of the aircraft when the nosewheel reaches the specified stop position. Like the aircraft centerline, they are also marked with reflective paint for high visibility.

The boundary around the centerline loosely resembling an aircraft's shape is called the **Equipment Restriction Area (ERA)**. It is also called **Equipment Restraint Area**, **Aircraft Safety Envelope** or **Aircraft Safety Area**. It defines the boundary within which no person or object must be present when the aircraft is rolling on the ramp and approaching its stop position.

After the aircraft has parked and its engines are turned off, different machines and vehicles can enter this safety envelope to perform their respective operation. However, as soon as their operation or task is finished, they must be removed from the safety envelope.

There must be no vehicle parked inside this safety envelop unless it has something to do with the aircraft. In short, this safety envelop must remain clear of any unnecessary piece of equipment, machinery, vehicle, objects and humans before, during and after aircraft parking.

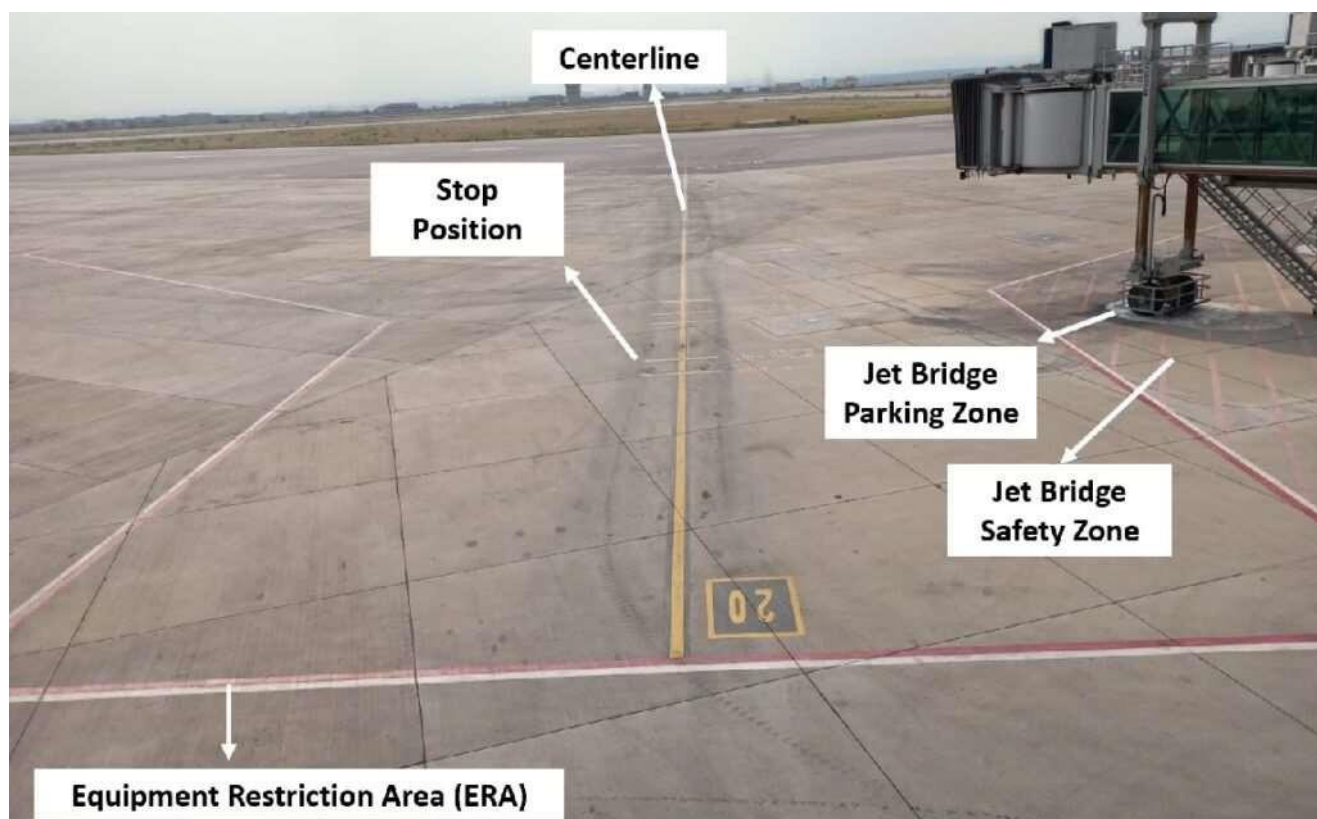
The area adjacent to Equipment Restraint Area (ERA) with ground markings for ground support equipment is the **Equipment Staging area**. It is also known as **Equipment Parking Area** or **Equipment Holding Area**. It is the area where Ground Support Equipment (GSE) are supposed to park before and after their job (which is the [specific ground support operation](#) each machine performs).



