



Movement Area Drivers Training Handbook

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INTRODUCTION

The Columbia Metropolitan Airport (CAE) and the Federal Aviation Administration (FAA) require all vehicle operators to complete the Airfield Movement Area Driver Training Program prior to operating a vehicle in the Airport Restricted/Controlled areas. This training will include completion of the Movement Area Driver Training Presentation and a practical ride-along with a member of the Operations Department. Vehicle operators must pass the Movement Area Driver Training Presentation with a score of 90% or higher to be eligible for the practical ride-along. Recurrent training will take place annually, concurrent with the renewal of an individual's Airport issued badge.

Each year many incidents and accidents involving aircraft and vehicles on airports result in property damage, personal injury, and in extreme instances, fatalities. For this reason, everyone's cooperation and compliance is required to prevent potentially serious accidents.

This Movement Area Driver's Training Handbook was written to supply information on recommended procedures for safe vehicle operation and driver safety in an airport environment to those having a need to drive within the Air Operations Area (AOA) of CAE. All ground vehicle operations within the CAE AOA shall be conducted in accordance with this training handbook, FAR Part 139, and South Carolina Traffic Laws.

REMEMBER: 'SAFETY' is the First Priority here at the Columbia Metropolitan Airport.

DEFINITIONS

Air Operations Area (AOA) – The AOA consists of all restricted ground areas of the airport, including taxiways, runways, loading ramps, and parking areas. In other words, everything that is inside the perimeter fence. The AOA is divided into two distinct areas: the 'Movement' area and the 'Non-movement' area.

Aircraft Rescue & Firefighting (ARFF) – Specialty equipment and personnel trained to respond to airport emergencies for airport rescue and firefighting.

Airport Traffic Control Tower (ATCT) – A facility using air to ground communications, visual signaling and other devices to provide air traffic control services to aircraft operating in the vicinity of the airport or on the movement area.

Aprons and Ramps – Areas designed for loading or unloading passengers, cargo, refueling, catering, parking or maintenance of aircraft. Aircraft **ALWAYS** have the right-of-way when operating on the apron.

Baggage Makeup Area – An area where baggage is sorted, loaded or unloaded from baggage conveyors and or baggage carts.

CAE – CAE is the three-letter identifier for Columbia Metropolitan Airport.

Federal Aviation Administration (FAA) – The federal agency charged with the administration and oversight of the national airspace system, including, but not limited to, air traffic control and airport security.

Fixed Base Operator (FBO) – The companies that conduct the servicing of general aviation within the airport restricted area.

Foreign Object Debris (FOD) – Any loose item, (trash, metal, rocks, etc) lying on the ground having the potential to cause significant damage to property or injury to personnel in the AOA.

Fuel Farm – Facilities designated for the storage of fuel.

Hold Line – A pavement marking made up of two solid yellow stripes followed by two broken (dashed) stripes located across a taxiway. The solid stripes of this marking must be considered like a STOP sign. (which includes pedestrians, vehicles and aircraft) The marking means you are near an active runway. You must receive clearance via radio from the Air Traffic Control Tower to cross a hold line and enter a runway. This is an example of a hold line marking:

Movement Area



Non-Movement Area

Jet Blast and Propeller Wash – Artificial wind created by operating jet turbine and propeller engines. These air velocities can be extremely high and very dangerous.

Movement Area (MOV) - The part of an airport for which air traffic control services ARE provided. Runways, taxiways, and helipads are considered to be in the movement area. It is marked by a single solid and a single dashed yellow line on the pavement. This is an example of a movement area boundary marking:

Movement Area



Non-Movement Area

Navigational Aids (NAVAIDS) – Electronic equipment located near runways and taxiways. They provide horizontal and/or vertical guidance to aircraft. The following are examples of navigational aid signs and markings:



ILS Critical Area Hold Position Sign



ILS Critical Area Boundary Marking

Non-movement areas (NMD) – The part of an airport for which air traffic control services are NOT required. Aprons and ramps are considered to be in the non-movement area.

Restricted Area – All areas within the AOA, including the Security Identification Display Area.

Runway - A strip of land at an airport on which aircraft can take off and land. Runway surface markings are white. Runways have stripes down the middle, solid lines along the edges and ends, and numbers on each end. The number is the runway's compass direction. In addition, runways have white lights along the edges and white lights down the middle.

