



Driver Training Manual for Ground Vehicle Operators

Des Moines Airport Authority

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Airport Operations Center: (515) 256-5000

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INTRODUCTION

Whether you are a new employee with no experience working in aviation or a seasoned veteran, the Des Moines Airport is truly a unique place that provides invaluable services to millions of Iowans.

Because the Des Moines International Airport is distinct and configured unlike any other airport in the world, this driver's guide consisting of site-specific information about the operational environment, has been developed in order to provide basic orientation. It is intended to complement the necessary practical "hands on" training provided by your employer. This guide has been designed to provide the fundamental information about the various signs, lighting, markings, and communication procedures needed to safely drive at the airport.

Because the day-to-day working environment is ever changing, it is extremely important that you take the time to individually educate yourself on safety specifics, regardless of your experience level or background. It is your responsibility to know, understand and follow the guidelines and requirements outlined in this manual when driving on the AOA.

Driving on the AOA at DSM is a privilege, not a right. It is the responsibility of all employees, contractors, and vendors who are issued driving privileges to understand and follow the procedures discussed in this manual.

The *most important attribute* of a qualified airport driver is **situational awareness** based upon a solid understanding of the rules. All State and City laws which apply to the operations of vehicles on the roads and streets in Iowa are applicable to vehicles operating in the AOA.

Runway Safety

Runway incursions are a serious safety hazard and have been a subject of ongoing concern for the aviation community. The Des Moines Airport Authority (DMAA) takes runway safety seriously and strives to achieve excellence in educating and training, with the ultimate goal of having zero runway incursions.

The FAA's Office of Runway Safety defines runway incursions as "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 takeoff of aircraft." Simply put, an incursion is any time that an aircraft, vehicle, or person enters a surface of the movement area without permission from ATC or operates on a surface in an improper or unsafe manner.

All vehicle operators must remain vigilant and be cognizant of the potential factors that increase the risk of becoming a statistic. Maintaining situational awareness will help to ensure operational errors that may lead to runway incursions are avoided.

GENERAL

TRAINING PROCESS

To obtain an AOA Driver's Credential on a SIDA badge, all applicants must complete the Airport's Ground Vehicle Driver Training Course and demonstrate a clear understanding of the presented curriculum. The program material includes this manual, as well as other various printed and electronic training aids. After completing the required training program, all applicants must complete and pass a written exam. Finally, those individuals attempting to obtain movement area access must pass an AOA Driver's Check Ride, requiring the applicant to exhibit to the driving instructor the ability to operate a vehicle safely on the airport's movement area.

Prerequisites

In order to obtain an AOA Driver's Credential, individuals must possess a valid United States driver's license and a DSM SIDA Badge, both in good standing.

Credential Issuance, Expiration, and Renewal

Once an applicant has successfully completed all stages of the DMAA Ground Vehicle Operations Training Program, the AOA Driver's Credential will be issued by the Airport Badging Office.

Annual recurrent training is required for all movement area drivers in order to maintain driving privileges on the AOA. In the event a driver fails to complete annual recurrent driver training, the AOA Driver's SIDA badge will be deactivated and all driving privileges revoked by the Authority until all required training has been completed.

Operational Changes

Information on changes to airport conditions, markings, signage, lighting, or pavement surfaces will be disseminated to all personnel with an AOA Driver's Credential by Airport Operations as they occur.

NONCOMPLIANCE

Corrective action will be taken by the Authority in the event an authorized permit holder fails to comply with the written rules and regulations regarding the operation of ground vehicles within the AOA.

Unless the Executive Director determines otherwise based on the circumstances of the incident, the consequences for violating these rules and regulations are as follows:

1. The **first violation** will result in the suspension of driving privileges on the airfield for

7 days. Driver's must retake the Movement Area Driver training and must also receive remedial training from the Airport Operations Department. This training must be documented and signed-off as successfully completed by the Airport Operations Department before driving privileges are reinstated.

2. A **second violation** will result in the suspension of driving privileges on the airfield for 14 days. Driver's must retake the Movement Area Driver training and must also receive remedial training from the Airport Operations Department. This training must be documented and signed-off as successfully completed by the Airport Operations Department before driving privileges are reinstated.
3. A third violation will result in **permanent revocation** of airport driving privileges

Fines

The Executive Director may levy fines of up to \$500 per occurrence against any individual found to have violated Airport Rules and Regulations.

The FAA may levy fines of up to \$50,000 against any individual that is found to be the cause of a runway incursion.

VEHICLE REQUIREMENTS

All vehicle accessing the AOA must meet the following requirements:

- Vehicles must be identified with the company name or company logo.
- Vehicles must display a DMAA Vehicle Permit.
- Vehicles may only carry as many passengers as the vehicle has installed seatbelts.

A vehicle inspection must be completed prior to operating in the AOA to ensure that the following standards, at a minimum, are met:

- Service brakes and emergency brake must function properly
- Tires must have appropriate tread depth
- Headlights, tail & brake lights- must be on during low visibility conditions & at night
- Clean, usable mirrors
- Sufficient fuel level
- Working gauges and indicators
- Engine must be in good operating condition
- No oil, fuel, hydraulic or other leaks
- Debris in the backs of pick-up trucks must be secured or removed to avoid creating FOD.
- Must meet all the vehicle inspection requirements of the organization by which they are owned or operated
- Fuel service vehicles must meet the standards set forth in NFPA 407.

In addition, if the vehicle will operate in the movement area, it must be equipped with the following:

- A fully functional, two-way ATC radio or be escorted by an authorized escort who is in constant contact with ATC via radio.
- An operational yellow/amber rotating or pulsing beacon visible from 360 degrees
- Appropriate vehicle markings
- A current copy of the Airport Diagram must be readily available to the driver

Proper two-way radio equipment with Ground Control Frequency 121.90 MHz is required of all vehicles authorized to operate on the movement area. Ground Control Frequency must always be monitored while the vehicle is within the movement area or safety areas.

ACCESS CONTROL AND AIRPORT SECURITY

The ability to maintain an effective level of security depends heavily on the people that work and operate inside the airport's perimeter fence. Anyone granted a SIDA badge becomes part of the overall security effort. For this reason, it is important that all vehicle operators with access to the airfield understand that they play an integral role in the overall security of the airport.

Only those vehicles that are necessary for the continued operation of the airport or for the support of airport related activities may be operated inside the airport's perimeter fence. Personal vehicles are never permitted to operate inside the perimeter fence except for those vehicles that are approved to access the private hangars of the General Aviation Ramps.

Driving Authorization Media

Any person operating a vehicle on the AOA must receive approval from DMAA, possess a current and valid state issued Driver's License, and successfully complete the appropriate driver training. All drivers must display their DMAA issued Security Identification Display Area (SIDA) Badge, with the appropriate "N" (non-movement only) or "M" (movement & non-movement areas) designating their driving authorization level.



Vehicle and Pedestrian Gate Access Control

It is your responsibility as a vehicle operator or pedestrian to secure a gate or door after passing through it. Remember that it is your responsibility to ensure that nobody follows you through a gate. You must position your vehicle so that it blocks the gate until the gate has fully secured.

If you happen to find an unsecured gate, hole in the fence, open door, or other un-attended/unsecured point of access to the airfield, it is your responsibility to maintain a direct line of sight with the area at all times, and to report it. Notification must be provided to the **Airport Operations Center at (515) 256-5000**. Under no circumstances should you leave the area unattended until an airport representative or LEO has arrived to relieve you.



AIRPORT SAFETY

Driving anywhere on the airfield is a job-related privilege that must be taken very seriously. Safely operating a vehicle on any of the airport surfaces requires concentration and vigilance. Moving aircraft, high noise levels, bad weather conditions and crowded ramp areas are just a few of the factors that you may face when operating a vehicle at DSM. *Extreme caution must be exercised at all times.*

Foreign Objects Debris / Damage (FOD)

Foreign Object Debris or **FOD** is includes *any object that does not belong on the airfield and can damage aircraft.*

In other words, any object whether it is a nail, rock, or even a plastic bottle that is on the ramp or airfield is FOD. These objects are dangerous to aircraft not only because they can cause vast amounts of monetary damage, but because in the wrong location, FOD can cause aircraft accidents and loss of life.

FOD can damage aircraft in many ways. Fuselage & wing skin puncture, ruptured tires, broken windows, cracked propellers, gouged turbine blades to name a few. Jet engines are incredibly powerful and can suck up FOD causing significant damage



Whether you are on a non-movement or movement area, FOD reduction is the responsibility of everyone. If you see something pick it up and dispose of it before it becomes a hazard to aircraft. Anything found on the non-movement area can easily make its way to a taxiway or runway.

If you see something while in the AOA, pick it immediately and dispose of it in a proper trash receptacle. If you see something blow into the movement area, **DO NOT GO INTO THE MOVEMENT AREA** to retrieve the item. Contact **Airport Operations Center** at **(515) 256-5000** and an Operations Supervisor will go into the movement area and pick it up.

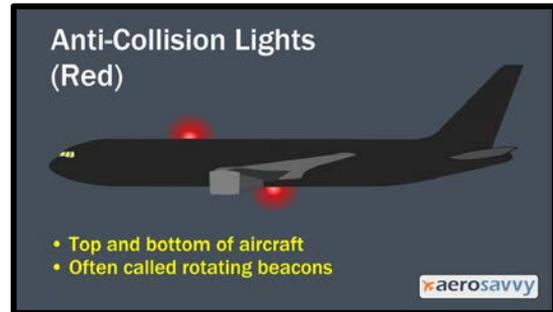


You can also reduce the possibility of FOD by keeping your vehicle clear of debris both inside and out. If you drive a pickup truck, ensure that all materials contained in the bed are secured and cannot blow out. If you are working with tools, check and re-check the area to make sure you did not accidentally leave any on the ground where it can cause damage.