For all aircraft stands where [jet bridges \(or passenger boarding bridges\)](#) are installed, jet bridge safety or movement zone and jet bridge parking zone is also marked on ground.

Jet bridge safety zone defines the area where no vehicle, machine or piece of equipment is allowed to remain as it poses risk of collision between that object and the jet bridge during movement. Even when the jet bridge is not operated, this safety zone must remain clear of any parked vehicle or piece of equipment.

Jet bridge parking zone defines the home position or parking position of the jet bridge. It is the area where jet bridge wheels must remain positioned when the jet bridge is not in use. Jet bridge moves from this parking zone when it needs to engage with the aircraft. Similarly, after boarding of passengers is completed, jet bridge needs to be returned to the same parking zone after disengagement from the aircraft.

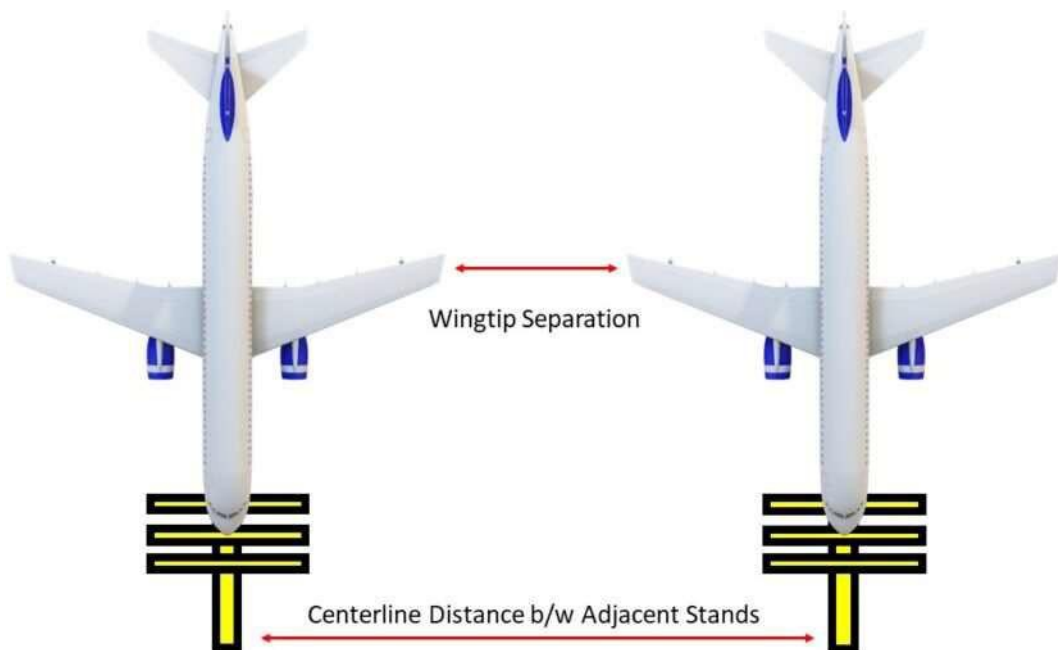


Ramp Layout of an aircraft stand with jet bridge

Technical Explanation of Ramp Centerline

Its purpose is to keep the aircraft centered on the ramp during the parking process otherwise there is no reference for pilots to keep the aircraft straightly aligned. This alignment is necessary for the aircraft for multiple safety reasons.

