



Steering clear of crashes

New Clear Roads training materials provide snowplow operators with strategies to increase their vehicles' visibility and avoid being struck in the line of duty

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When a snowplow is involved in a crash—even one that’s relatively minor—it can have major repercussions for a transportation agency.

Rear-end collisions and crashes while turning are common and are not usually the plow operator’s fault, but that knowledge does little to comfort maintenance managers who now face the challenge of clearing ice and snow with fewer resources.

“Every year, we have 3 to 5 percent of our trucks taken out of service because they’ve been rear-ended,” says Doug McBroom, operations manager for the Montana Department of Transportation. “It’s a huge problem because once someone with a commercial driver’s license is in a crash, it triggers a series of things that have to happen before they can legally drive again. On top of

that, the truck is out of commission while being evaluated by our mechanics, who are in turn taken away from their usual work.”

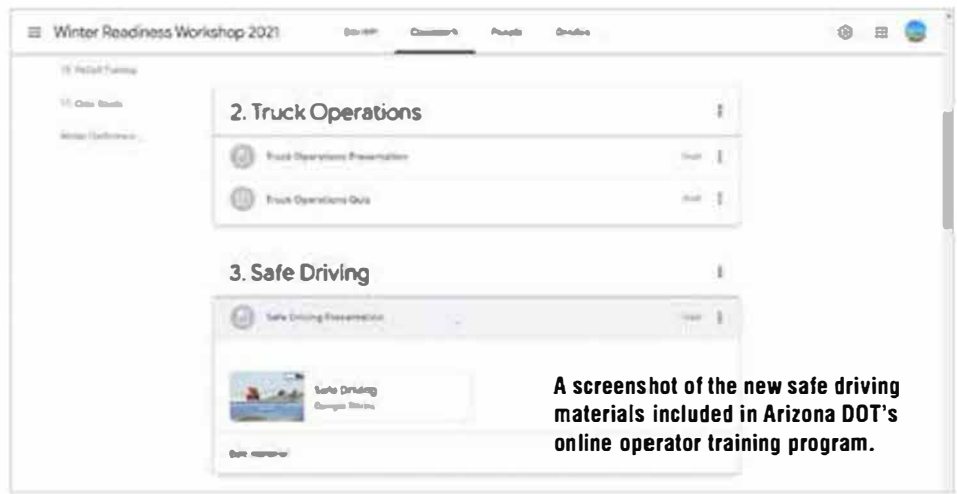
To reduce these types of crashes and make the roads safer for everyone, the Clear Roads winter maintenance consortium (www.clearroads.org) engaged a team of researchers from Virginia Tech Transportation Institute’s Center for Truck and Bus Safety. The team was tasked with identifying the most common reasons that vehicles strike snowplows and recommending steps that plow operators can take to lessen their odds of being hit.

Prioritizing safe roads

The research team collected data from more than a thousand documented crashes involving snowplows and interviewed plow operators and winter maintenance managers from across



Wing plows help operators clear a wider path but can be struck by other drivers who may not see them (photo courtesy of Iowa DOT).



A screenshot of the new safe driving materials included in Arizona DOT's online operator training program.



Video simulations from the Clear Roads Defensive Driving training module help operators visualize common crash scenarios and driving behaviors that can either lead to other vehicles striking the plow (above) or reduce the opportunity for collisions.

the country. The information revealed the five most common preventable crash types: fixed-object strikes; run-off-road crashes; backing crashes; wing-plow strikes; and rear-end strikes by another vehicle.

The team then compiled specific recommendations for snowplow operators to help them anticipate and avoid crashes.

Driving safely

While most agencies discuss safe driving techniques during operator training courses, the practices compiled through the Clear Roads study can serve as a good reminder for even experienced operators. These strategies include:

- **Learn the route.** Driving the route ahead of winter weather can help operators learn what to expect, while marking potential hazards can help identify risky areas and

objects that may become hidden under snow.

- **Watch for hazards.** Be constantly vigilant for potential dangers directly ahead and further down the road. A visual scan for hidden and visible dangers, including a check of all mirrors at least every 8 to 10 seconds, can give operators more time to react and prevent crashes.
- **Keep fatigue in check.** Most operators report feeling tired during their shift. Take a break to walk and stretch at least every two hours.