Aircraft Familiarization

Red anti-collision lights, often referred to as “rotating beacons,” are located on the top and bottom of aircraft and can be seen from any angle. When ground personnel see the red lights flashing, they know the area is unsafe. Walking near an operating jet engine or turboprop is dangerous.

Red anti-collision lights are turned on just before push-back from the gate and engine start. They are turned off after engines are shut down at the gate.



Nothing attracts attention better than a super bright, red flashing light. A red anti-collision light on the ground means danger!

Drivers should look for the red anti-collision lights before driving behind an aircraft, especially aircraft parked at the terminal gates. If the lights are on, the aircraft is about to move.

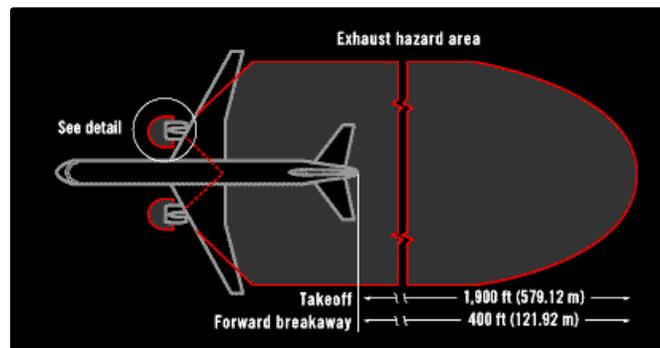


Yield to ALL aircraft on the terminal apron Do not drive behind an aircraft with anti-collision lights on. Tug drivers have limited visibility around the aircraft and may not see your vehicle. Additionally, aircraft being towed have limited maneuverability and it is difficult to stop quickly. Drivers should stop and give-way to the aircraft. Watch for the wing-walkers to signal to the vehicle indicating that it is safe to proceed behind the aircraft.

Any reports from pilots and ground crew about drivers cutting off aircraft during push back or taxi will be investigated fully. Be patient, otherwise it could cost you your driving privileges.

Jet Blast

Jet blast or prop wash is a serious concern to pedestrians and ground vehicles. Objects and debris can be picked up and flown into vehicles or pedestrians causing damage or injury. Always be aware of where aircraft are and where their engines are pointing. Never drive behind an aircraft when the engines are running. The pilot may increase thrust at any time, without warning.



Emergency Vehicles

All drivers on the airport must yield to marked emergency vehicles responding to an emergency, just as you would while driving on public streets. Emergency vehicle operators must exercise extreme caution for unexpected movements of other vehicles, pedestrians, and aircraft.



It should be noted that even in an emergency, taxiing aircraft may not give way to emergency vehicles unless specifically instructed to do so by ATC. Emergency vehicle operators must also make certain to have proper runway clearances prior to proceeding past the mandatory hold position marking and signage.

Medical Emergencies

If there are injuries as a result of an accident that need medical attention, call the **Airport Operations Center** at **(515) 256-5000** immediately to request medical attention. The DSM Aircraft Rescue Fire Fighting (ARFF) Department is stationed on the airfield and will provide a timely response to the emergency. Requests can also be made via radio to the ATC Tower or to your company.

Accident Reporting

Report all accidents involving motor vehicles, as well as damage to airport property immediately to DMAA **Airport Operations Center** at **(515) 256-5000**. This notification should be separate from any police report and must include at a minimum: your name, employer, date and time of the incident or accident and the circumstances surrounding the event.



Airport property includes airfield lighting, signs, fixtures, turf areas, buildings, jet bridges, fencing, ground power units, etc. Vehicle deviations from any paved surface onto a turf surface may result in an unsafe airport condition that comprises safety areas and active movement areas. Failure to report such incidents shall result in appropriate action taken by the Authority.

Special Consideration for Accidents Involving Parked Aircraft

If you are involved in an accident involving a parked aircraft, it is critical that the aircraft not be flown until any damage to the aircraft can be assessed and repaired as needed. **Remember that by not reporting, you are putting someone else's life in serious jeopardy.**

ENVIRONMENTAL

Spills

It is the responsibility of all airport employees to engage in safe driving and fueling practices in order to avoid spills of any hazardous material including lavatory waste, de-icing fluid or petroleum products. If a spill occurs or if you notice a spill contact the **Airport Operations Center** at **(515) 256-5000**. No spill is too small to report. If you are in doubt, the best response is to call.



Fuel and chemical spills are a serious matter and disposal is the responsibility of the airline or fueling agent. It is critical to stop the spill from spreading once it happens. Become familiar with your company's spill containment procedures. You must capture all spills with absorbent material so that it can be picked up and disposed of properly.

It is **never** permissible to push the spill into a drain or simply dilute it with water. Timely reporting is critical to prevent further contamination and to secure the scene safely. The **Airport Operations Center** must be notified at **256-5000** as soon as you are physically able to do so.

Fire Prevention

The first consideration when dealing with a spill is safety. If the spilled product is flammable in nature like Avgas, Jet-A, diesel fuel or gasoline, then precautions must be taken to minimize the potential for fire. Any potential source of ignition near the spill must be removed or disabled immediately.



Spill Clean-up

After the threat of fire has been dealt with, the environmental impact of the spill needs to be taken into consideration. Fuels, lavatory cart waste and anti-freeze are just a few of the products that could be spilled or leaked. It is extremely important that any product be kept from reaching a storm drain or unpaved area whenever possible. Lavatory cart spills must never be washed

down storm drains. These spills need to be cleaned in the same manner as a fuel spill and disposed of properly.



Materials including loose absorbents, pads, mats or booms can all be used to stop or detain a spill from leaving a paved area or from reaching a storm drain. It is your responsibility to know where and what you are supposed to do in the event of a vehicle spill, so check with your supervisor if you are unsure of what actions need to be taken, where your supplies are kept, and how to dispose of any used absorbent materials resulting from the clean-up.

1. All spills of any chemical, fuel, or other hazardous material must be contained, cleaned, and reported to the **Airport Operations Center at (515) 256-5000**.
2. No spills, including lavatory cart spills, are to be washed down storm drains. Each spill must be cleaned with proper absorbent materials.
3. Storage tanks, vehicles, aircraft, etc. that appear to be leaking fuel, antifreeze, hydraulic or other hazardous fluids need to be reported immediately and the spills directed away from storm drains if possible.
4. Cleaning of all spills is the responsibility of the company that owns the leaking equipment. All materials used to contain spills are to be disposed of properly by the owner of the leaking equipment.

Aircraft De-Icing

The blue markings on the Main Terminal Ramp indicate the boundaries for aircraft de-icing during winter weather conditions. All de-icing operations must take place completely within these lines. When this is done overspray or unused de-icing material is diverted to collection tanks.



Any de-icing fluid that crosses the blue de-icing line is considered a HazMat spill and Airport Operations must be contacted immediately. If de-icing takes place outside of these lines, then the chemicals will enter nearby creeks and streams. State penalties and fines will be assessed on any entity that applies de-icing chemicals outside the designated areas.