Runway Hold Sign - Signs with white numbers on a red background are runway signs. Runway hold signs are placed on each taxiway that will lead onto or across a runway. Runway hold signs indicate that you must stop and hold your position and contact ATCT if you would like to cross over or onto the runway. This is an example of a runway holding position sign:



Runway Incursion - “Any occurrence at an aerodrome involving the incorrect presence of an Aircraft, Vehicle or Person on the protected area of a surface designated for the landing and take-off of an aircraft.”
Note: The Protected Area includes the Runway Safety Area.

Safety Area - A designated area abutting the edges of a runway or taxiway intended to reduce the risk of damage to an aircraft inadvertently leaving the paved surface.

Security Identification Display Area (SIDA) - An FAA designated restricted area. Each person must wear an airport issued or airport approved identification medium on your outermost garment above your waist unless under airport approved escort.

Surface Incident – Any event where unauthorized or unapproved movement occurs in the movement area.

Taxiway - A paved and marked area established for taxiing of aircraft from one place on an airport to another. Taxiway surface markings consist of a solid yellow line with double solid black lines along the edges, down the center of the taxiway. In addition, taxiways have blue lights along the edges and green lights or reflectors down the middle. Unlike runways, letters identify taxiways. Black letters on a yellow background indicate a taxiway destination sign; how to get to taxiway or runway. Yellow letters on a black background indicate a taxiway location sign; where you are at. The following are examples of taxiway signs:

All Direction / Destination signs have yellow backgrounds and black letters or numbers



Taxiway Direction Sign



Taxiway Location / Destination Sign Array



Taxiway Location Sign



Runway Destination Sign



Runway Holding Position Sign

VEHICLE OPERATOR RULES AND REGULATIONS

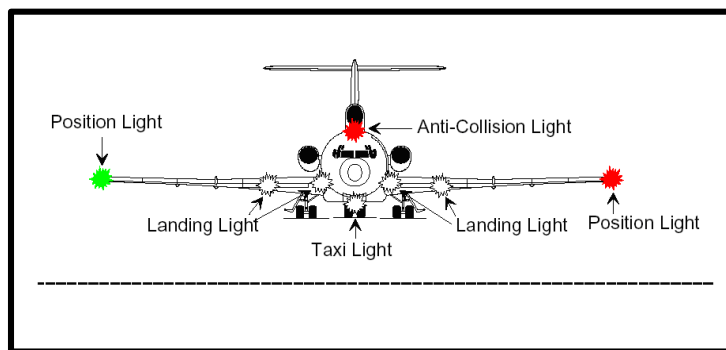
1. All motor vehicles operating on the terminal ramp and FBO ramps **must be clearly marked** with an authorized company logo, sign, or decal. The marking must be legible and located on both sides of the vehicle. The lettering height on vehicle markings should be at least three inches tall. Remember to challenge the driver of any unmarked vehicle unless they are under escort.
2. All motor vehicles operating at the airport must be safe to operate with respect to tire tread depth, brakes, lighting, and appearance. Non-motorized vehicles, such as baggage carts, shall also be kept in safe working condition. **Airport Personnel may periodically inspect ramp vehicles.** Discrepancies noted will be referred to the owner for prompt corrective action. Vehicles not meeting safety standards should be removed from service until repairs have been completed.
3. No person shall operate a motor vehicle or motor powered equipment at the airport except:
 - a) Persons **assigned to duty** in such areas.
 - b) Persons **authorized** by Airport Operations.
4. All South Carolina traffic laws and codes apply on airport property. Obey all posted vehicle speed limit signs, roadway markings, and other signs. No driver shall operate a vehicle while under the influence of alcohol, any narcotic, or habit-forming drug. Seat belts, if installed, must be used and your driver's license must be in your possession any time you are driving in the AOA.
5. Smoking is prohibited on the terminal ramp and authorized only in designated areas in the AOA.
6. The maximum vehicle speed limit on the terminal and FBO ramps is 15 MPH. The maximum vehicle speed limit in the baggage areas is 10 MPH. Emergency vehicles are exempt from this rule when responding to airport emergencies.

7. Aircraft always have the right of way. You must yield to all moving aircraft. Never cross in front of a moving aircraft. The best thing to do if you see an aircraft approaching is to STOP. If the aircraft is heading towards you, determine the safest path and get out of the way.

8. Do not operate a vehicle within 25 feet of any aircraft unless you are engaged in the servicing or repairing of that aircraft. Do not drive under a passenger loading bridge at any time and do not drive between a parked aircraft and the terminal building gates while passengers are loading or unloading. Fuel trucks are not to be parked closer than 50ft near any building and must remain 10ft clear of any other vehicle.

9. Do not drive/operate a vehicle within 15 feet of the preceding vehicle. DO NOT TAILGATE and the vehicle horn should be used only as a warning device.

