

Sharp tools for effective winter maintenance



Improved weather information, pavement temperature sensing, written plans, and anti-icing techniques are some of the best tools around for managing winter's snow and ice. Streets and highway maintenance personnel learned of the latest developments and shared tips at the T.I.C.'s fall workshops on Winter Road Maintenance.

Satellite weather data

Seventy of the state's 72 county highway maintenance shops have now installed the DTN satellite weather data system. This commercial weather information vendor supplies radar maps, satellite cloud photos, and wind speed maps along with a host of other weather condition and forecast information. The easy-to-use system includes a satellite dish, monitor, mouse, and keypad. It is relatively inexpensive, costing \$70 a month plus a \$350 set-up fee.

"Good weather information is an important decision tool in deciding when to call people out and what strategy you want to use for fighting a particular storm," says Mike Adams, program manager for WisDOT's Road Weather Information System (RWIS).

One of the most useful components is the regional radar images that are updated every 15 minutes. These are composite pictures from all the National Weather Service NEXRAD Doppler radar sites in the upper Midwest, like those broadcast on local and national television weather shows. Sitting at the DTN monitor the operator can replay three hours' worth of images to check the speed, size and track of storm systems.

Pavement temperature tools

WisDOT operates a network of 51 pavement sensor and weather stations on Interstates and major highways around the state. The stations continuously report data which is readily available via computer. All stations report pavement surface temperature and condition, sub-surface temperature, and the relative amount of chemical present in solution. Some also report depth of standing moisture, percentage of ice in solution, freezing point of solution, and percentage of chemical in the solution.

In addition, pavement forecasts are prepared under contract to WisDOT by a company called SSI. Reports are available both on-screen and in hard copy, and can be accessed by telephone from remote sites such as the homes of supervisors. Starting last March those forecasts were also being distributed to

county maintenance shops through the leased DTN link.

SSI's 24-hour forecast of projected pavement temperatures can help you decide when to begin salting or if a round of salting can be eliminated. A few degrees difference between the pavement and air temperatures can be critical when temperatures are hovering around freezing.

"Having DTN and SSI together is a very slick package," says Dane County Highway Superintendent Steve Haag. "Just a couple of clicks of the button and you've got all the information you need to make a decision." Haag plans to have the county's night dispatchers work out of his office this winter so they can have continuous easy access to the system's data. The information will help them decide when to call crews in and when to send them home.

New this winter are more specific forecasts from SSI based on important operating criteria established by WisDOT. Criteria include snow amount within specified time periods, winds greater than 15 mph, pavement and air temperatures below freezing.

Vehicle-mounted pavement temperature sensors

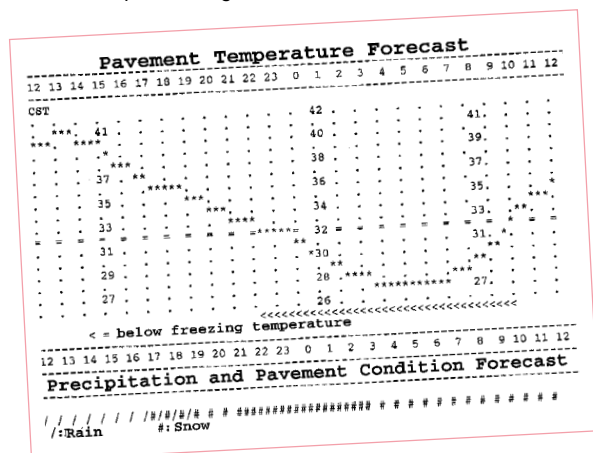
Recently developed infrared sensors can be mounted on vehicles to supply local pavement temperatures. Supervisors can use this information to make maintenance decisions and to monitor roads with special characteristics like those which are heavily shaded or exposed to winds. WisDOT distributed at least one vehicle-mounted sensor to nearly every county last winter; some counties had two.

"It was a pilot program to evaluate the units," says Mike Adams, RWIS program supervisor. "Usage and acceptance was very good but we had some reliability problems." Temperature information was very accurate when checked against in-ground sensors, but about a third of the \$2500 units produced by Control Products, Inc. failed because of a problem part. An upgraded unit available for this winter at around \$1300 should eliminate the part problem along with adding a new feature: an air temperature reading.

A competing sensor from Sprague Heavy-Duty Technology Group is considerably less expensive at around \$400, but initial indications are that its temperature readings were not as accurate, according to Adams. There was about a three degree variation from WisDOT's in-ground sensors.

Anti-icing to prevent ice bond

Maintenance crews have traditionally used a de-icing approach to snow and ice control, breaking the bond between ice and the pavement surface after it has formed. Anti-icing prevents ice/pavement bond formation and has several benefits. These include producing better pavement conditions and using less chemical which can result in lower costs. Liquid anti-icing applications



have been reported to last for several days, particularly in preventing frost on bridge decks.