The first is to ensure a safe separation between the wingtips of the aircraft being parked on the ramp from wingtips of the aircrafts parked on the adjacent ramps (or aircraft stands).



Centerlines also create safe separation between wingtips of aircrafts parked on adjacent aircraft stands

The second is to and allow different ground support equipment to safely connect and move around the aircraft. This purpose is fulfilled in conjunction with aircraft stop position (which we will discuss shortly).

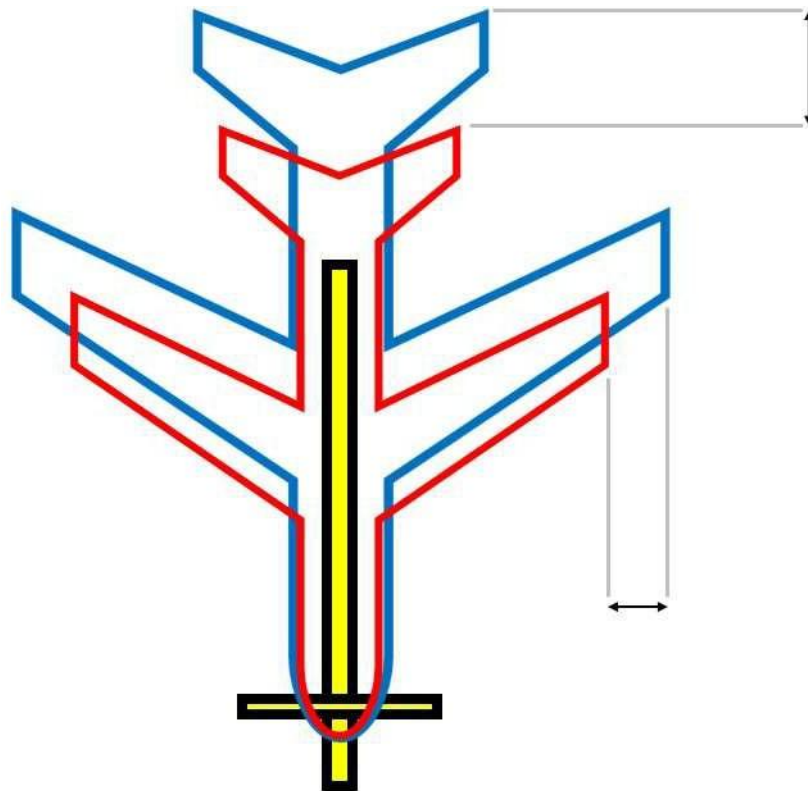
When pilots approach the ramp, the nosewheel of the aircraft remains on this centerline as the aircraft rolls over the ramp until it reaches its designated stop position.

Technical Explanation of Stop Position

Stop position is marked perpendicular to the centerline to indicate where the aircraft will finally apply its brake and stop. Aircraft's nose wheel needs to be on the point of intersection of centerline and stop position when the aircraft finally stops for parking on the ramp.

There is need for more than one stop position because different aircrafts have different geometries. If you stop the nosewheel of all aircrafts on a single stop

position, their rear landing gears, wings, engines, tail, fuel receptacles and other ground service connection points will end up at different places because of varying geometries.



If different aircraft types are parked on the same stop position, their geometrical differences end up positioning their wings, engines, tails and ground servicing connections at different locations

However, what's needed is that:

- The wing and engine of each aircraft remain safe distance away from other structures/objects on the ramp such as jet bridges
- Ground servicing connections remain accessible for [ground support equipment \(GSE\)](#) especially the aircraft door remains within the reach of jet bridge
- Rear landing gears remain clear of any pit systems available on the ramp
- The aircraft tail remains within safety clearance from the taxiway.