10. Drivers must display functioning headlights and tail/brake lights during hours of darkness and reduced visibility. SLOW DOWN and STAY ALERT in reduced visibility conditions. Pay extra attention for aircraft, equipment and passengers on the ramp at night and reduced visibility conditions and remember that aircraft have Red and Green lights on their wingtips –**If the Red light is on the right then the aircraft is heading TOWARDS YOU.** If the Red light is on the left, watch out for Jet-blast or prop-wash.



*If an aircraft has their beacon on, it either has its engines on or is about start its engines. Or it's moving or about to move.

11. Vehicle operators must ensure that SIDA gates CLOSE completely behind them when entering or exiting the SIDA.

Piggy backing and swiping your badge while a vehicle gate closes is forbidden and may result in fines, suspension and revocation of driving privileges at the airport.

12. Spill clean-up responsibility lies with the vehicle operator, NOT the Airport Fire Department. The individual/tenant/company responsible for the spill is responsible for clean-up to include providing any absorbent materials necessary and properly disposing of the material. DHEC shall be notified of large spills.

13. If you have an accident you must notify Airport Operations at 822-5050 and submit a report to the Airport Police Department as soon as practicable after the accident. Reports must have names, addresses of individuals and witnesses, if any. Remember, don't take chances and don't take shortcuts.

14. Service and repair activities for ground service vehicles must not be conducted on the terminal ramp. Maintenance activities may only be conducted in specifically designated areas. If your vehicle breaks down, YOU are responsible for moving it to a place suitable for repairs. DO NOT leave an immobile vehicle in aircraft parking spots, roadways, or bag make-up/drop-off areas.

15. All Runway Incursions and Surface Incidents **MUST** be reported immediately. Remember, when you cross the Movement Area Boundary Marking you must be in contact with the Airport Traffic Control Tower and adhere to their instructions. **Fines for Runway Incursions can run into many thousands of dollars.**

16. All construction equipment operating in the Airport Operations Area will be prominently marked with either a: 3' square flag with a checkered pattern of orange and white attached to the vehicle: or a Flashing or steady burning amber colored beacon mounted on the uppermost part of the vehicle.

Please ensure that you take extra care during periods of construction.

AIRPORT HAZARDS

Visible Hazards

The following items are just a few visible safety hazards associated with working around airplanes:

- a) **Pointed Appendages of Airplanes and Equipment** - Be alert when walking or working around aircraft and ground support equipment.
- b) **Slick Surfaces** - Be careful around areas where oil or hydraulic fluid accumulate (below engines and near landing gear). When these areas get wet they become a slip hazard.
- c) **FOD (Foreign Object Debris)** - It is a piece of material or debris that does not belong on the ramp. Be responsible and PICK IT UP and dispose of it properly. FOD can cause serious aircraft / equipment damage and personal injury.
- d) **Unsafe Vehicles** - Your vehicle must have properly functioning brakes, lights and must not be actively leaking any fuel, brake or hydraulic fluid. Malfunctioning equipment can hurt you or others, and many times is an accident looking for a place to happen.

Unseen Dangers

There are numerous unseen dangers you may be exposed to while driving on the movement / non-movement areas:

- a) **Jet Blast** - Jet blast can take a tiny screw from a piece of luggage and turn it into a 200 mph projectile capable of causing serious bodily harm and equipment damage.
- b) **Noise** - Aircraft engine/APU noise can cause significant hearing loss in a short amount of time. Always wear hearing protection when near operating aircraft engines/APU's.
- c) **Reduced Visibility** - Reduced visibility shrinks everyone's comfort zone. Slow down and allow

extra time to get the job done or get to your destination. Be aware at night to pay extra attention for taxiing aircraft and ensure that your headlights, tail break lights and beacons/strobes (if fitted) on.

- d) **Unsafe Attitudes** - A vehicle is not a toy. Vehicle drivers must remain in safe control of their vehicles at all times. Blatant horseplay or careless operation of vehicles is unprofessional, dangerous, and against Airport Rules and Regulations

Safe vehicle operation should be everyone's goal. If you see a dangerous or unsafe condition, report it to your supervisor or Airport Operations (822-5050). Deliberate reckless operation of vehicles may result in fines, suspension, or revocation of driving privileges on the airport.