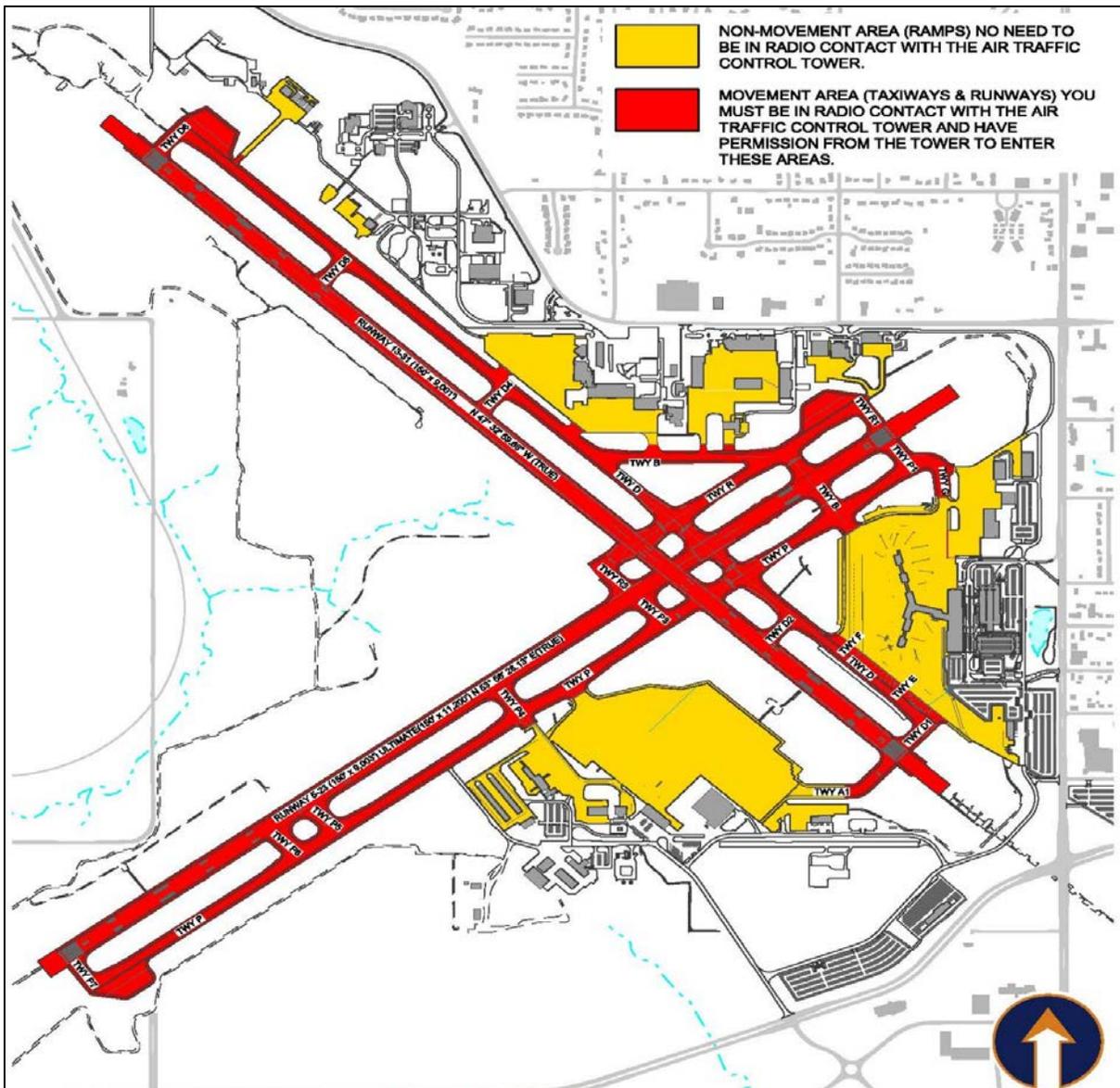


AIRFIELD FAMILIARIZATION

In terms of air traffic control, the AOA is separated into two of areas **Movement Areas** and **Non-Movement Areas**. The biggest distinction between a Non-Movement area and a Movement Area is that a Movement Area is controlled by the FAA's Air Traffic Controllers, while the Non-Movement Areas are not.

The Terminal, Cargo, and GA Ramps, and associated service roads are in the **Non-Movement Area (Yellow)**. Always be aware of your surroundings and know where you are authorized to operate.

The movement and non-movement areas of the Des Moines International Airport are depicted on the following map. **Runways, Taxiways and Safety Areas** are in the **Movement Area (Red)**.



NON-MOVEMENT AREAS

Non-movement and ramp areas are unique from other parts of the airfield because they do not fall under the authority of the Air Traffic Control Tower. This means that aircraft and vehicle operators are free to move around a ramp without being under the direction of an Air Traffic Controller. This provides a vehicle operator the flexibility of movement needed to perform many of the tasks that occur on a ramp, but also requires the vehicle operator to be alert at all times.

Many activities take place on a ramp that can create a distraction or hazard: aircraft are moving, passengers may be walking between an aircraft and a gate, moving jet bridges can limit visibility, and noise levels can be high enough to mask sounds that would normally provide a warning.



The non-movement area includes the Terminal, Cargo, and GA Ramps, and perimeter roads. It is imperative that you exercise extreme caution when driving in these areas. Aircraft are always moving and since their field of vision is severely limited from the cockpit, it is up to the ground vehicle operator to exercise safety and proper driving habits to avoid collision and accidents.

AIRCRAFT HAVE THE RIGHT OF WAY AT ALL TIMES

There are no exceptions to this rule. It is up to you as the vehicle operator to give all aircraft the right of way in every situation. Always assume the pilot cannot see you and it is up to you to give them plenty of clearance to pass.

In addition to giving aircraft the right of way, there are several other areas to avoid and be aware of when operating a vehicle on the non-movement area.

1. An airport environment is notoriously loud; always double check before proceeding because you may not hear approaching vehicles, aircraft, or people.
2. Give the right of way to pedestrians and emergency vehicles; these include Fire, Police, and Airport Operations vehicles.
3. During the winter season, give way to snow removal equipment. They operate close to the gate areas and their field of vision may be limited as well.
4. Always wear a safety vest or high visibility jacket when working on the terminal apron.

Non-Movement Area Boundary Marking

The non-movement area boundary marking consists of a single, solid yellow line and a single, dashed yellow line and indicates the separation of the *movement area* from the *non-movement area*. The vehicle in the picture is located on the non-movement area of the marking.



The dashed side of this marking includes taxiways and runways. Anyone who crosses this line without the proper training and credentials is subject to suspension or revocation of their driving privileges and fines.

All drivers with an “N” notation on their SIDA badge must always remain on the solid side of this line, no exceptions. DO NOT CROSS!!!

Speed Limit



The speed limit on the non-movement area is **20 mph**, however, all drivers must exercise caution and reduce speed when necessary. The presence of emergency vehicles, aircraft, inclement weather, poor visibility and icy conditions all necessitate a slower speed when present. Drivers must observe a **5 mph** speed limit (walking speed) in these situations and while driving near aircraft.

Jet Bridge

A **jet bridge** is used to load and unload passengers. They are the moveable “bridges” that are positioned next to the aircraft to allow people walk between the aircraft and the terminal building.

When operating a vehicle near a jet bridge, use caution and be alert to your surroundings. That portion of the ramp closest to the terminal building and jet bridges become congested.



Because ground equipment, aircraft, drive lanes and jet bridges are close to the terminal building, visibility is limited. Use extreme caution in these areas as someone could walk into your path with little or no warning. **No vehicles are permitted to drive under a jet bridge at any time.**

Automatic Roll-Up Doors

The airport utilizes high-speed automatic roll up doors for safety and convenience at the bag make-up and baggage claim areas. The doors detect when a vehicle is approaching and roll up to allow entry and exit. Drivers must slow down when approaching the doors to allow enough time to fully open. If a vehicle approaches too quickly the driver will not have time to stop should the door not open as quickly as the driver anticipates, or if conditions such as ice or snow are present.



When an accident or collision with one of these doors occurs, report it to **Airport Operations Center** at **(515) 256-5000** immediately. If negligence is proven to be a factor, SIDA badge revocation will occur which will restrict the driver from working on airport property. If the accident goes unreported, the DMAA can revoke SIDA privileges permanently. Use caution and common sense when entering and exiting from these areas.

Main Terminal Ramp Caution Areas

The baggage claim garage doors are hidden from view by the green trash compactors. Slow down in this area as baggage carts may exit the building without warning.

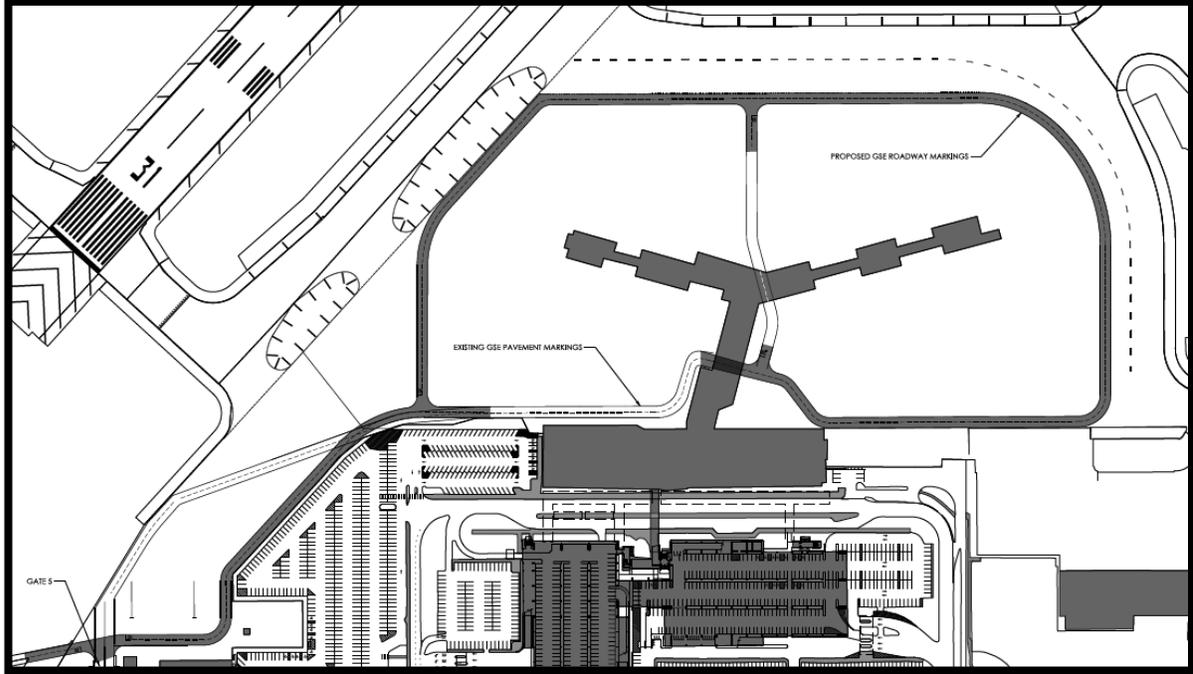
STEM Overpasses – These are passages that go underneath the concourse. These areas are highly traveled by vehicles and pedestrians. Slow down while driving through and use the proper lanes. There are many blind spots. The exits of these overpasses intersect with high-use, aircraft gates.



Vehicle Lanes

A designated vehicle lane has been established on the Terminal Apron to control the flow of traffic. Any person driving a vehicle within the AOA shall use Vehicle Lanes when available and to the extent possible.

When a vehicle's destination is located off the Vehicle Lane, the driver of the vehicle shall use the Vehicle Lane, as long as reasonable. All drivers of vehicles shall enter the Vehicle Lane at a 90-degree angle, at the closest point that it can be done safely. No driver shall stop or park any vehicle on the Vehicle Lane except to yield to an aircraft or to prevent harm to persons or property



Airport Perimeter Roads

The South Perimeter Road connects the South Cargo ramp to the East Cargo ramp. All airport drivers may access this road. **CAUTION:** heavy fuel truck traffic is present on this road frequently. Slow down and give space to the fuel trucks. Fully loaded fuel trucks have large stopping distances and are difficult to maneuver.

