Maintenance Decision Support System

Problem: Highway Road Weather Conditions Necessitate the Efficient Use of Response Resources. Winter storms can quickly affect the road conditions and lead to safety problems and reduced mobility. Crashes occur when vehicles hit other vehicles (including snow plows) or hit highway roadside structures. Changing road conditions and the resulting crashes tax the resources of responding crews from state and local transportation agencies. In addition, transportation agency budgets often reflect today's "Do More With Less" philosophy – making the efficient use of an agency's limited resources critical.

Putting it in Perspective:

- One in every five highway projects is considered "traffic sensitive."
- Two out of every five urban interstate miles are considered congested.
- Traffic delays have more than tripled in the past 20 years.
- By 2020, the Nation's population is expected to grow by 16 percent, and vehicle travel is expected to increase by 42 percent.

Solution: Maintenance Decision Support System. The Maintenance Decision Support System (MDSS) project is based on leading diagnostic and prognostic weather research capabilities and road condition algorithms, which are being developed at national research centers.

The goals of the project are to:

- Provide a decision support tool, which provides recommendations on road maintenance courses of action
- Capitalize on existing road and weather data sources
- Augment data sources where they are weak or where improved accuracy could significantly improve the decision-making task
- Fuse data to make an open, integrated and understandable presentation of current environmental and road conditions
- Process data to generate diagnostic and prognostic maps of road conditions along road corridors, with emphasis on the 1- to 48-hour horizon (historical information from the previous 48 hours will also be available)
- Provide a display capability on the state of the roadway.

It is anticipated that components of the MDSS system developed by this project will be deployed by road operating agencies, including state Departments of Transportation (DOTs). MDSS system components will generally be supplied by private vendors.

The MDSS was developed by the expertise of the Iowa DOT, FHWA, National Center for Atmospheric Research (NCAR), MIT Lincoln Laboratory, Cold Regions Research & Engineering Lab (COE), NOAA Forecast Systems Laboratory (FSL), National Severe Storms Laboratory (NSSL), ISU Center for Transportation Research & Education (CTRE), and Mitretek Systems.

Successful Applications: States' Results Demonstrate Success.

Iowa DOT

The Iowa DOT was the leader for development of the MDSS prototype.

OPERATIONS

Benefits

- Demonstrate that new technologies are available to assist maintenance managers with maintaining safety and mobility
- Promote stakeholder partnerships to deploy an advanced surface transportation weather decision support system
- Produce deployment guidance for public/private development

Additional Resources:
To learn more, visit
http://www.fhwa.dot.gov/resourcecenter/index.htm
or **http://www.ops/fhwa.dot.gov/winter**

For more information, contact:
Ray Murphy, FHWA Resource Center
Phone: (708) 283-3517
E-mail: ray.murphy@fhwa.dot.gov

FHWA Publication No: FHWA-RC-BAL-04-0015