One stop position cannot place all the different parts of different aircrafts at exactly where they are needed with respect to safety clearances. Therefore, multiple stop positions are marked on ground where each stop position is generally able to park selected few aircraft types.

So for example, if a ramp is able to accommodate 15 different aircraft types, it may have 3-4 stop positions each able to park 4-5 aircraft types.



Notice how different stop positions have different aircraft types associated with them on the ramp

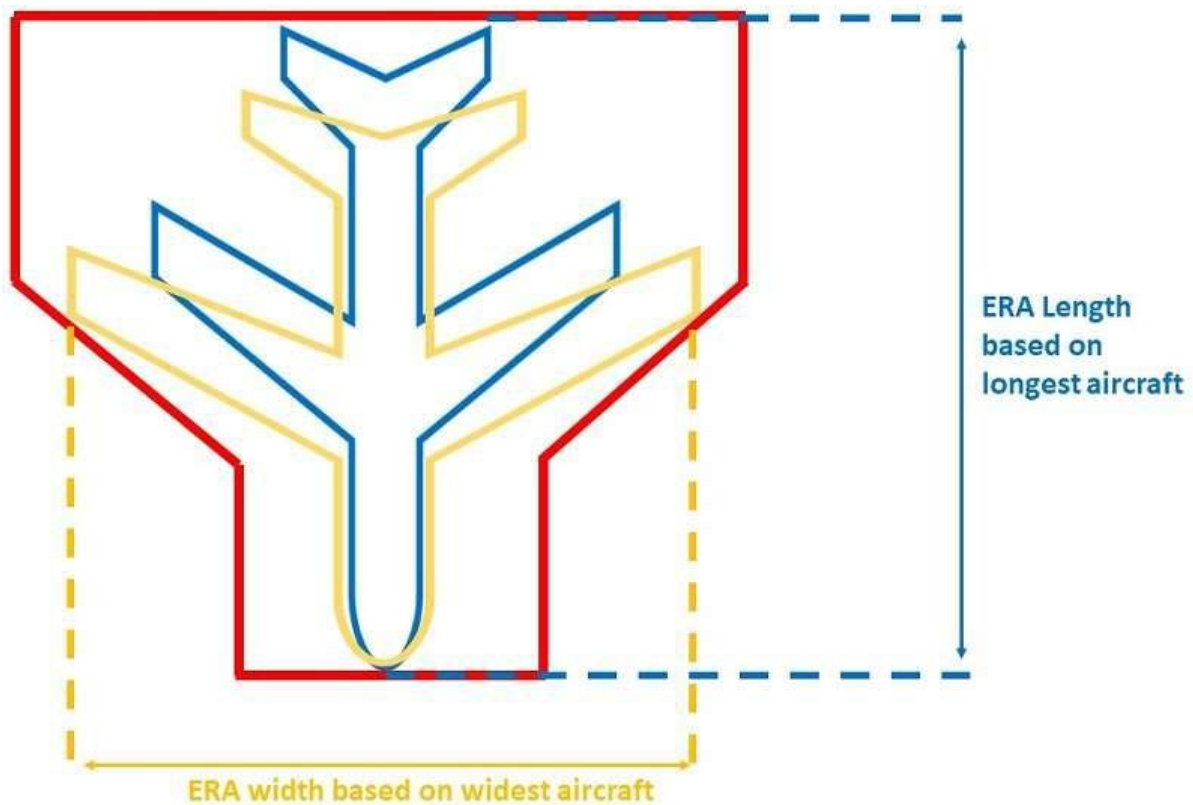
In short, while centerline safely positions the aircraft along its width, stop position safety positions the aircraft along its length.