Additional perimeter roads have been established by the airport for security inspections, and maintenance activities. When marked as "Authorized Vehicles Only", only authorized DMAA or FAA maintenance vehicles may use the perimeter road. These perimeter roads are unpaved. Unauthorized vehicles should exit through a vehicle gate and use a landside road to access other portions of the airport.



INCURSIONS

An incursion is, any occurrence involving the incorrect presence of an aircraft, vehicle or person on a movement area designated for the landing and takeoff of aircraft. *Simply put, an incursion is any time that an aircraft, vehicle, or person enters a runway or taxiway without permission from ATC or operates in an improper or unsafe manner.*

Unauthorized entry onto a movement area is dangerous and can result in distracted ATC operators, and catastrophic aircraft accidents.

Having situational awareness is key in preventing incursions from happening. The driver and passengers should be aware of their surroundings to predict what future actions. To enhance situational awareness drivers should follow these best practices:

- Any distracting material i.e. cell phones, reading materials, radios (other than ATC), passengers talking, etc. must be eliminated or kept to a minimum.
- Always be aware of your surroundings; be aware of other traffic is operating.
- Know the airfield, the lights, signs, markings and airport layout
- when ATC gives instructions know where you are and where you are going.
- Obey ATC instructions, simply driving where you want to go is a violation.
- If in doubt, ask! Do not proceed unless your understanding of the instruction is clear.
- Always read back hold short instructions and obey those instructions without exception.



AFTERMATH OF INCURSIONS



Incursions/deviations occur because people make mistakes, even ATC can sometimes give instructions that could lead to a safety hazard by authorizing a vehicle to drive onto a runway when aircraft are landing.

This is why it is so important for operators to remain vigilant not only to their own requests and instructions but also to be situationally aware of the movements of others on the airfield. It is up to all who are actively driving on the airfield to practice driving safety and reduce the possibility of runway incursions and deviations.



MOVEMENT AREAS

The movement area includes runways, taxiways and their associated safety areas. Movement areas are considered "controlled" which means that you must receive permission from the Air Traffic Control (ATC) Tower before you proceed.

Movement area driving privileges at DSM require several steps before authorization is obtained. The DMAA requires that movement area drivers: receive authorization from DMAA, complete SIDA badge training/testing, and complete additional practical driver training. An operator must pass all required steps before certification to drive on the movement area is granted.



Operating on the movement area should only be done by necessity. Vehicles operating on the movement area are limited to those necessary for airport operations. Limiting access is one way to reduce the possibility of incursions, deviations, and accidents. In addition to the FAA mandated requirements, all vehicles operating in the AOA areas must adhere to the all DMAA requirements and practices.

Only authorized vehicles having two-way communications with the ATCT can escort vehicles onto the movement area. An authorized vehicle must always monitor and accompany an escorted vehicle. Likewise, all escorted vehicles must remain with an authorized vehicle within the movement area. When escorting a vehicle, you are assuming full responsibility for the vehicle and operator.

Vehicle Requirements

In addition to the general requirements to operate a vehicle on the AOA at DSM, all vehicles which will operate in the movement area must be equipped with the following:

- A fully functional two-way ATC radio or be escorted by an authorized escort who is in constant contact with ATC via radio.
- An operational yellow/amber rotating or pulsing beacon visible from 360 degrees
- Appropriate vehicle markings
- A current copy of the Airport Diagram must be readily available to the driver

Proper two-way radio equipment with Ground Control Frequency 121.9 MHz is required of all vehicles authorized to operate on the movement area. Ground Control Frequency must always be monitored while the vehicle is within the movement area or safety areas.

TAXIWAYS

Taxiways are used to move aircraft to and from runways for takeoff and are always referenced with a letter designation (i.e. “A”, “B”, “C”). Taxiway designations are pronounced using the aviation phonetic alphabet (i.e. “**Alpha**”, “**Bravo**”, “**Charlie**”). There are taxiways that run parallel both runways to deliver aircraft to each end of a runway. At various points along the way, taxiway connectors are present to connect those taxiways with a runway.

Taxiways are identified by a single letter or single letter digit combination and include the following:

Identifier	Primary Use
Taxiway A	South Cargo Apron access to RWY 31
Taxiway B	Main Terminal Apron and Taxiway D
Taxiway D	Parallel for RWY 13/31
Taxiway D1, D2, D4, D5 and D6	Stub TWYs for RWY 13/31
Taxiway E, F	Main Terminal Apron to TWY D
Taxiway G	Main Terminal Apron to TWY P
Taxiway P	Parallel for RWY 5/23
Taxiway P1, P3, P4, P5, P6 and P7	Connector TWYs for RWY 5/23
Taxiway R	Partial parallel for RWY 5/23
Taxiway R1 and R3	Stub TWYs for RWY 5/23

Taxiway Markings

There are numerous ways to differentiate between a taxiway and a runway. Knowing these differences is of the utmost importance to avoiding accidents, incursions, and deviations. Taxiway markings are always painted **YELLOW**.

Non-Movement Area Boundary Marking

Prior to entering onto a taxiway, you must obtain a clearance (authorization) from the Air Traffic Control Tower. Remember, the point where a movement area meets a non-movement area is indicated by a non-movement area boundary marking. The *non-movement area boundary marking* consists of a single, solid yellow line and a single, dashed yellow line. It indicates the separation of the movement area from the non-movement area. **Permission to proceed must be obtained from the Tower, each time you cross from the non-movement side to the movement side.**



TWY Centerline Markings

The taxiway centerline is a continuous yellow marking that provides pilots with the location of the center of a taxiway. It ensures pilots of wing tip clearance on both sides of the aircraft. On certain taxiways the centerline doubles in width to indicate the designated Low-visibility / **SMGCS** route.



Enhanced Taxiway Centerline Markings



The taxiway enhanced centerline consists of a solid yellow centerline with dashed yellow lines on either side. The Enhanced Taxiway Centerline Marking indicates that a runway hold short marking is approaching. This marking starts 150 feet before the hold short marking. It is a warning indicator that the operator must soon stop to hold short of a runway.

Taxiway Edge Line Markings

Edge lines are painted to show the edges of a taxiway that are approved for aircraft weight and operation. The lines are broken up into two categories:

- Solid edge lines- indicate that an aircraft may NOT pass over these lines. The pavement on the other side of these lines is not of sufficient strength to support aircraft weight or integrity.
- Dashed or Broken edge lines- indicate that an aircraft may pass over these lines.



Taxiway-to-Taxiway Intermediate Holding Position Markings

On the movement area, an intermediate boundary marking indicate the location for pilots and drivers to hold short of another taxiway intersection. For example, at DSM there is an intermediate marking on TWY D & TWY B just before the intersection of both taxiways. ATC will direct a vehicle or aircraft hold short at this line to allow to another operator proceed on the intersecting taxiway.



On the non-movement area, the intermediate boundary marking designates the taxiway safety area for the terminal ramp taxi lane. This marking ensures wing-tip clearance for aircraft using the taxi lane. Drivers and personnel pushing back aircraft must take care not to push aircraft over this line as it could interfere with or block taxiing aircraft.

Taxiway Location Signs

Location signs inform pilots/drivers what taxiway they are currently on and are labeled with yellow letters with a black background. The example picture shows a location sign indicating to operators they are on taxiway "G". *Remember: Black Square, you're there .*



Taxiway Directional Signs

Directional signs inform the pilot/operator what direction to travel for that particular taxiway. For example, the picture shows a directional sign with the inscription <- D ->. That tells the operator that if they were to turn right or left at the next intersection they would be on taxiway "D".



Taxiway Location and Directional Signs are often combined in the same sign array. The sign to the left indicates that you are located on TWY P and TWY B crosses left and right.

Information Signs

Information signs inform the pilot/operator of special instructions or locations at various points on a taxiway. The picture is an example of an informational sign at DSM, it instructs pilots departing Runway 23 to avoid flying over a lake off the departure end of the runway.



Do Not Enter Signs

The Do Not Enter Sign does not apply to vehicle drivers, only to pilots. This sign is found where vehicle service roads lead onto taxiways. The Do Not Enter Sign is used to prevent pilots from taxiing onto roads where the pavement is not strong enough to support the weight of an aircraft or is generally unsafe for aircraft. If you are driving a vehicle, you can drive beyond this sign.



Taxiway Edge Lighting

The taxiway edge lighting outlines the edge of a taxiway and are blue in color. They are spaced at regular intervals to assist in notifying movement area operators of taxiway pavement limits in low light conditions.



Taxiway Centerline Lighting

The taxiway centerline lighting comes in two colors, amber & green. These lights compliment the taxiway centerline markings and are used during low visibility conditions to aid operators in maintaining the center of the taxiway. The lights are all green until you approach a runway intersection, at which time they alternate amber and green.



RUNWAYS

Drivers with non-movement area driving privileges are **prohibited** from operating on runways and taxiways, however, it is important to be able to recognize the runway environment so that you do not inadvertently enter a prohibited area.

These paved surfaces are the **most dangerous** surfaces on an airport and extreme caution must be used at all times when operating a vehicle on or near a runway. Aircraft travel at very high speeds when departing and landing on a runway making them especially hazardous.

Aircraft use runways for landing and taking off. DSM has two runways: 05/23, and 13/31. Runway designations are pronounced by individual numbers (i.e. “two-three” or “three-one”). Runways are always designated by numerical values indicating their magnetic heading rounded to the nearest ten with the trailing zero dropped (230° becomes RWY 23).

Each runway has two ends with numerical values 18 (or 180°) apart to accommodate aircraft coming from either direction depending on the winds. Aircraft need to land and take-off from the runway that lets their nose point as close as possible into the wind.

