Maintenance Innovation State of the Practice

Maintenance Innovation: Fog or Low Visibility Detection and Warning Systems

Description: State departments of transportation (DOTs) have considered ways to warn motorists of conditions when visibility is low due to fog or other weather, dust or smoke. The Florida Department of Transportation, for example, sponsored research more than a decade ago to compile a synthesis of visibility detection systems and traffic control techniques in the U.S. and around the world.

(*Source*: Colorado DOT.)

Requester Name/Agency: Keith Donovan, Illinois Department of Transportation

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Query: Are any members using fog or low visibility detection (LVD) systems?

Summary of Responses:

State	LVD System Used	Comments
Colorado	Visibility sensors detect low visibility and provide warning with flashing beacons (see image above) that are activated via radios when visibility drops below a threshold level.	System used in one location prone to fog on Interstate 25 north of the Denver Metro area.
Connecticut, Idaho, Indiana, Louisiana, Minnesota, New York, Texas, Utah	None	*Texas*. Uses intelligent transportation system message boards on interstate highways to post warnings. *Utah*. Has discussed using the systems.
Maryland	Sensor data from road weather information system (RWIS) locations drives automatic weather warnings that are displayed on overhead dynamic message signs.	Examples of displayed messages include: • ICY ROADS POSSIBLE • BRIDGES AND RAMPS FREEZE FIRST • REDUCED VISIBILITY A few roadside signs in one area of the state activate amber flashing lights when thresholds are detected.
Michigan	While no stand-alone fog warning system is used, Advanced Traffic Management System response plans for foggy conditions are activated with environmental sensor station data to trigger warning messages on dynamic message signs.	System used in Grand, North and Superior regions.
South Carolina	Agency weather system includes a few fog sensors, with one activating lights on a bridge.	None

State	LVD System Used	Comments
Virginia	Such systems include an automated fog detection system that triggers warning lights at a bridge that experiences frequent fog and a more elaborate weather-based variable speed limit system.	A 2018 VDOT research project found that a weather advisory system connected to a variable speed limit system resulted in slower speeds and reduced crash rates on I-77.

References

Impacts of the I-77 Variable Speed Limit System on Speed and Crash Characteristics During Low Visibility Conditions, Virginia Department of Transportation, 2018.

Synthesis of Visibility Detection Systems, Florida Department of Transportation, 2012.