

# Idea Exchange

## Mobile pavement sensor improves salt use

In Vermont they are using pavement temperature information to limit salting to conditions where it will be most effective. Pavement and air temperatures can often be very different. Supervisors collect pavement temperatures using an infrared sensor mounted on their patrol trucks.

Vermont's Smart Salting strategy, first fully implemented for winter 1994-95, appears to have cut salt and sand use. "We used 59,000 cubic yards of sand, compared to an average of 100,000 cubic yards, and kept salt use to the average of 100,000 tons, with 10 more storm events last year," says Milan Lawson, State Maintenance Engineer. He supervises winter maintenance for 3072 road miles in Vermont.

The infrared sensor looks like a flashlight mounted to the truck's frame. A digital unit inside the cab continuously displays pavement temperatures while the supervisor drives at highway speeds. The sensors cost Vermont about \$2200 each.

Pavement temperatures vary about five degrees with local conditions like shading, pavement type and age, road elevation, and bridge decks. The range remains

relatively constant over the geographical area for which a supervisor is responsible.

Supervisors determine salt application rates by combining pavement temperature with an estimate of the ice or snowpack thickness. Since one pound of salt can melt more than 46 pounds of ice when pavement temperatures are at 30°, and about 8.6 pounds at 20°, they try to limit salting to that 10 degree range. This gets the job done while conserving salt and keeping excess out of the environment.

Using ground speed controlled salters and keeping them calibrated are important elements of the strategy as well. Pre-wetting the salt, either as it's being loaded or through tanks on the truck, helps jump start the salt's melting action when the snow is dry. The salt sticks better and less bounces off when it is spread or kicked off by following vehicles.

*Copies of Vermont's Smart Salting booklet are available from the T.I.C. Use the form on page 7 or call us at 800/442-4615. Vermont's sensor supplier is Control Products Inc., Vancouver, WA, 360/571-0988.*

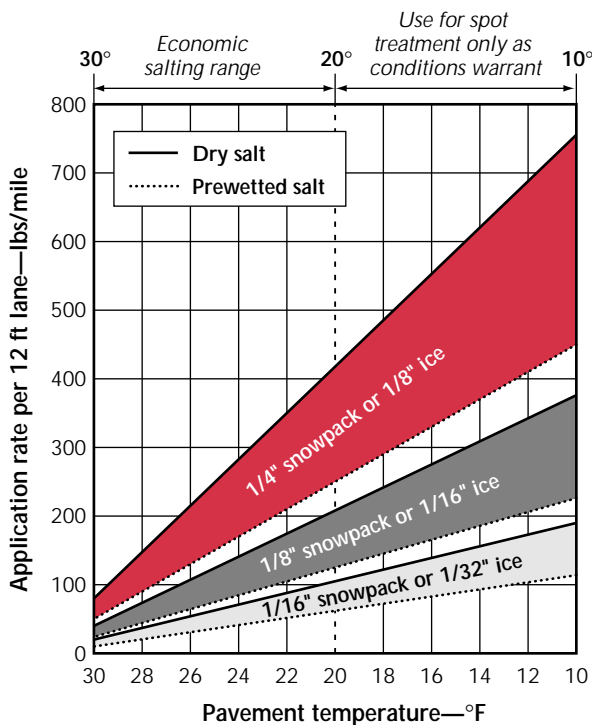
## Thermal system fixes problem manholes

"There's nothing more frustrating than to hit a high manhole when you're plowing," says Rick Heisler, public works supervisor in the city of West Bend. He's found a system for repairing them that is quick, effective and efficient. The city hires a local contractor to level raised manholes using an infrared thermal patching system.

The unit heats a six by eight foot area of bituminous concrete around the raised manhole. Workers rake and loosen the softened material, then spray on an emulsion to help rejuvenate the existing pavement materials. New hotmix is also added and the pavement surface is reshaped and compacted to eliminate the high spot. The whole process takes about 15 minutes.

"We did 400 in the summer of 1994, and it cost us \$38 each," says Heisler. "Now we have them on a regular maintenance schedule and are doing about 125 a year for \$45 each."

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**This chart shows effective salt application rates as determined by melting formulas. In actual salting patrols with ground-oriented spreaders, the practical minimum is about 100 pounds of salt per lane mile with an error factor of ± 25 pounds.**

## Crossroads

A newsletter providing information on roads and bridges to local officials, published quarterly by the Transportation Information Center, located at the UW-Madison, Dept. of Engineering Professional Development, 432 N. Lake St., Madison, WI 53706. Phone: 800/442-4615. Fax: 608/263-3160.