The ATCT is the only entity that regulates the flow of traffic on runways and taxiways so strict attention must be paid to their driving instructions and full compliance must be adhered to at all times by the operator.

Various signs, markings, and lighting are used in the runway area to assist pilots/operators in navigating during the day and at night. The following examples highlight these visual aids.

Runway Holding Position Markings

Painted yellow on the taxiway pavement and co-located with the holding position sign. This marking is an airport version of a stop sign. It is used to mark the entrance of a runway. As you approach the runway, you will see two solid yellow lines with two dashed lines. Prior to reaching the solid lines, it is imperative that you **STOP** and do not cross the line until you have clearance from ATC. Always look both ways before you cross any runway and use extreme caution.



Surface Painted Holding Position Sign

A surface painted holding position sign has white characters on a red background. Do not drive past this sign without a clearance from ATC. It provides an additional visual cue to alert pilots and vehicle operators of a holding position location and the associated runway designator. Always look both ways before you cross any runway and use extreme caution



Elevated Runway Guard Lights



Runway guard lights are used to alert operators that they are at a runway hold short line and need permission from the ATC to go any further. Runway guard lights have dual lights that are amber in color and are located each side of a taxiway connector. The lights flash back and forth to draw attention to the critical nature of the hold short line. **Caution: not all taxiways that intersect a runway have guard lights installed.**

Runway Signs

There are several signs that are located on, or just before a runway. Some of the signs are Directional Signs and provide the same information as the directional signs found on taxiways. Other signs provide pilots with information on how much distance remains from a specified point on the runway to the runway's end. The most important runway signs for driver training purposes, however, are the Runway Holding Position Signs.

Runway Holding Position Signs



Runway Holding Position Signs display the Runway's designator numbers in white, over a red background. They are located in line with the painted runway holding position markings discussed above. Like those markings, the runway holding position signs are used to alert drivers and pilots that they are approaching a runway.

It is critical that all drivers understand that they will need **an additional** clearance from the ATC Tower to proceed beyond a runway holding position marking or a runway holding position sign to access a runway.

Just because you have received permission to operate on a taxiway does not grant you permission to drive onto a runway. No vehicle operator shall cross a runway holding position marking unless permission from air traffic control has been expressly given to do so.



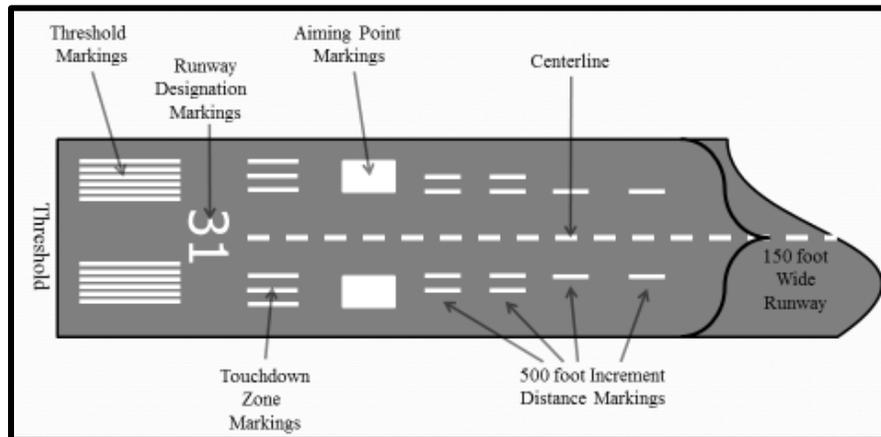
Distance Remaining Signs



These signs consist of a black background with white numbers that indicate the distance, in thousands of feet, remaining on a runway. They occur in 1000 ft. increments.

Runway Markings

Runway markings are painted white. There are several different markings found on runways that provide a pilot with visual cues and reference points during take-off and landings. For driver training purposes, it is not necessary that you know what all these markings mean, but that the only white markings on any movement area are located on a runway.



Runway Identifier

The runway identifier marking is a large painted number at the approach of a runway that gives pilots the magnetic heading for that runway. For example, the picture shows the identifier marking "31." That tells pilots they are approaching or taking off from Runway 31.



Runway Lighting

The airport runways are available for use 24 hours a day and are illuminated during darkness and low visibility. For driver training purposes, it is not necessary that you know what all these lights signify but you must know what light colors are only found on runways.

Runway Edge Lights

Runway edge lights are either white or amber in color. These colors can only be found on a runway, which helps distinguish them from other areas of the movement area. They are used at night and during inclement weather conditions to define the runway's borders.

Runway edge lights are white in color for all but the last 2,000 feet of the runway's length. For the last 2,000 feet, the color changes from white to amber. This change in color informs a runway user that they have 2,000 feet of runway left before reaching the end.



Threshold Identifier Lights

Threshold Identifier Lights are red and green in color and are located at both ends (thresholds) of a runway. They are used to inform landing and departing aircraft of the beginning or ending point of the runway. Threshold Identifier Lights will appear to be red or green, depending on which side of the lights you are viewing them from.



Touch Down Zone and Center Line Lighting

Runway 31 is equipped with in-pavement lighting that provides additional visual references for departing and landing aircraft. For driver training purposes, know that these lights are flush with the runway's surface and are white or red in color.

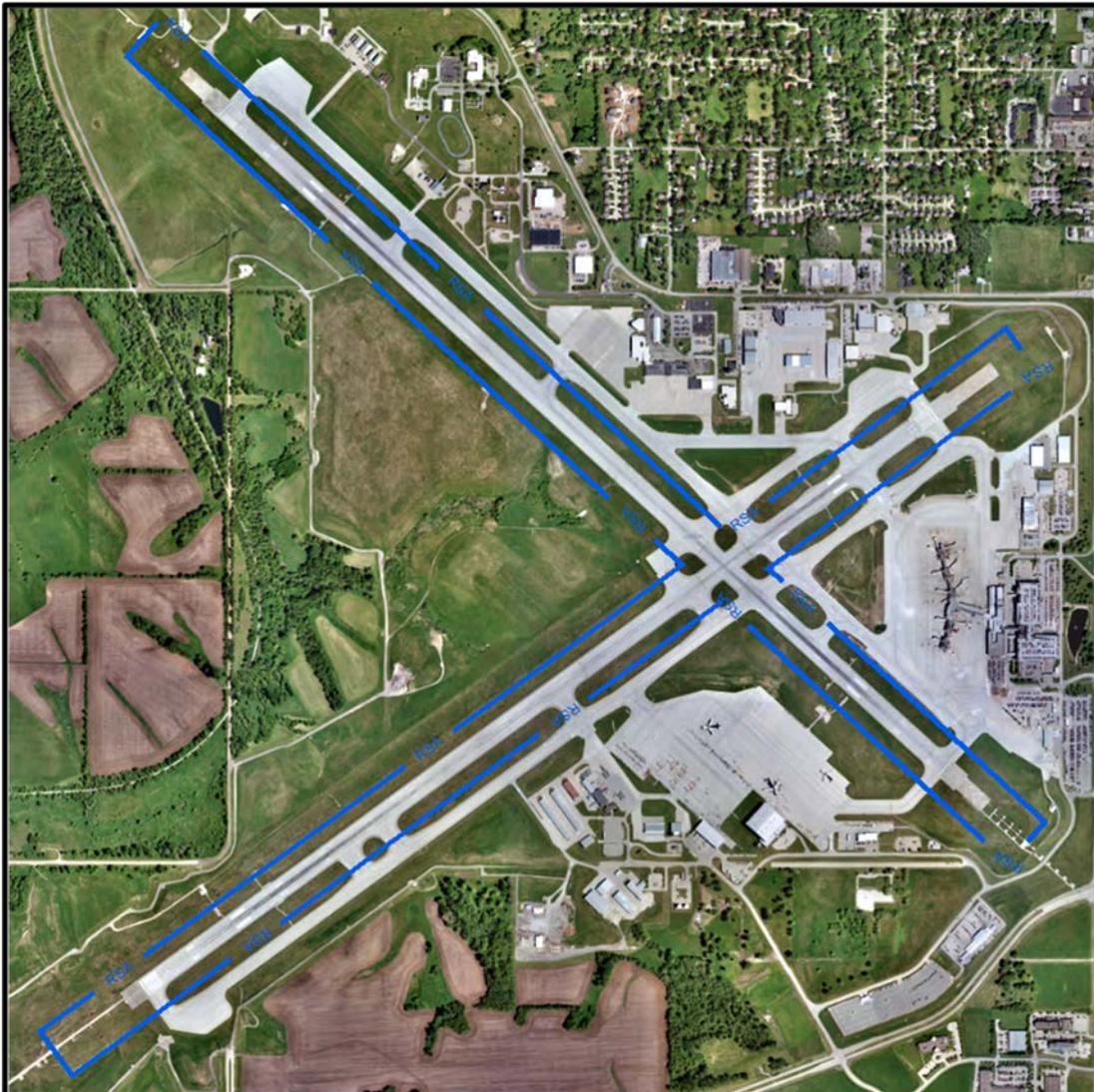


SAFETY AREAS

The following map depicts the safety areas of the runways and taxiways at DSM. A safety area is a defined area surrounding a runway or taxiway, which is maintained to reduce the risk of damage to aircraft in the event of an undershoot, overshoot, or excursions from a runway or taxiway.

The Safety Area is basically an “umbrella” of land including grass/non-paved areas extending out past the runway and taxiway on either side. It is treated like a runway and taxiway surface. Vehicle drivers must understand that the Runway Safety Area is part of the runway environment and they may not enter the safety area without clearance from ATC.