RADIO COMMUNICATION PROCEDURES

A vehicle driver must obtain permission from the ATCT prior to entering the movement area. This area includes runways, taxiways, route bravo, safety areas and ILS critical areas. The following steps should be used:

- a) Tune your two-way radio to ground control frequency 121.9 Mhz.
- b) Before making a transmission, **listen**. Don't step on someone else's transmission and don't jump in the middle of another communication. Think about what you will say
- c) In most communications the following **RULES OF THUMB** are a good way to remember how to talk on the radio. When the frequency is clear, tell the ground controller:
 - 1. Who you are calling
 - 2. Who you are
 - 3. Where you are
 - 4. Where do you want to go

If the ground controller gives you instructions to hold short of a runway or taxiway, you must **read back the holding instructions** to the controller. **THIS IS MANDATORY.**

Entering a movement area without prior permission from ground control constitutes an incursion. This act is a violation of FAA and Airport Rules and Regulations and is punishable by fines, suspension, and/or revocation of driving privileges.

A typical radio conversation/transmission would go like this:

Vehicle Operator - "Columbia Ground, Operations Two."

Ground Controller - "Operations Two, go ahead."

Vehicle Operator - "Operations Two is on the terminal ramp and would like to go to the approach end of Runway 11 for the daily airfield inspection."

Ground Controller - "Operations Two, proceed via Taxiway Alpha and hold short of Runway 11, give way to all aircraft."

Vehicle Operator - "Operations Two will proceed via Taxiway Alpha and hold short of Runway 11, and will give way to all aircraft."

LOST COMMUNICATIONS PROCEDURES

If you lose two-way radio capability with the ground controller while in the movement areas **DO NOT PANIC**. Check the radio volume, channel, or squelch level. If you are still unable to communicate with ground control, perform the lost communication procedure as follows:

Contact ATCT directly:






- 1) Immediately move vehicle off of any paved surfaces into the nearest grassy area outside of any Runway Safety Areas. Allow enough space for aircraft to taxi past your vehicle safely.
- 2) Contact the ATCT cab directly by phone at 803.822.4511 and advise them of your radio issues and current location. If you do not have the ability to contact the ATCT directly use the procedures listed below.

Light Gun Procedures:

- 1) Pull safely off the pavement into the nearest grassy area. Pull off far enough to allow aircraft to taxi past
- 2) Point the vehicle headlights towards the control tower
- 3) Flash the vehicle headlights to attract the controller’s attention
- 4) Wait for a light gun signal and comply with the signal sent by the controller.

LIGHT GUN SIGNALS

When you get the ground controllers attention with the vehicle headlights, he/she will point a light gun at your vehicle. Different colored signals have different meanings. The following signals are universally accepted:

Steady Green -	Cleared to cross runway or taxiway	
Steady Red -	STOP	
Flashing Red -	Clear the runway or taxiway	
Flashing White -	Return to your starting point	
Alternating Red / Green -	Exercise extreme caution	

Comply with the light gun signal immediately and then initiate repairs to your two-way radio.

AVIATION RADIO PHRASEOLOGY

It is important to understand the controller's primary responsibility is ensuring the safety of all aircraft, vehicle, and pedestrian traffic operating in the movement area. The radio should not be used like a telephone and unprofessional 'CB talk' should never be used when communicating with the tower. Try to be brief and to the point during all radio communications.

The following are terms with their meanings used in communicating with the tower while on foot or operating a vehicle in the movement area.

Acknowledge - Let me know you have received and understand this message

Advise intentions - State what you plan to do

Affirmative - Yes

Confirm - What I heard is (message)..... Is that correct?

Correction - An error has been made and the correct version follows

Expedite - Used when prompt compliance is required to avoid the development of an imminent situation

Go ahead - State your message (IT NEVER MEANS PROCEED)

Hold - Stop where you are

Hold short of (designated runway or taxiway intersection) - Proceed to, but hold short of a specific point

Negative - No, or permission denied, or that is not correct

Proceed - You are authorized to begin or continue moving

Radio Check - Confirm that my radio transmission is clear.

Read back - Repeat my message back to me

Roger - I have received all of your last transmission (Should not be used to answer a yes or no question)

Say again - Repeat your last transmission

Stand by - Wait a moment, I will call you back (Used when a delay in transmitting is requested by the caller)