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## Thermal system fixes manholes

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*Infrared heater softens asphalt around a raised manhole, readying it for repair.*

section of the city and prepare a bid spec. It takes one person two or three days to survey the manholes, spray-

When they started the manhole program, they repaired problem manholes all over the city. Now, each spring they review all manholes in a

paint numbers on them, and mark corresponding numbers on a map for those needing repair.

West Bend considered buying one of the units, but decided it was more economical to contract for the service. "Then they're responsible for everything including traffic control," says Heisler. The contractor took just two days to repair 126 manholes last summer.

*Copies of West Bend's bid specs for thermal manhole repair are available from the T.I.C. Use the form on page 7 or call us at 800/442-4615. Or call Rick Heisler at 414/335-5060.*

***Do you have an idea to exchange? Have you designed a gadget or found a new way to do something that other streets and highway people can use? Use the form on page 7 to let us know, or call Don Walker or Steve Pudloski at 800/442-4615.***

## Resources

*Materials listed here are available from the Wisconsin T.I.C. unless otherwise noted. To get your copy call 800/442-4615 or use the form on page 7. Videotapes are loaned free through Wisconsin County Extension Offices.*

**Where to go with the snow: Snow treatment and disposal guidance for municipalities**, Wis. DNR, PBL-WR-154-95REV, 1995, pamphlet. This brief pamphlet points out that snow removed from streets may have salt, nutrients, oil, sand, silt, litter, heavy metals, and toxic chemicals. Explains potential problems, recommends disposal methods, and offers strategies to reduce contaminants.

### Metric training on computer

WisDOT now has available a training program on metric (SI) use in highway agencies. The program, *Metric (SI) Training for Highway Agencies, CBT 1.0*, is based on the National Highway Institute course by the same name. The disks run on IBM compatible computers, 286 or better, with VGA graphics.

The training allows users to progress at their own speed, use whatever modules apply to them, and participate in training at their convenience. The course includes: building blocks for conversion to SI, overview of SI in the highway context, five modules, quiz and quiz questions. The modules are: Planning and roadway design, Drainage, Bridge design, Materials, Quantity/cost estimation.

*Available on loan from BJ Panke, WisDOT Division of Highways Training Coordinator, 608/267-3615.*

### New tapes in video library

**Privatizing Public Works**, UW-Madison (#17787, Tape 1–120 min., Tape 2–90 min.) Phoenix, Charlotte, and Indianapolis are the "giants" in privatizing public works, but smaller cities have also succeeded including San Mateo,

Calif., Highland, Mich., and Wauwatosa and Salkville, Wis. Key players from these seven cities present their experiences through panel discussions, case studies, and question and answer sessions. This tape records a nationally televised satellite conference held at UW-Madison July 19, 1995.

**Roads of Winter Driving**, WisDOT (#17788, 18 min.) Depicts actual winter driving conditions and, through driver comments, provides correct driving techniques for given situations. For all drivers.

**Snowplow Safety**, National Safety Council (#17789, 23 min.) Discusses pre-operation vehicle inspection procedures and techniques for safe operation of the vehicle in a wide variety of situations. Good for plow operators and supervisors.

**The Snowfighters**, Salt Institute (#17790, 21 min.) Provides good information on costs vs. benefits of salt as a highway deicer, maintenance and winter preparation, spreader calibration, and snowfighting techniques. For supervisors, maintenance, and operator personnel. Elected officials can also benefit.

**School Zone Safety**, Utah DOT & Utah Technology Transfer Center (#17791, 22 min.) Good training for school crossing guards. Includes duties at reduced school speed zones, school crossings, and traffic signals. Also presents proper signing and marking for school zones. For school crossing guards, traffic engineers, school officials, and local safety groups.

**Winter Control Operations**, Ontario Ministry of Transportation (#17796, **Snow Plowing**, 26 min.; **Sanding and Salting**, 27 min.; **Sidewalk Maintenance**, 19 min.) An excellent three part video involving all aspects of winter road and sidewalk maintenance. It includes fall preparation, equipment preparation and maintenance, communication procedures, and materials usage and handling. For supervisors, equipment maintenance personnel and safety-related groups.