- RWY Safety Area- 250 ft. on either side of the centerline for a total of 500 ft. wide
- Extends 1000ft from the end of each runway.
- TWY Safety Area- 85.5 ft. on either side of the centerline total



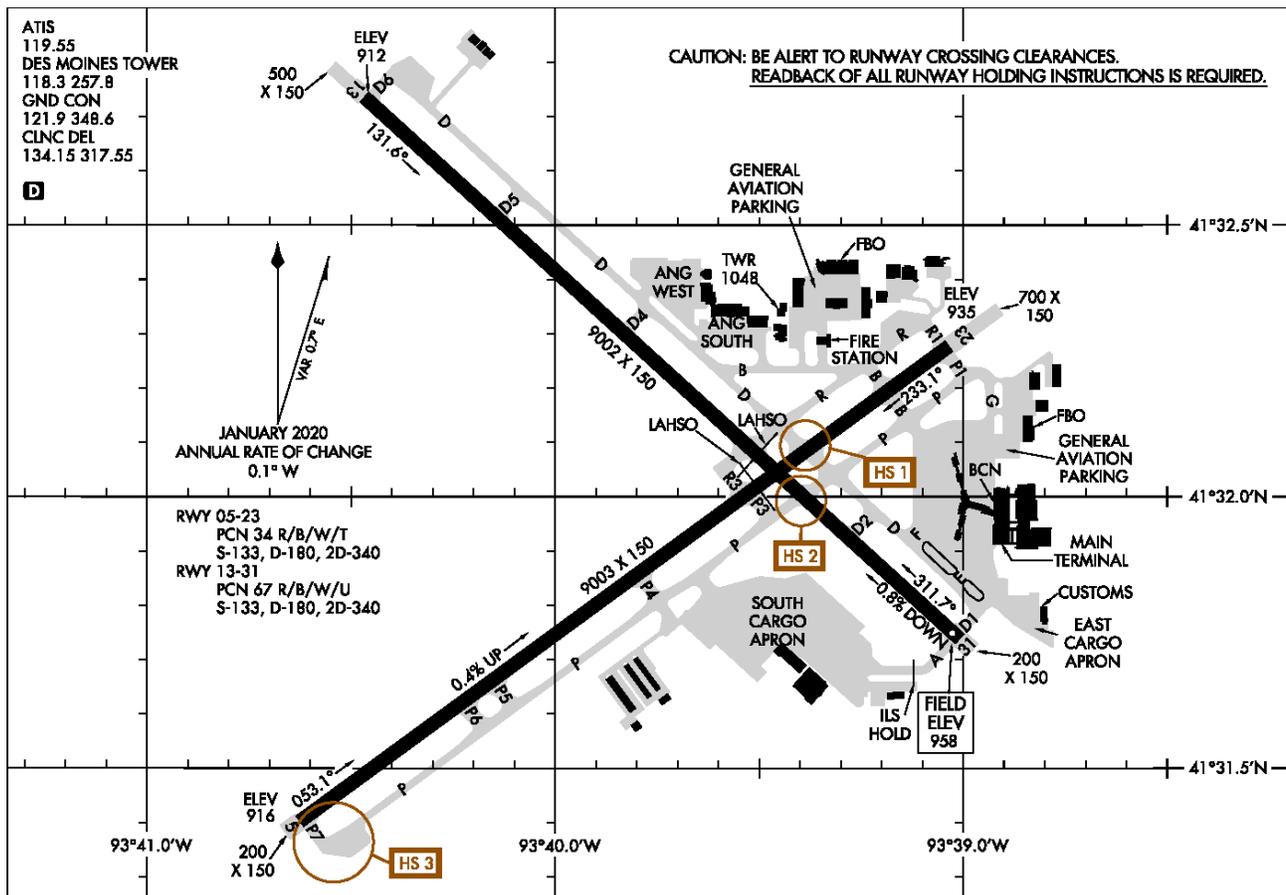
The operation of a vehicle in the Runway Safety Area (RSA) is generally restricted to vehicles that must be in the RSA either to maintain the safety area itself or to gain access to equipment fixed within the RSA due to function (i.e. runway lights, signage, navigation equipment, etc.). Vehicles cannot be in a Safety Area during aircraft operations. Vehicles should only access a runway safety area when it has been closed to aircraft.

It is imperative that all vehicle drivers with access to the movement area be aware of the physical boundary limits of the Runway Safety Area. Hold-short Signs and Markings are located at the edge of the Runway Safety Area and are a good visual indicator of the runway safety area boundary.

All personnel needing to access the RSA must coordinate with Airport Operations. Drivers of vehicles working in the RSA close to the runway, such as those involved in mowing operations, must be particularly cautious and listen carefully to radio instructions from the ATCT.

AIRPORT DIAGRAM

ATC will assume you are familiar with all runways, taxiways, and ramps at the Airport and may reference any area in an instruction. Ensure you are familiar with the airport by regularly reviewing the airport diagram. You should always have an airport diagram in the vehicle with you.



Hot Spots

A hot spot is defined as, “a location on an airport movement area with a history of, or potential risk of collision or runway incursion, and where heightened attention by [...] drivers is necessary.” Proper planning helps avoid confusion by eliminating last-minute questions and building familiarity with known problem areas.

The FAA designated hot spots at DSM are shown outlined in brown on the airfield diagram below.

- HS 1/2: Use caution and comply with the signs and markings when driving near this complex intersection.
- HS 3: ATC has limited visibility at the intersection of TWY P7 and RWY 5.

AIRPORT COMMUNICATIONS



One of the biggest differences between operating on the Movement Area versus the Non-Movement Area is the requirement to effectively communicate your intentions over a radio to the FAA operated **Air Traffic Control Tower (ATC Tower)**. Any vehicle operating on the movement area must be in contact with and under the control of ATC.

The Air Traffic Control Tower at DSM is open 24 hours a day, 7 days a week. This means that anyone requesting clearance to depart, land or even taxi at DSM must first receive permission from the Tower. Vehicles must likewise receive permission from ATC controllers prior to operating on the Movement Area.

ATC COMMUNICATION

Being able to communicate safely and efficiently over the radio is a key component to the overall safe operation at DSM. Vehicle radio communication with ATC is critical to prevent disastrous results. It is important that both the vehicle operator and the ATC controller have a clear, unambiguous understanding of intentions and instructions.

Informed, educated drivers will have a better understanding of what to expect, and what is expected of them when driving on the airfield. Communicating your location and intentions clearly and concisely are key to eliminating confusion and possible deviations and incursions on taxiways and runways.

The following information provides a general overview of the more common phrases spoken over the radio and lists the phonetic alphabet. All drivers possessing movement driver privileges must be familiar with all these terms and phrases.

Each vehicle must contain a fully functional two-way radio capable of communicating with DSM ATC frequencies: Ground Control- 121.9 & Tower- 118.3. If a vehicle does not have a radio, an escort may be provided by a properly equipped vehicle.



Contacting Air Traffic Control

Before a vehicle operator crosses over the Movement Area boundary marking, they must obtain permission from ATC. Using the appropriate ATC radio frequency, contact ATC by announcing either “Ground” (taxiways on 121.9) or “Tower” (runways on 118.3) and then your vehicle call sign, and your request when there is a break in radio traffic.

When requesting driving instructions, it must always follow the same pattern, who you are, where you are, and where you want to go.



Do not drive onto the movement area until ATC has given specific clearance to proceed. When the controller responds to your request you must repeat the critical information back. This will let the controller know that you understood the instructions given, if there is any discrepancy in your read back, they can correct you before you proceed.

Vehicle operators must receive explicit instructions to access any runway. This applies to both inactive and closed runways. Instructions to cross multiple runways will not be issued. Vehicles must have crossed the previous runway before another runway crossing is issued. **Never cross a hold position marking without explicit ATC instructions to do so.**

Remember, if the controller gives any “hold short” instructions it is imperative that you read back all hold-short instructions and that you stop short of those surfaces without exception.

All vehicles operating within the movement area of the airport must maintain a working radio, capable of transmitting to, and receiving from:

- **GROUND CONTROL** **121.9**
(When driving on taxiways)
- **TOWER** **118.3**
(For driving on runways.
When vehicle is equipped
with this capability)

Use Ground Frequency, (121.9) when driving in the movement area.

Use Tower Frequency, (118.3) when driving on, or within the safety area of runways, (if the vehicle is equipped with this frequency).



The following example describes a standard exchange between a vehicle operator (Airport-12) and ATC (Ground):

Airport-12: “Des Moines Ground, Airport-12 is on the terminal ramp at taxiway bravo, requesting to drive taxiway bravo to the Elliott ramp.”

GROUND: “Airport-12, Des Moines Ground, proceed on taxiway bravo, **hold short** of runway 23 on bravo.”

Airport-12: “Airport-12, proceed on taxiway bravo, **hold short** of runway 23 on bravo.”

Proceed to runway 23 on taxiway B and hold short of the runway at the hold short marking, after a brief time ATC will continue with instructions...

GROUND: “Airport-12, cross runway 23 and proceed on taxiway bravo to the Elliott ramp”

Airport-12: “Airport-12 crossing runway 23 on bravo to the Elliott ramp”

When you have crossed the runway announce that you are off when you have passed over the hold short marking on the other side...

Airport-12: “Des Moines Ground, Airport-12 is off of runway 23”

GROUND: “Airport-12, roger”

*When you have crossed the movement boundary marking, announce to ATC that you are **off** the movement area.*

Airport-12: “Des Moines Ground, Airport-12 is off the movement area at Elliott”

GROUND: “Airport-12, roger”

Radio Communication Essentials

- Know your intentions prior to speaking on the radio. You may want to say it out loud to yourself first to get it right. Speak in a normal, conversational tone and enunciate your words.
- Before transmitting, wait for several seconds. Listen for other radio traffic to avoid causing interference on the frequency. Remember that ATC is issuing important and time-sensitive instructions to aircraft on the same frequency.
- Use plain language to ensure you are understood. If you can't remember the exact aviation phrase, it is ok to use plain English to describe your request. Remember, the controllers are people too. However, you should make every effort to use standard phrases. ATC uses very exact wording to ensure clear communications.