Anti-icing involves applying small amounts of liquid chemical to pavements in advance of a storm. It is commonly used on roadways requiring a high level of service or bare pavements throughout the storm. It requires accurate and detailed weather predictions and specialized equipment to apply the specified small amounts of chemicals. The effectiveness of a specific chemical depends on the temperatures and costs involved. Anti-icing is not recommended when pavement temperatures fall below 15° F.

Pre-snow planning

Planning plow routes, setting priorities, and putting winter maintenance policies in writing before the snow flies prevents confusion and saves time. Policies, which may only be a

couple pages long, should include priority categories for all roads along with conditions and times when plowing will take place. Also include local rules such as those about mandatory equipment in trucks, prohibitions on towing private vehicles, mailbox installation requirements, and controls on dumping snow from private property onto roadways.

It is easier for elected representatives and maintenance office staff to answer questions from the public when policies are written down. Preparing publicity early in the winter season can help remind everybody what the policies are.

For more good ideas about winter maintenance, check last year's winter issue of Crossroads (Winter 1997). If you don't have a copy use the form on page 7 to get one from the T.I.C. For information on the DTN satellite-delivered weather information system call DTN at 800/485-4000, ext. 3141. The regional sales manager will refer you to a nearby sales representative.

Calendar

Specific details and locations for workshops are sent to all Crossroads recipients. For additional announcements, or more information, call the T.I.C at 800/442-4615.

Chainsaw Safety, Maintenance and Operation Learn about personal protective equipment, proper maintenance procedures, and the most effective techniques for chainsaws and brushsaws. Taught by expert trainers from the Forest Industry Safety & Training Alliance, Inc. Morning classroom session and afternoon outdoor demonstrations.

Dec. 8	Green Bay	Dec. 17	Eau Claire
Dec. 9	Tomah	Dec. 18	Cable
Dec. 10	Barneveld	Dec. 19	Rhineland
Dec. 11	Brookfield		

Pavement Management for Local Roads A two-part workshop that meets a range of training needs for PASER and PASERWARE pavement management systems users. **Part 1, Jan 5, a.m.**, covers the basics of pavement management, how to rate pavements using PASER and an introduction to the logic of PASERWARE.

Part 2, Jan 5, p.m. & Jan 6, a.m., demonstrates the features of PASERWARE 1.0 with an opportunity to try the program in the computer lab, testing various maintenance strategies by running simulations with several data bases, including your own if available. Register for either or both: January 5 & 6 in Madison.

Highway Safety Make your local road system safer. This workshop covers sign inventories and maintenance, sensible signing for local roads, using crash information to reduce hazards, improving safety at intersections and driveways, locating and mitigating roadside hazards, and funding for safety projects.

Jan 7	Green Bay	Jan 21	Cable
Jan 8	Brookfield	Jan 22	Eau Claire
Jan 9	Barneveld	Jan 23	Tomah
Jan 20	Minocqua		

Legal Town Road Right-of-way Issues Review the legal procedures to establish, abandon, vacate, and discontinue town highways on open roads and in subdivisions. Part of an ETN series on local transportation issues. For a brochure, call your local county extension agent or 608/262-9960.

January 13th, 9-10:20 a.m., ETN locations in every county

Load Posting This ETN workshop will review your authority and procedures for establishing load limits on local roads. (Part of a series on local transportation issues). If you need a brochure, call your local county extension agent or 608/262-9960.

February 10th, 9-10:20 a.m., ETN locations in every county

Roadway Maintenance Improve your street and road maintenance operations. Workshop includes preventive maintenance techniques and investigating and repairing pavement failures.

Mar 11	Green Bay	Mar 17	Cable
Mar 12	Brookfield	Mar 18	Eau Claire
Mar 13	Barneveld	Mar 19	Tomah
Mar 16	Minocqua		

UW-Madison seminars

Local government officials are eligible for a limited number of scholarships for the following engineering courses in Madison. For details, use the form on page 7, call 800/442-4615, or e-mail: ranum@engr.wisc.edu.

Stream Stability & Scour for Bridge Inspectors, Dec 8

Bridge Inspection Update, Dec 10-11

Nondestructive Evaluation of Bridge Conditions, Dec 11-12

Maintaining Asphalt Pavements, Feb 2-3

Pavement Management, Feb 4-5

Urban Street Design, Feb 11-13

Bridge Rehabilitation, Feb 16-18

Steel Bridge Fatigue Repair, Feb 18-19

Improving Public Works Construction Inspection Skills, Feb 23-25

Highway Environmental Impacts, Mar 2-3

Managing Fleet Maintenance Operations, Mar 26-27

Pesticide Applicator Training

Certification is required for workers who apply pesticides in right-of-ways, or their supervisors. Registration deadlines for 1998 training sessions are January 14 and 15. Pre-registration cards are available from county Extension offices as are self-study units and videotapes.

Jan 28	Arlington	Jan 29	Wausau
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