Technical Explanation of Equipment Restriction Area (ERA)

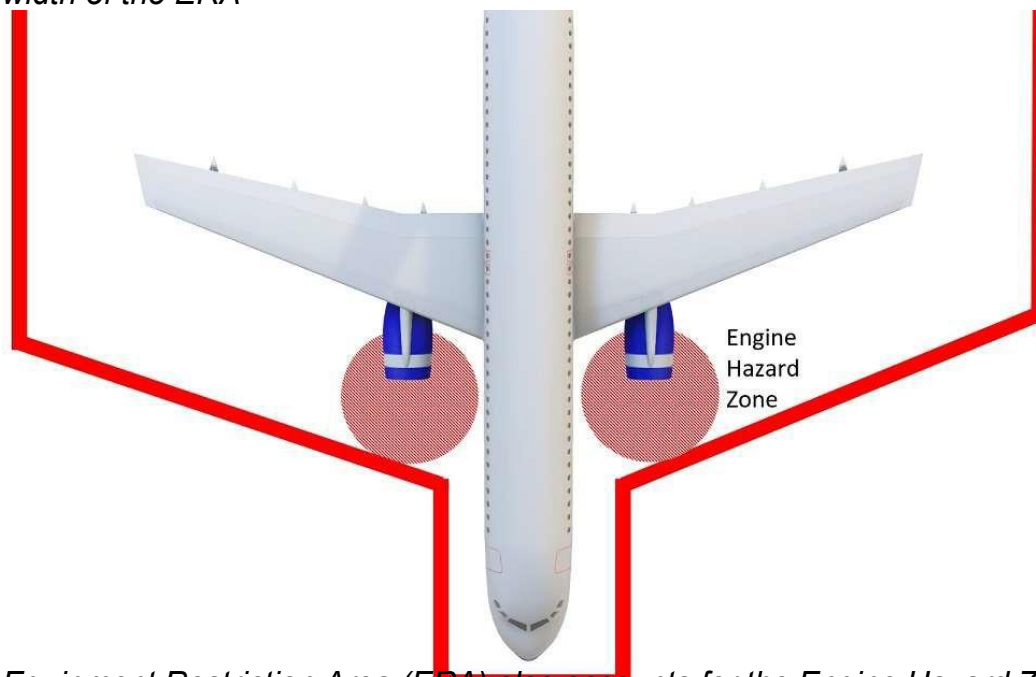
Equipment Restriction Area (ERA) is a safety envelop marked on ramp that serves as a safe boundary around the aircraft parked on the ramp. There must not be any vehicle, machinery or any piece of equipment standing inside this safety envelope when the aircraft is approaching its stop position.

This boundary is marked after considering all of the different aircraft types designed to be parked on the ramp. The width of the Equipment Restriction Area (ERA) is based on the wingspan and fuselage diameter of the widest aircraft to be parked on the ramp.

Similarly, the length of the Equipment Restriction Area (ERA) is based on the length of the longest aircraft. The inclined boundaries are based on the wing geometry and the greatest engine suction hazard zone of all aircrafts to be parked on the ramp.



Superimposing aircrafts to be configured on an aircraft stand reveals the length and width of the ERA



The Equipment Restriction Area (ERA) also accounts for the Engine Hazard Zone of an aircraft (which is the area in which no object or person must be present when the engine is running)