Unable - I cannot comply with a specific instruction, request, or clearance

Verify - Request confirmation of information

Wilco - I have received your message, understand it, and will comply

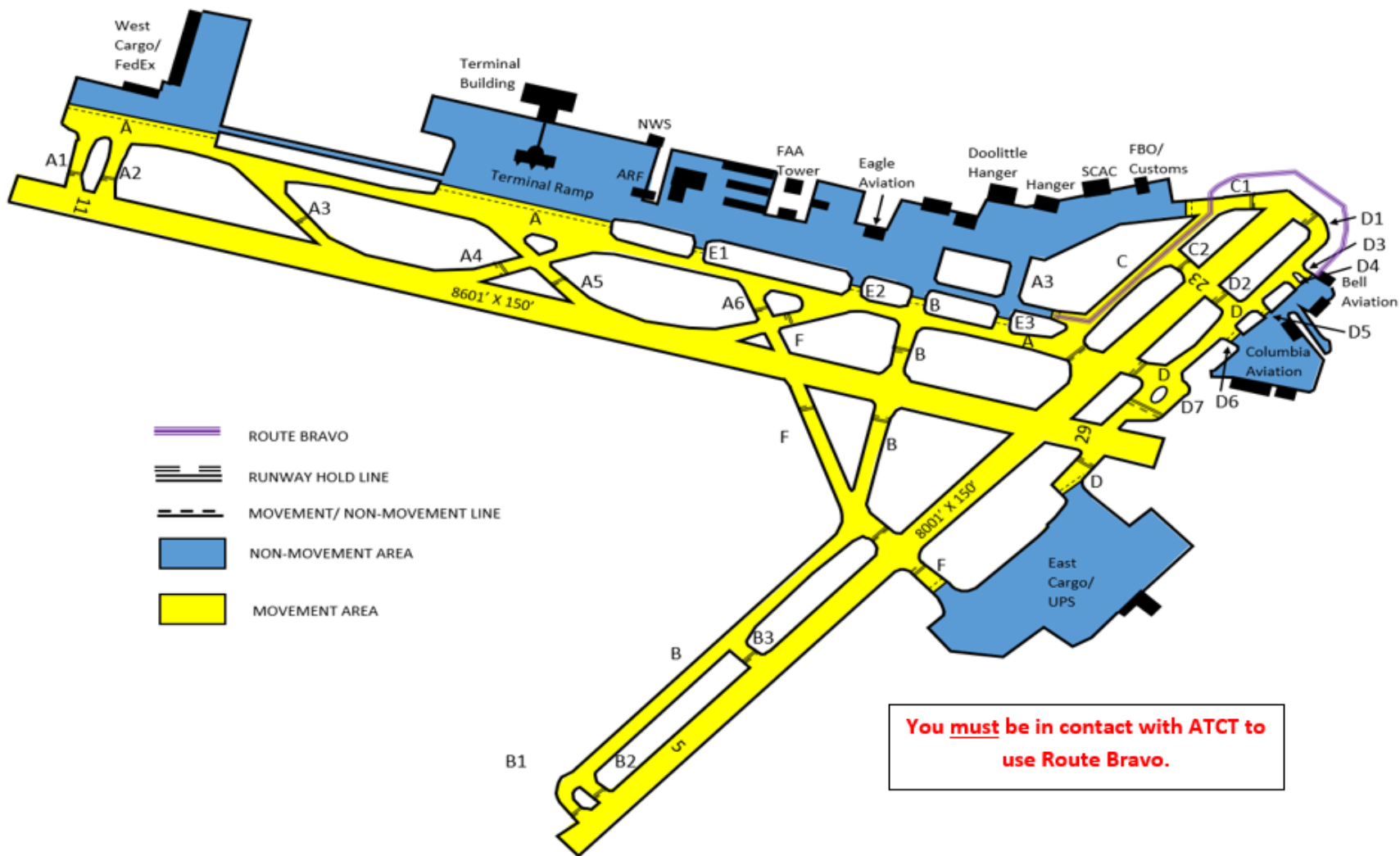
THE AVIATION ALPHABET

The following is the International Civil Aviation Organization (ICAO) phonetic alphabet that is used in radio transmissions. Because some letters sound similar over the radio, like M and N, use the words in place of letters to reduce confusion. For example, Taxiway M would be referred to as Taxiway Mike.

A – Alpha	N – November
B - Bravo	O – Oscar
C – Charlie	P – Papa
D – Delta	Q – Quebec
E – Echo	R – Romeo
F – Foxtrot	S – Sierra
G – Golf	T – Tango
H – Hotel	U – Uniform
I – India	V – Victor
J – Juliet	W – Whiskey
K – Kilo	X - X-ray
L – Lima	Y – Yankee
M – Mike	Z – Zulu

**CONTACT THE AIRPORT OPERATIONS
DEPARTMENT WITH ANY QUESTIONS OR
CONCERNS AT:
803.822.5050**

CAE MOVEMENT / NON-MOVEMENT AREAS



TERMINAL RAMP MOVEMENT / NON-MOVEMENT AREA BOUNDARY

