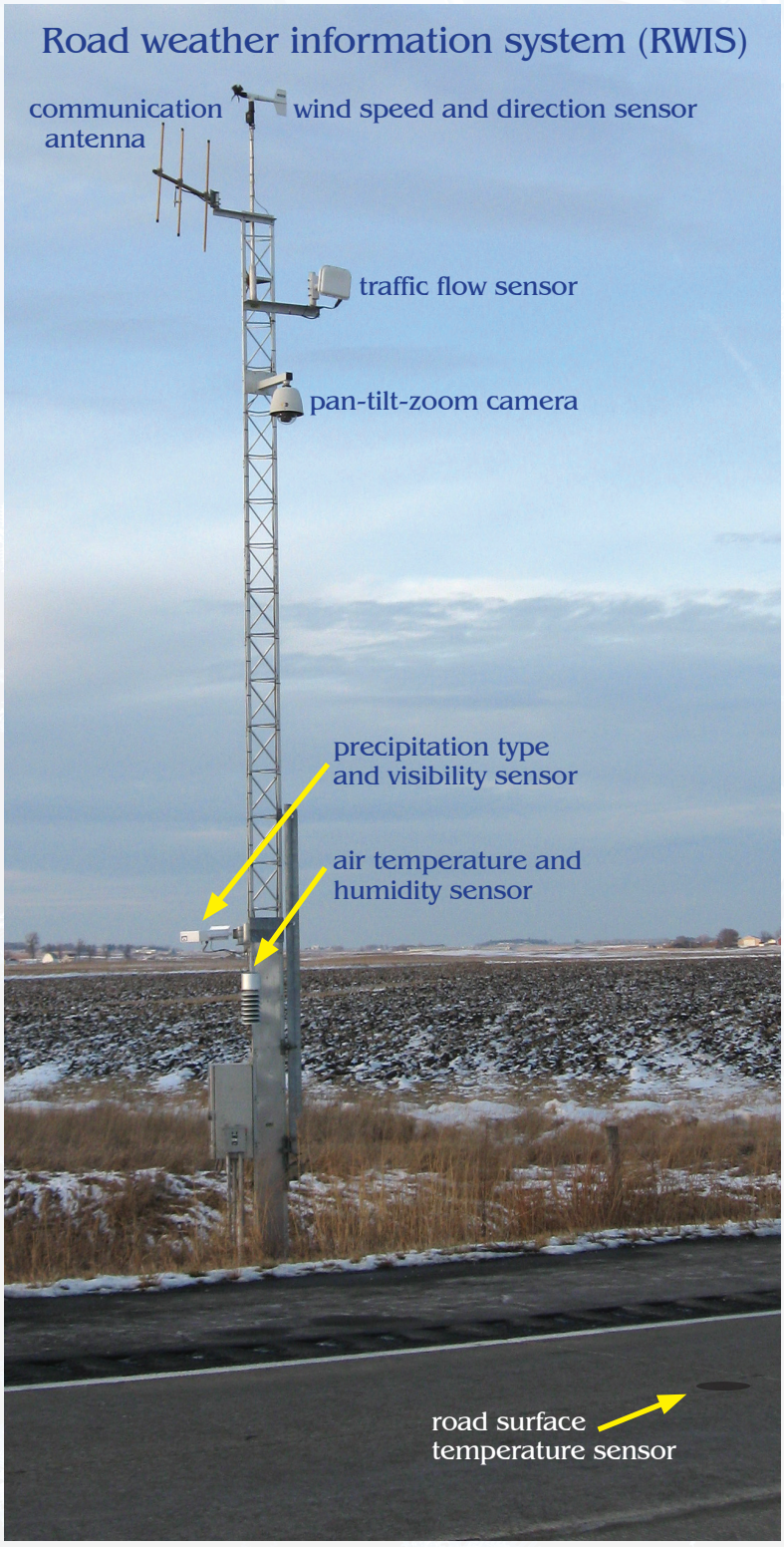
Winter Technologies

2008-2009 Iowa Department of Transportation

The Iowa DOT is responsible for snow and ice removal on more than 9,000 miles of roadway. The Iowa DOT utilizes a fleet of 900 snowplow trucks operated by nearly 1,200 operators, supervisors and mechanics to complete the task. The Iowa DOT is continually testing and evaluating new equipment, materials and methods to assist in snow and ice removal efforts. The Iowa DOT's goal is to provide safe winter roads for Iowa travelers as efficiently and effectively as possible. This document briefly describes a number of new and improved technologies at the Iowa DOT.

