

New approaches for winter maintenance

Several local agencies are learning how to use new techniques to fight Wisconsin's winters. This includes new chemicals, application techniques and equipment.

Salt and calcium chloride are the traditional deicing chemicals used to keep roads clear of snow and ice. Research sponsored by the FHWA is leading to the use of other chemicals and techniques.

The biggest change has centered on anti-icing—making a light application of liquid chemicals before the storm to keep ice or snow from bonding to the pavement. It has proven particularly effective in fighting frost on bridge decks.

Wis DOT is working with county highway departments to test these new procedures on state highways. Early results are promising. Tom Martinelli, WisDOT maintenance engineer is analyzing the results of last winter's trials and will be issuing a report early this summer. Preliminary discussions revealed some useful lessons.

Anti-icing bridge decks with magnesium chloride seems particularly successful. Applying about 25-40 gallons per lane mile of a 30% liquid MgCl solution seems to effectively prevent frost formation, especially in the fall and spring. The material can be applied during regular working hours since it is effective for four to seven days. Some counties set up regular bi-weekly or weekly applications while others spray when weather forecasts predict icing conditions.

Light anti-icing treatments can be effective with light snow. Applications should not be made when blowing snow is possible, however, since the MgCl attracts moisture and tends to collect snow on the pavement. Rain also quickly washes away the chemical. When heavy snow conditions develop, normal deicing operations using dry or pre-wetted salt are required.

Pre-wetting of salt has been done for many years. It speeds up deicing and helps keep the salt on the pavement, lowering salt use. Several agencies report good results using either MgCl or ICE BAN as a pre-wetting chemical. Ed Kaszick, Brown County Highway Department superintendent of operations used 30 gallons of MgCl per yard of coarse salt.

"We applied a slurry just as the storm was starting to prevent bonding of the snow to the pavement," Kaszick says. "It seemed to act quickly, getting the salt brine down into the concrete pavement's tining so the snow couldn't bond."

Although mag chloride is currently more expensive than calcium chloride for pre-wetting, it has the advantage of being much less corrosive on equipment and on vehicles using the roads.

"I think it has a lot of potential if we can work out the details," says Dick Leffler, Florence County Highway Commissioner.

WisDOT is also working with several counties on developing a winter maintenance "concept vehicle" to test new snow removal



Icing on bridge decks is a frequent problem. Spraying liquid magnesium chloride can help prevent it.



Jefferson County built its own double spray bar to apply mag chloride to bridge decks.

equipment. In cooperation with Monroe Truck Equipment, they are investigating improved spreader controls, on-board pre-wetting and anti-icing equipment. They are also working on ways to reduce blowing snow around snow plows (the so-called white cloud effect), and to improve safety through lighting equipment and improving driver safety.

Using these alternative chemicals, procedures and equipment requires new skills and a firm understanding of all aspects of winter road maintenance. The T.I.C. will present the latest in snow-fighting information at its updated winter maintenance workshops scheduled for September. Plan to attend and learn how your agency can take advantage of new technology and avoid the mistakes of others.

*See Calendar page 8 for dates and locations of the September Winter Maintenance workshops. Copies of a new booklet from FHWA, **The New Generation of Snow and Ice Control: Anti-icing and RWIS**, are also available. See Resources on page 5.*