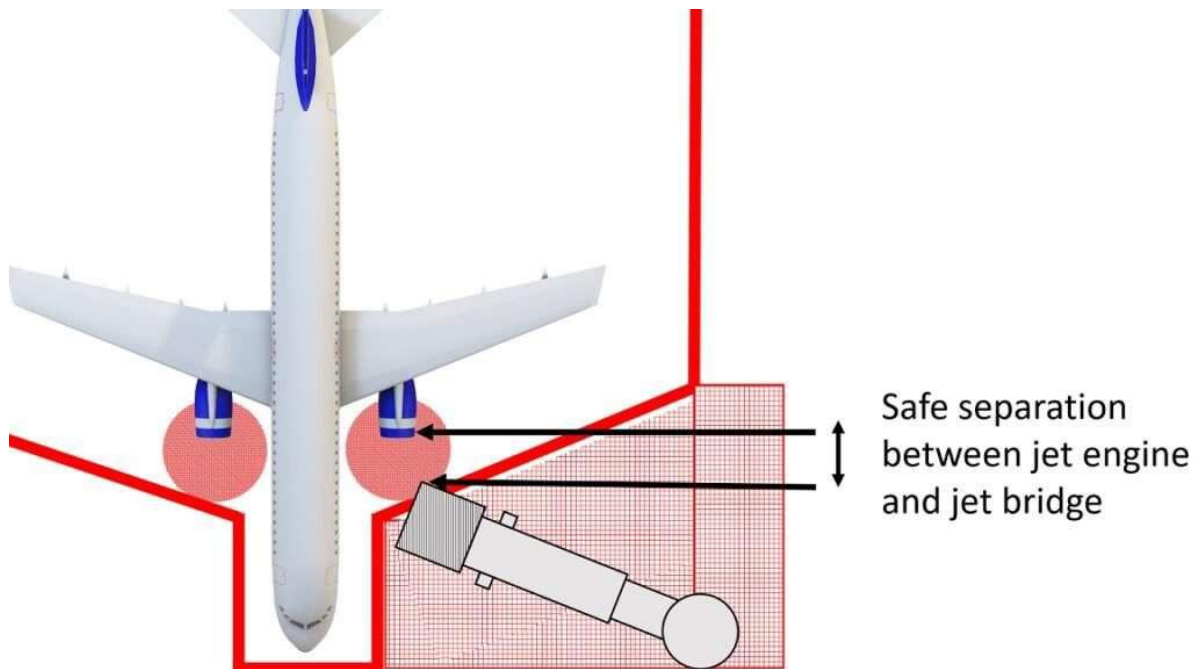
Technical Explanation of Jet Bridge Safety & Parking Zone

Understanding jet bridge safety zone is simple. Since jet bridge is a heavy duty piece of movable equipment, an area is marked on ground for safety during its movement. It is necessary to prevent jet bridge running over or colliding with any object or person causing an accident.

The jet bridge parking zone is more technical in nature. When the aircraft is rolling on the ramp to reach its stop position, all other equipment and objects can be removed from the ramp except for jet bridge. It cannot be removed from the ramp. Therefore, it becomes necessary that the ramp layout accounts for this constraint. It does so by defining a carefully evaluated parking zone for the jet bridge.

