Section XI - Safety

MoDOT's snow removal goal is that all major routes are to be restored to a wet or dry condition as soon as possible after the end of the storm.

An important part of "clear" is providing the safest road conditions possible. Safety, for the traveling public and department personnel, is to be given primary consideration.

MoDOT vehicles are equipped with warning lights to improve safety. Warning lights increase the visibility of our vehicles during inclement weather and should help in avoiding traffic accidents.

Snow and ice removal operations must be carried out in a manner that provides a safe environment for the public, as well as for MoDOT personnel. When performing snow and ice removal operations, these guidelines must be followed:

Your first job is to think "**safety**" for you and the public.

1. Always be aware of your surroundings.
2. Obey all traffic laws.
3. Avoid making sudden moves.
4. Avoid pushing snow over bridge and overpass rails.
5. Avoid pushing/throwing snow onto sidewalks.
6. Be aware of discharged material.
7. Show courtesy toward other drivers and pedestrians.

✳ Operator safety

1. Always wear your seat belt.
2. Wear proper safety glasses and vest, according to PPE's Rules and Regulations.
3. Clean headlights, brake lights, turn signals, wiper blades, and windows frequently.
4. Keep supervisors informed of changing conditions.
5. Don't become a hazard! Make sure that you and your equipment continue to operate safely. This means take breaks when needed!!!!
6. Discuss routes with other operators

✳ Warning lights

Warning lights **shall** be activated while performing snow removal operations on the roadway. Warning lights consist of one or more of the following: rotating lights, bubbles or strobes. It is recommended when using strobe lights in nighttime operations, that the strobes be dimmed if the lights are fitted with a dimmer switch.

Note: *Whenever a MoDOT truck is fitted with a plow, operators should always activate the warning lights when on the roadway.*

On board safety equipment and PPE checklist:

	Flares and/or safety triangles
	Fire extinguisher
	First aid kit
	Ice scraper
	Flashlight
	Pulling chain
	Scoop shovel
	Various tools (i.e. hammer, pry bar, pliers, etc.)
	Tire chains
	Extra washer fluid
	Retroreflective vest
	Gloves
	Stop/slow paddle
	Warm clothing
	"In case of an accident" procedure pamphlet

Note: *All items in the truck are to be secured in a tool box or by some other means. Loose items can be a safety hazard, in the event of an accident.*

Driver Fatigue

Driving is a complex mental and physical task that requires sustained levels of concentration and skill to maintain maximum performance. No responsible driver can afford to be fatigued.

Driver fatigue is a major safety hazard for all drivers. Fatigue crashes tend to be severe with little or no braking and avoidance action.

A fatigue driver can experience

- ✳ Poor judgement
- ✳ Slower reaction times
- ✳ Decreased driving skills

Affects of Fatigue (Some affects of fatigue a driver may encounter)

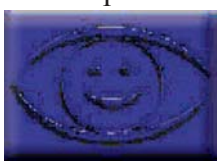
- ✳ Not able to respond quickly to an emergency.
- ✳ May not be able to spot dangers.
- ✳ Trouble performing simple task such as changing gears.
- ✳ May drift out of your lane.
- ✳ Trouble maintaining a constant speed.
- ✳ Poor memory - suddenly become aware of driving a number of miles without knowing it.

Drowsy Driving

Drivers may become fatigued to the point they become drowsy and may actually drift in and out of sleep without knowing it. As a driver you can become drowsy and drift into (micro-sleep) which is a brief nap lasting up to 3 to 5 seconds. A common result of drowsy driving is running off the road accident. No attempt is made to control the vehicle and the results are usually very severe crashes.

Staying Alert

Get enough sleep - most people require 7-8 hours of sleep in 24 hours. Avoid medications, most medications can make you sleepy, sometimes it's better to suffer from a cold then the effects of the medicine.



Take breaks - short breaks can keep you alert. Take a break BEFORE you become drowsy. Get out, walk around and inspect your vehicle.