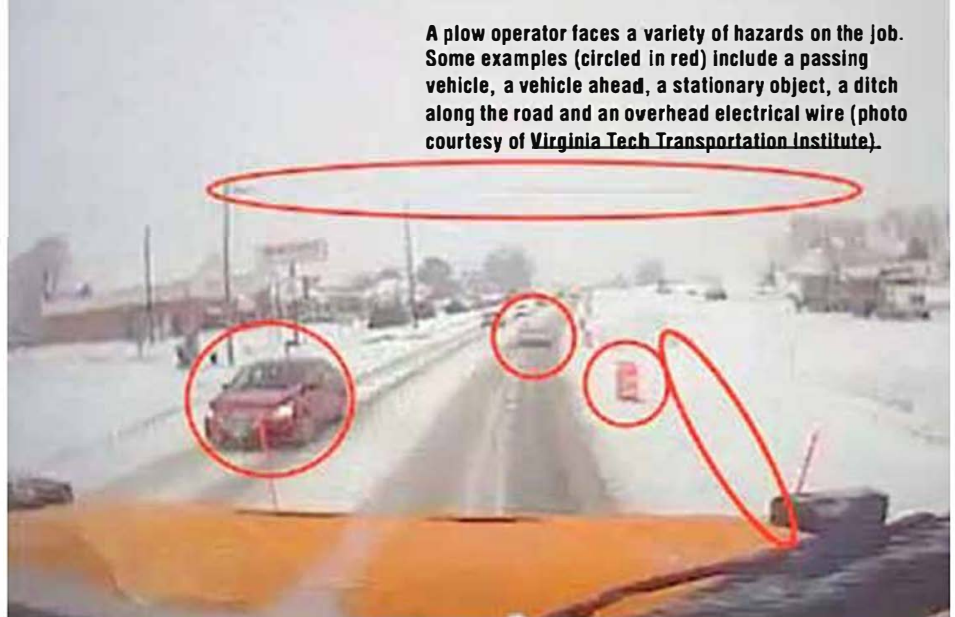
Driving defensively

Strategies for proactively avoiding collisions are less commonly included in operator training programs. The recommendations developed by the Clear Roads researchers provide intuitive but

effective strategies to improve safety for all road users.

- **Maintain visibility.** Adverse weather and nighttime conditions can make it hard for others to see the plow. Periodically stopping to check that lights are working and clear of snow and ice can ensure that the plow is conspicuous to other drivers.
- **Use caution.** Generally, driving more slowly and patiently can reduce the odds of a collision. Let traffic pass and be sure to signal well in advance of lane changes, merges or turns.
- **Reduce the snow cloud.** As the plow travels, it can leave a trail of airborne snow in its wake. Slower speeds reduce this effect and can make it easier for other drivers to see the road ahead.

- **Avoid moving in reverse.** Backing up can be dangerous and should be avoided whenever possible. If backing is necessary, get help from a second person, or get out and check all around the plow for obstacles.
- **Keep calm.** If other drivers become impatient, it's important to remain cool and not engage.



A plow operator faces a variety of hazards on the job. Some examples (circled in red) include a passing vehicle, a vehicle ahead, a stationary object, a ditch along the road and an overhead electrical wire (photo courtesy of Virginia Tech Transportation Institute).

"By helping operators understand the potential dangers and what they can do to minimize them, we're improving safety for everyone."



Marking potential hazards ahead of a snowfall can help snowplow operators know where the road's shoulder is (photo courtesy of Clear Roads).

Passing the torch

To help transportation agencies share this guidance with their plow operators, the researchers created modular training courses for safe and defensive driving that agencies can customize to fit their needs. Both courses integrate with Clear Roads' popular Snowplow Operator and Supervisor Training modules, providing presentation slides, instructor guidance and exam materials as well as videos and animated simulations to demonstrate key concepts. All materials can be downloaded for free from the Clear Roads website.

The training materials were completed and released ahead of the 2020 winter season. While initially intended to be used in a live classroom setting, they proved to be an invaluable source of quality digital content as the COVID-19 pandemic forced many agencies to quickly pivot and take their educational offerings online.

"In the past we developed our own material and presented it live," says Kevin DUBY, the statewide road weather manager for the Arizona Department of Transportation (ADOT). "COVID helped us realize we can do training

online, with little cost, less travel and less disruption to our workforce."

Other state DOTs, like Indiana and Delaware, plan to integrate some or all of the new materials into their training programs ahead of the 2021 winter season. As editable PowerPoint™ presentations, the slides can be modified for easy integration into an agency's existing training programs.

"We're using the slides and notes and prerecording the presentations," DUBY explains. "We also replaced the pictures in the materials with look-alike pictures from ADOT."

No matter how an agency chooses to customize the materials, McBroom just wants to get the word out.

"We want the roads to be as safe as possible," he says. "Plow operators are working to keep roads clear, but sometimes the plow is contributing to the hazard—like with the snow cloud. By helping operators understand the

potential dangers and what they can do to minimize them, we're improving safety for everyone."

The training materials discussed in this article can be accessed through the Clear Roads website:

- Safe driving for snowplow operators: <https://clearroads.org/download/safe-driving-training/>
- Defensive driving for snowplow operators: <https://clearroads.org/download/defensive-driving-training/>
- Snowplow operator and supervisor training: <https://clearroads.org/project/12-04/>

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