

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.

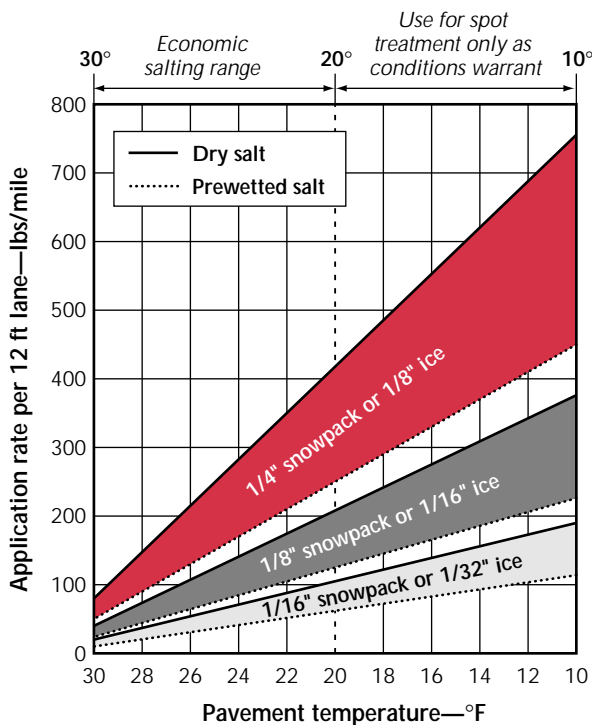
Thermal system fixes problem manholes

"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

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