Road weather information system (RWIS)

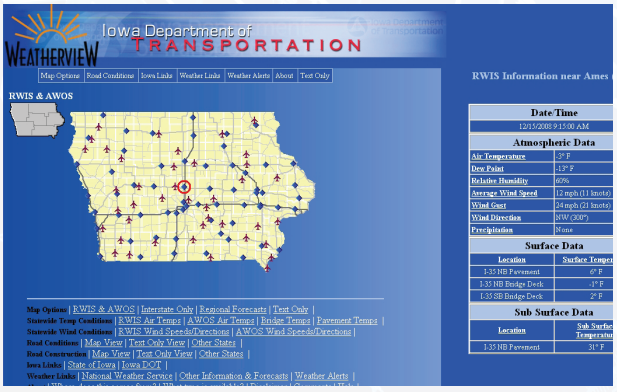


Thermal mapping

Pavement temperatures along a highway are affected by weather, but can also be affected by differences below the roadway surface. Understanding differences in pavement temperatures along a roadway allows for customized treatment of roadways that can reduce chemicals and save money.

Weatherview

The Weatherview Web site was developed in 1999 and was the first of its kind in the nation to share weather information from roadway weather information systems (RWIS) along roadways and automated weather observation stations (AWOS) at airports with the public through the Internet. The Iowa DOT's customized weather forecasts are available on the site, along with a number of links to other weather and road condition information that can be helpful to travelers and other government agencies. Numerous enhancements are planned for the site in the fall of 2009.



www.dotweatherview.com

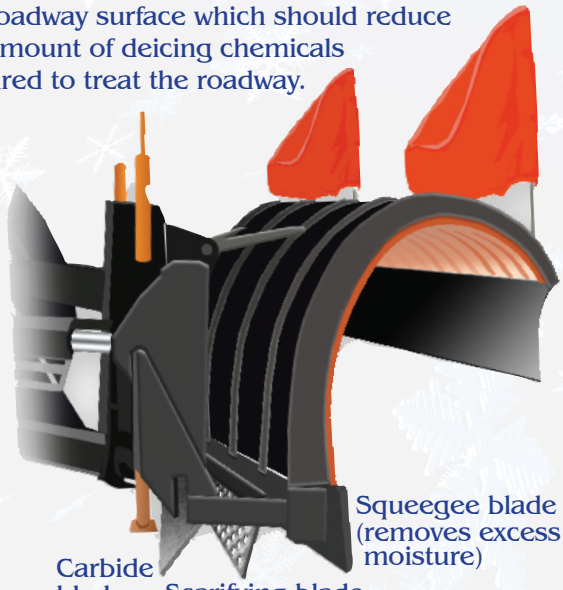
Laser guide for wing plow

This device, mounted on the cab of the snowplow truck, lets the operator see the projected path of the wing plow. The wing plow is mounted on the right side of the truck and extends 6-8 feet beyond the front (main) plow allowing the truck to clear a wider path. The laser shines a green dot in the operator's field of vision ahead of the truck to show the expected path of the wing plow. The device can be helpful in areas with limited right-of-way or areas with numerous obstacles. The cost of the unit is $2,400. Cost to replace a damaged wing plow is $10,000-$11,000.

Laser guide for wing plow

Multiple edge plow

The Iowa DOT has been working on ways to maximize the amount of snow or ice cleared from the roadway with each pass of the plow. Since a traditional plow does not conform to the contour of the roadway, the plow can leave ¼ to ½ inch of snow or ice behind the truck after every pass. Deicing chemicals applied by the snowplow truck will need to melt through the snow or ice left by the plow before it can work on any new precipitation. The multiple edge plow will remove more snow/ice from the roadway surface which should reduce the amount of deicing chemicals required to treat the roadway.



Flexible-edge plow

A flexible-edge blade developed by the Iowa DOT allows the blade to adjust to the contour of the roadway. The blade is divided into one-foot segments and is then attached to the front plow with bolts surrounded by rubber. The rubber surrounding the bolt allows the blade to move horizontally and vertically to adjust with the variations in the roadway.

Flexible edge allows the plow to adjust to the contour of the roadway

Zero velocity spreaders

Placement of salt on the roadway during a winter storm can be very critical to the success of the maintenance operations. The Iowa DOT has been investigating and testing zero velocity spreaders for snow removal operations. These spreaders place deicing chemicals on the roadway at a rearward speed that matches the forward speed of the truck, reducing the chance of deicing chemicals bouncing from the roadway. The spreaders also allow the operators to place materials exactly where they want on the roadway to compensate for strong winds or spreading materials across multiple lanes. Tests done by the Iowa DOT indicate zero velocity spreaders can help retain 20-25 percent more material on the roadway than with traditional spreaders.