Braking and Reaction Time

It important to adjust speeds to all traffic, road, and weather conditions. Allow plenty of stopping distance when following other vehicles

To stop a vehicle you need to SEE-THINK-DO

- ✳ See - A hazard
- ✳ Think - Decide to stop
- ✳ Do - Place your foot on the brake pedal until you stop

Factors of Total Stopping Distance

(At 55 mph a commercial vehicle will travel 81 feet/second in dry conditions).

- ✳ Driver's Perception Time - 3/4 of a second (61 feet). The time it takes for you to identify there is a hazard
- ✳ Reaction Time - 3/4 of a second (61 feet). The time it takes for you to react to a hazard and application of the brakes
- ✳ Brake Lag - 1/2 of a second (32 feet). The time it takes for air to flow through the brake lines and apply the brakes
- ✳ Braking Distance - (390 feet). Is the amount of distance traveled once the brakes are applied and effective
- ✳ Total Stopping Distance - distance traveled from the perception of a hazard to the time the vehicle stops (at 55 miles per hour the total stopping distance will be 544 feet)

Perception		Reaction		Brake Lag		Braking Distance	=	Total stopping Distance
61 Ft.	+	61 Ft.	+	32 Ft.	+	390 Ft.		544 Ft.

Precautions or Hazards

Bridge Abutments

Abutments are a common snow removal hazard when the ends of a bridge are covered by windrows. When clearing bridge surfaces, operators should take it slow to avoid equipment damage.

Railroad Crossings

Operators shall raise their snowplow or grader blade to an adequate clearance level and turn the spreader off before crossing railroad tracks. Operators should notify railroad authorities when a crossing cannot be cleared immediately.

Note: *Do not spread salt or other chemicals across the railroad tracks because salt is a conductor of electricity and can cause crossing guard arms to come down and stay down.*

Surface Changes

Operators should also take notice of surface changes (i.e. asphalt to concrete) during dry runs. A change in surface type can leave a "lip" that can damage a plow during snow removal operations.

Note: *Differences in surface changes can also be affected differently in regards to freezing, so keep an eye on your road surface temperature gauge.*

Overpasses/Bridges

Operators **shall** avoid pushing snow over railings and guardrails onto other vehicles, roads, or railways. Low overheads should also be a concern when operating snow equipment, especially when using tailgate spreaders where you must raise the truck bed.

Box Culverts

Raised box culverts can damage snow removal equipment. Locate box culverts prior to beginning snow removal operations.

Other Emergency Equipment

(i.e. *Ambulances, tow trucks, police, etc.)*

Operators should be aware of other emergency vehicles, make routes passable for these vehicles, and allow them to pass when it can be done safely.

Bridge Expansion Joints

Operators should slow their vehicle as well as raise the plow to clear these expansion joints as the joints can cause damage to the plow, blade, and/or vehicle.

Manhole Covers

Operators should note the location of any manhole covers, prior to inclement weather. This will help you avoid hitting them with the plow, when they are snow covered.

Islands and Curbs

Operators should locate these areas during dry runs to avoid hitting them when they are covered by snow.

Lights and Reflectors

Lights and reflectors shall be checked repeatedly during a shift to ensure they are in good working order and visible to all traffic.

Stopping on Roadways

Equipment should not be stopped on the roadway surface to engage or inspect spreaders, check lights, or talk to another operator. Equipment should be pulled off the road, to a safe location, when performing these duties.

Slow Moving Equipment

Slow moving equipment **shall** stop occasionally, at a safe location, to allow traffic to pass.

Abandoned Vehicles

During a winter storm with district approval you may have an abandoned vehicle removed if it is creating a traffic hazard because of its position in relation to the state highway. Preferably, the Missouri State Highway Patrol will take the lead role in these situations.

Power Lines

The location of low or sagging power lines should be communicated to all operators. Power lines are of considerable importance due to personal injury risk and loss of power to surrounding residents.