- If you are ever unsure what the controller said, or if you don't understand an instruction, ask the controller to repeat it with, "say again".
- Never assume that ATC gave you the correct instruction. If ATC gives you instructions that seem confusing or unsafe, clarify the instructions before proceeding. NEVER follow an unsafe instruction. When in doubt- ASK!
- Read back all runway crossing and hold short instructions. If you do not, ATC will remind you by repeating the instruction. This is a hint that you didn't properly read back their instructions.
- If you do not get an immediate response from ATC, wait before calling ATCT again. Depending on traffic load, the controller may not be able to immediately respond to you.
- Look both ways! Check for traffic before entering any runway or taxiway. ALL Runway crossings require a clearance from the ATCT, for each runway crossing, regardless of the runway status, (open or closed).
- Advise the ATC whenever you are off of a runway, runway safety area, taxiway, or clear of the Movement Area (back at a ramp).

Aviation Phonetic Alphabet

When communicating with the Control Tower, use the Aviation Alphabet and phraseology to describe the vehicle's location or position, and for specific requests for access to taxiways or runways.

Because some letters sound similar, the following words are used to reduce confusion. For example, Taxiway 'B' would be referred to as Taxiway 'Bravo'. Vehicle operators must memorize this phonetic alphabet and use it when communicating with ATC. A chart of the phonetic alphabet is included at the end of this manual.

AVIATION / ATC TERMINOLOGY

ACKNOWLEDGE	Let me know you have received and understand this message.
ADVISE INTENTIONS	Tell me what you plan to do.
AFFIRMATIVE	Yes
CONFIRM	My version is... Is that correct?
CORRECTION	An error has been made. The correct version is...
EXPEDITE / WITHOUT DELAY	With a sense of urgency, comply with instructions rapidly.
GO AHEAD	Controllers use this phrase to mean "state your request Note: Use extreme caution with the phrase "Go Ahead". It NEVER means "proceed".
HOLD	Stop where you are
HOLD SHORT OF	Proceed to, but hold short of a specific point.

IMMEDIATELY	Used by ATC when compliance with such action is required to avoid an imminent situation.
NEGATIVE	No, or permission not granted.
PROCEED	You are authorized to begin or continue moving.
READ BACK	Repeat my message back to me.
ROGER	I have received all of your last transmission (Not a yes/no answer)
SAY AGAIN	Repeat what was said
STAND-BY	Wait, I will get back to you. (Stand-by is not an approval or denial)
UNABLE	I can't do it
VERIFY	Request confirmation of information
WILCO	I have received, understood and will comply with your message

RADIO MALFUNCTION

In the event that your radio malfunctions and communication with ATC is cut off, there are several steps you must take.

1. If you are on a runway, drive out of the runway safety area onto the grass immediately. If you are on a taxiway, drive off of the taxiway safety area into the grass immediately.
2. Point your vehicle towards the ATCT and flash your headlights. ATC will contact an escort to escort you off the movement area. DSM does not provide light-gun signals to vehicles on the Movement Area.
3. If you have a cell phone, call the **Airport Operations Center** at **(515) 256-5000** and explain the situation.

DO NOT CONTINUE TO DRIVE ON THE MOVEMENT AREA. WAIT FOR AN ESCORT OFF OF THE AIRFIELD!!

SPECIAL CONSIDERATIONS

NIGHTTIME & LOW VISIBILITY CONDITIONS

Whenever driving at night or during inclement weather such as snow, rain, icy conditions, and fog, allow extra travel time and drive slower than normal. Drivers must observe a **5 mph** speed limit (walking speed) in these situations. (SEC 3, 5-3 d)

Exercise extreme caution during these conditions and keep driving to a minimum. Only operate equipment if it is necessary to continued airport operations.



Under winter conditions, lights, signs and markings may be obscured by snow. Braking action will be greatly diminished, and all surfaces will be slippery due to the presence of ice, snow, slush and even de-icing fluids. Snow removal equipment may be operating in low visibility conditions and may not see your vehicle. Use extreme caution and remember that there are extra risks present.

DMAA will initialize the SMGCS plan during low visibility conditions. During SMGCS, non-movement drivers must keep driving to a minimum and stay within established drive lanes unless it is necessary for aircraft operations.

WILDLIFE



Wildlife poses a significant threat to aviation at the Des Moines International Airport. The Airport is surrounded by wetlands, wooded areas, and farmland. These areas, in addition to the large green areas located on the airport, are a major attractant to various species of wildlife for food and shelter. Deer, coyotes, foxes, geese, hawks, and rabbits are common to the airport.

Wildlife strikes cause millions of dollars in damage each year to aircraft in the United States. Such incidents can cause severe injury to airport users, and even death. If you see animals on the AOA, immediately contact **Airport Operations Center** at **(515) 256-5000** so that these hazards can be addressed to ensure the safety of aircraft operations at DSM.

INSTRUMENT LANDING SYSTEM – ILS

An **Instrument Landing System (ILS)** is a radio system that provides guidance to aircraft, allowing the aircraft to land during periods of low visibility. When an ILS is in use, vehicles operating within an “ILS Critical Area” may disrupt the radio signals. This disruption of signal could cause an aircraft’s navigational system to become unreliable.

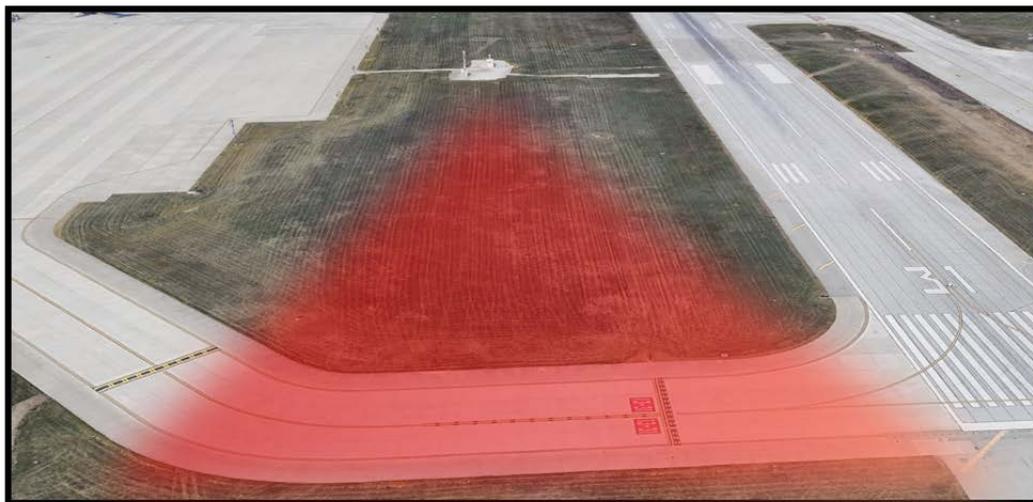


ILS Holding Position markings are painted on the pavement as a yellow horizontal ladder. The marking indicates the holding position a vehicle/aircraft must use to remain clear of the ILS Critical Area, so no interference is caused to the ILS signal.



When ILS conditions are in effect, ATC will ask you to hold here; do not pass over the ILS critical area marking until directed by ATC. There is one ILS hold line at DSM on Taxiway A which is depicted below.

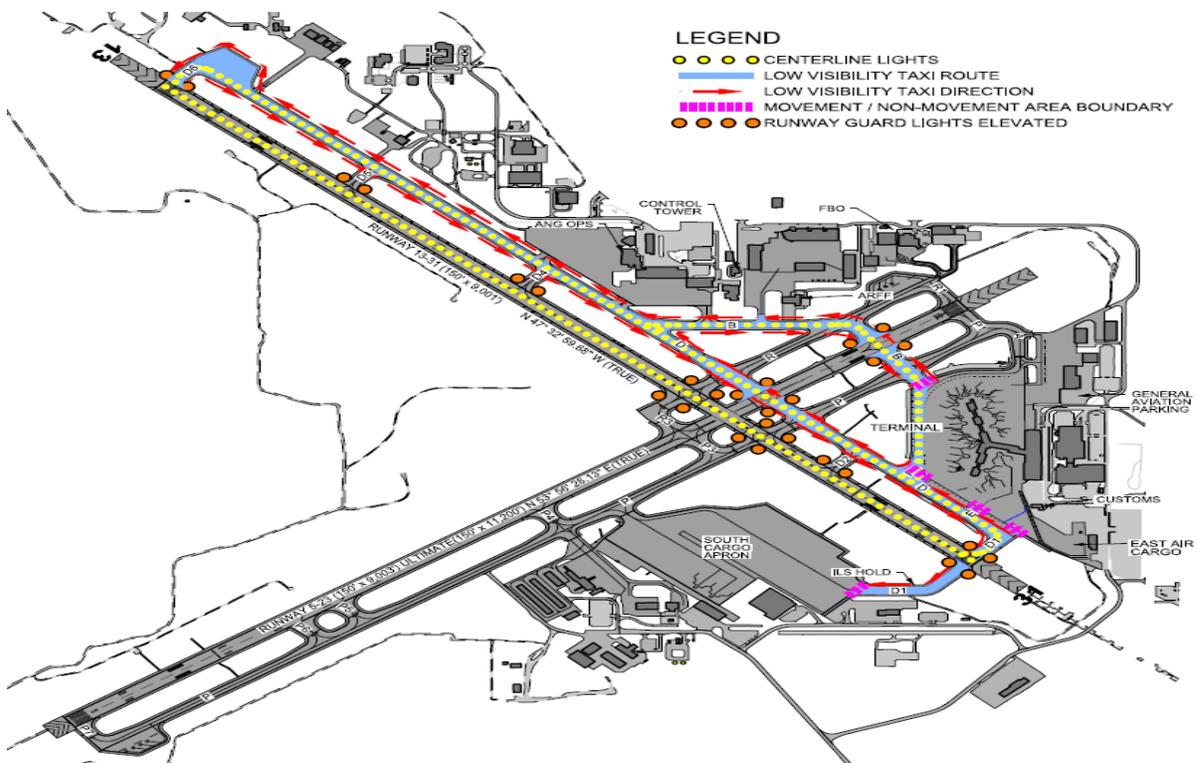
It is imperative to hold short of all ILS Critical Areas during low visibility conditions (less than 3 miles visibility). Contact ATC if you are uncertain if it is permissible to enter the area. During periods of low visibility, it is important to treat this as you would any other “hold short” marking. Do not proceed past ILS Critical Areas until instructed by ATC. The red shape is a radio signal given off from a glideslope antenna.



