

# Backing Warning Sensors for Tow Plows

Final Report  
For  
June 2013

Sponsored by:  
Iowa Department of Transportation  
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<b>16 Abstract</b> Backup warning system devices were evaluated to determine if they would alert winter maintenance snow plow drivers to obstacles directly behind the trailer and out of view of the driver when a unit is backed up. When the sensors on the back of the tow plow were covered with snow during plowing operations, the sensor would go off in the cab and continue going off, which would result in drivers turning the volume of the unit way down. One shop stated that the wireless transmitted signal would be hit or miss depending on the winter weather that they were operating in. The sensors on the back of the tow plow trailer would come in contact with salt brine and in this situation one of the sensors did go bad. The weatherproof box that was designed to keep the system waterproof did not fully keep the moisture out. It was found that the system did alert drivers of items behind the unit and there were no backup accidents reported during the research period.			
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## Objective

To determine if a back up warning system on the rear of a trailer would alert the driver to obstacles directly behind the trailer and out of view of the driver when a unit is backed up avoiding backup accidents.

## Process

Three commercial backup sensor systems that included four rear sensors and a wireless LCD display mounted in the cab of the truck were purchased. This system would alert the driver audibly along with a visual display that showed the distance of obstacles that are behind the back of the trailer. The LCD display would show when an object was within 8 feet of the vehicle when the truck and trailer backed up. The cost of the sensor was \$179.99 per unit. The shops that tested this system are located at the Grimes, Waterloo, and Sioux City Hamilton shops. A weather proof box was also installed on the rear of the trailer to protect the wiring and sensors from getting wet from the elements.



## Findings

Two of the three shops were able to test the system through the winter season. One shop did not have the system fully hooked up and still does not have the trailer back for this season.

The system would transmit the signal to the display in the truck cab, alerting the driver of any obstacles that were behind the unit as they were backing up. A loud audible sound was also emitted in the cab warning the driver. This audible sound was loud enough to be heard over other sounds in the truck cab.

One shop had the unit wired to the trailer lights as it had no back up lights on the trailer to wire in to. In this case, when something was close to the back of the tow plow it would sound. Another thing noted when the sensors on the back of the tow plow were covered with snow during plowing operations, the sensor would go off in the cab and continue going off. As it was very loud, the driver would turn down the volume of the unit.

One shop stated that the wireless transmitted signal would be hit or miss. It was stated to have something to do with the winter weather that they were operating in. The sensors on the back of the tow plow trailer would come in contact with salt brine and in this situation one of the sensors did go bad. The weatherproof box that was designed to keep the system waterproof did not fully keep the moisture out.

This research project was to determine if the addition of a backup warning system mounted to the rear of a trailer would alert the driver to obstacles behind the unit when backing up to prevent accidents. It was found that the system did work, alerting the driver of items behind the unit. There were no backup accidents reported this season.

It is recommended that the DOT could purchase this back up warning system as an option to add to its fleet.