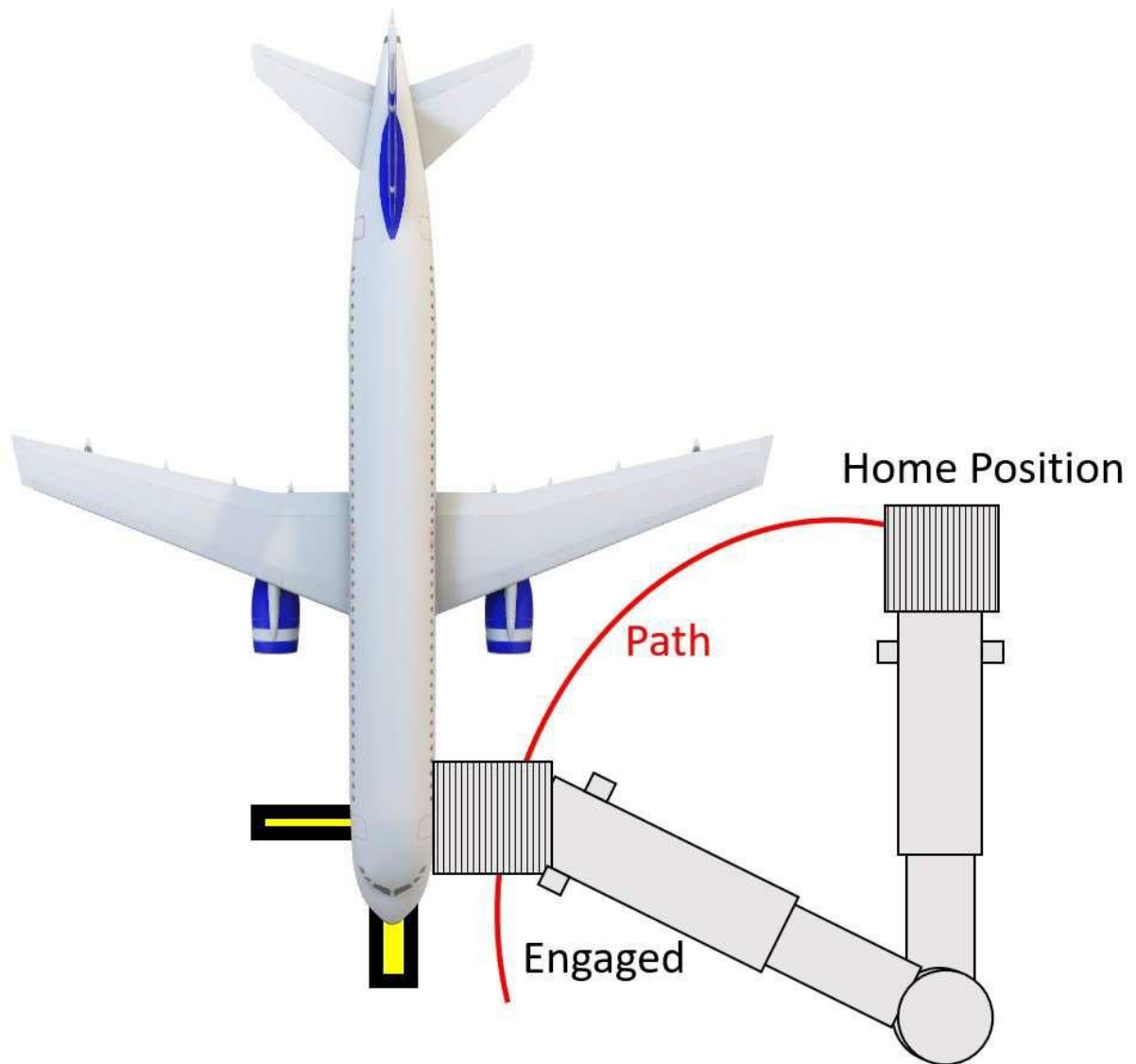
The location of this parking zone on the ramp is subject to three important technical considerations. The first is that jet bridge is located in the path of the aircraft wing and engine. Therefore, jet bridge's parking zone keep the bridge safe distance away from the wings and engine of the approaching aircraft.

Second, when the aircraft reaches the ramp and is rolling on the ramp for parking, its engines are on. When the engines are on, the engine suction hazard zone comes into play. It becomes necessary to not only create safe physical separation between the jet bridge and the aircraft but also account for the suction hazard distance of the jet engines. The parking zone of the jet bridge addresses this aspect as well.



One of the functions of Jet bridge parking zone is to keep it safe distance away from aircraft's jet engine that approaches the ramp idling

Third, often times jet bridge has to move in an arc path to engage with the aircraft door. Under such a condition, the parking zone of the jet bridge is supposed to make sure that none of the aircraft body parts fall in the path of this arc. The jet bridge parking zone is marked after considering how the jet bridge will make its path to the aircraft door.



Jet bridge parking zone must also account for jet bridge's path towards the aircraft door. Any part of aircraft wing or engine must not be falling in this path.

FUEL HYDRANT PIT

Lastly, if there are any pit systems on the ramp like a fuel hydrant pit, it is also marked with indicative ground markings as visual cues to anyone passing by for observing precaution and ensuring alertness and safety.



Note the black colored ground marking on the ramp for the fuel pit system