SURFACE MOVEMENT GUIDANCE CONTROL SYSTEM - SMGCS

In order to enhance taxiing capabilities in low visibility conditions and reduce the potential for runway incursions, improvements have been made in signage, lighting, and markings at DSM. The Surface Movement Guidance Control System, more commonly known as SMGCS (acronym pronounced "SMIGS") is a plan to facilitate the safe movement of aircraft on the airport during periods of low visibility. When visibility on the airfield falls below 1200 feet, airport operations will close all movement area surfaces except for:

- ➔ Runway 31
- ➔ Taxiways A, B, D, F, D1, & D6
- ➔ Terminal, Cargo, and GA Ramps



Airport users will be notified when SMGCS operations are in effect. During SMGCS, the movement area is limited to essential personnel (FAA, ARFF, and Airport Ops) unless specific approval has been given by DMAA. All tenants should limit non-essential ramp operations and use extreme caution when driving/walking on the ramp areas (non-movement). Airport tenants will be notified when visibility has risen to a point when SMGCS operations are no longer in effect.



CONSTRUCTION

Extra vigilance is essential when driving on an airport during construction. Normal driving routes may be altered, and runway/taxiways may be closed, requiring heightened awareness by pilots and drivers.

Persons who are authorized to operate construction equipment on movement areas at DSM will be required to complete the Airfield Driver Training Program prior to commencing construction activity. Only persons specifically trained and authorized shall be allowed to operate construction equipment on or across any active taxiway or runway at the airport.



Authorized vehicles and equipment must be escorted across or on to any movement area by an authorized escort motor vehicle equipped with a two-way radio in contact with the Air Traffic Control Tower.

No motor vehicle or other construction equipment under the supervision of a construction contractor should be allowed to remain at the work site at the end of the working day, unless specifically authorized by the Authority.

When authorized to remain at the airport, equipment should not be parked overnight in any position or location where it constitutes an actual or potential hazard to aircraft or motor vehicles at the airport. Airport Operations will designate parking locations in such instances.

EQUIPMENT FAILURE

If a vehicle breakdown occurs on the movement area, DSM ATC and Airport Operations must be notified immediately. Do not abandon your vehicle on the movement area. If it is safe to do so, remain with the vehicle until help arrives. Should it be necessary to evacuate your vehicle due to an unsafe condition, inform the ground controller and remain clear of all taxiways and runways.

DEFINITIONS

Air Operations Area- Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft, in addition to its associated runway, taxiways, ramps, or aprons. At DSM this refers to the area within the secured and fenced-in area of the airport.

Access Road- A road designed for DMAA employees, FAA, emergency vehicles to drive which are off limits to airport employees, contractors, and tenants.

Accident- a collision between one aircraft or vehicle and another aircraft, vehicle, person or object which results in property damage, personal injury, or death.

Aircraft incident- an occurrence, other than an accident, associated with the operation of an aircraft that affects or could affect the safety of operations.

Airside- All land that resides inside the barbed perimeter fence, includes the AOA, movement, non-movement, and secured areas.

Apron- (also called a Ramp) defined area on an airport intended to accommodate the parking and servicing of aircraft, the loading and unloading of passengers and cargo, refueling, maintenance and other servicing options. Also known as a Ramp

ATCT (Air Traffic Control Tower) - A service provided by ground-based controllers who direct aircraft on the ground and though controlled airspace.

ARFF- Aircraft Rescue Fire Fighter, full time fire rescue crew that is stationed on the airfield at DSM.

Designated Roadway / Motor Vehicle Lanes- Any portion of the AOA marked by two parallel white lines designed primarily for the safe and orderly movement of vehicles

DMAA- Des Moines Airport Authority, controls and regulates all land, buildings, and services at the airport.

Expedite- used by ATC when prompt compliance is required to avoid the development of an imminent situation.

FAA- Federal Aviation Administration

FBO- (Fixed Base Operator) a business that provides a range of basic services to general aviation aircraft. Services may include the sale and dispensing of fuel, line services, aircraft parking and tie

down, pilot and passenger facilities, airframe and power plant maintenance, pilot instruction, aircraft sales and rentals.

FOD- Foreign Object Debris, anything that can cause damage to an aircraft engine, tire, hull, etc. Includes items such as trash, rocks, nails, cans, etc.

Gate- An area of the AOA specifically designated and made available for the sole use of parking by an Aircraft.

General Aviation (GA) - All civil aviation operations other than scheduled air services and non-scheduled air transport operations for service or for hire.

GSE- Ground Support Equipment, all vehicles utilized for the service of an aircraft or aircraft operation. Examples include: Tugs, carts, belt loaders, lavatory service carts, fuel trucks, de-icing equipment.

Instrument Landing System (ILS) - a navigational aid composed of a localizer antenna and a glideslope antenna, which provides vertical and horizontal guidance to aircraft approaching the runway.

ILS Critical Area- an area provided in order to protect the signals of a localizer and glideslope.

Incursion- any occurrence at an airport involving an aircraft, vehicle, person, or object on the ground that creates or may create a collision hazard or results in loss of separation with an aircraft taking off or intending to take off, landing or intending to land.

Jet Blast- rapid air movement produced by the jet engines of aircraft, particularly on or before take-off.

Jet Bridge- A device used to enplane and deplane passengers from the aircraft door to the terminal.

LEO- Law Enforcement Officer, DSM utilizes the services of the Des Moines Police Department Airport Unit

Mobile Fueller- a vehicle owned/operated by an authorized fuel agent, used to dispense Jet A or 100 LL fuel to aircraft.

Movement Area- The part of an airport to be used for the takeoff, landing, and taxiing of aircraft. Specific approval for entry onto the movement area must be obtained from Air Traffic Control.

Non-Movement Area- taxi lanes, aprons, and other areas not under the control of the air traffic control tower.

Operator- any person who is in actual physical control of an aircraft or motor vehicle.

Pushback- A procedure where aircraft back up under the power of another vehicle.

Ramp Areas (Aprons)- Portions of the airport designated for the loading and unloading of passengers or cargo on and off aircraft.

Restricted Areas- areas of the airport posted to prohibit or limit entry or access by the general public.

Right of way- the right of one operating vehicle/aircraft to proceed over all others.

Runway- a stretch of pavement in the movement area designed for the landing and takeoff of aircraft which is controlled by the air traffic control tower.

Runway Safety Area- the surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an aircraft unintentionally leaving the paved surface of the runway.

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 runway or taxiway. This area is controlled by the air traffic control tower.

SMGCS (Surface Movement Guidance Control System) - a system providing routing, guidance and surveillance for the control of aircraft and vehicles in order to maintain the declared surface movement rate under all weather conditions within the aerodrome visibility operational level while maintaining the required level of safety.

Taxi – the movement of an aircraft under its own power on the surface of an airport.

Taxiways – A defined path used by aircraft to travel between the ramps and the runways. Taxiways have yellow paint markings and blue edge lights

Terminal Ramp- The apron/ramp area that is designated for air carrier passenger operations around the Terminal. Only authorized personnel with SIDA clearance may operate on this ramp.

Valid State Driver's License- Each driver must have obtained and must maintain, in good standing, a valid state Driver's License or a Limited State Driver's License that permits such driving at work.

PHONETIC ALPHABET

A	Alpha	AL-FAH	N	November	NO-VEM-BER
B	Bravo	BRAH-VOH	O	Oscar	OSS-KAH
C	Charlie	CHAR-LEE	P	Papa	PAH-PAH
D	Delta	DELL-TAH	Q	Quebec	KEH-BECK
E	Echo	ECK-OH	R	Romeo	ROW-ME-OH
F	Foxtrot	FOKS-TROT	S	Sierra	SEE-AIR-RAH
G	Golf	GOLF	T	Tango	TANG-GO
H	Hotel	HOH-TEL	U	Uniform	YOU-NEE-FORM
I	India	IN-DEE-AH	V	Victor	VIK-TEH
J	Juliett	JEW-LEE-ETT	W	Whiskey	WISS-KEY
K	Kilo	KEY-LOH	X	X-ray	ECKS-RAY
L	Lima	LEE-MAH	Y	Yankee	YANG-KEY
M	Mike	MIKE	Z	Zulu	ZOO-LOO

1	One	WUN	6	Six	SIX
2	Two	TOO	7	Seven	SEV-EN
3	Three	TREE	8	Eight	AIT
4	Four	FOW-ER	9	Nine	NIN-ER
5	Five	FIFE	0	Zero	ZEE-RO