



us to go from 12 graders down to four which is a big benefit when graders cost \$250,000 each."

Weronke observes that underbody plows vary widely in reliability and maintenance.

**New spreaders** with a chain or belt in the bottom of the salt box. These spreaders can be reversed to permit discharge either to the rear or the front of the truck. They can discharge material in front of the drive wheels and to the side, for shouldering or spreading black dirt in the summer. "We like them," says Lyga. "It makes a very versatile truck." "I don't like them," says Weronke. "If you get a rock in the gear drive or under the belt it can be very uncomfortable chiseling it out of there at 20 degrees below zero."

**Automatic tire chains** (\$1800) These chains hang next to the wheel until activated, then they spin under the wheel giving traction. They eliminate tire chain inventory, installation time, and maintenance and seem to be effective in hilly areas. "Our county is quite hilly and we've been using them for a number of years," says Lyga. "Even when we get expensive chains they tend to break, and wear a lot. With this unit you just flip a switch. Maintenance-wise they're so much better; you just replace a short link."

**Anti-icing System** An on-board 900 gallon liquid storage tank, spray bar and pump system allows the operator to switch back and forth for an anti-icing application to a dry or prewetted salt application mode by the flip of a switch or the turn of a knob. This setup makes the truck more flexible for various types of winter operations.

For more details on these items, contact Bill Weronke, Portage County, 715/345-5230, or Dave Lyga, Trempealeau County, 715/538-2221. Other counties involved in the study are Barron, Columbia, Florence, Kenosha, Manitowoc, and Taylor. A report will be available after July 1. Contact Tom Martinelli, 608/266-3745, or e-mail: [thomas.martinelli@dot.state.wi.us](mailto:thomas.martinelli@dot.state.wi.us)

## Winter Concept Vehicles test gadgets

Planning for the Winter Concept Vehicle (WCV) program began in August 1998 and it now has two snow seasons of experience. Starting with three counties in winter 1999-2000, the program had a total of eight counties in the winter of 2000-2001. These volunteer counties field-test new equipment and technology under real winter weather conditions. The program is organized by Tom Martinelli, winter operations engineer, in WisDOT's Bureau of Highway Operations.

"The intent is that the experiences will be shared with other counties, giving them the information they need to decide if they want to incorporate any of these options on their trucks," says Martinelli. The state pays for the concept equipment beyond what the county would normally put on a

winter patrol truck. In return, the county people evaluate and report on the individual equipment.

The counties are testing many 21st century "gizmos and gadgets" now available from vendors. Other technologies under study include GIS systems, data reporting systems, and zero-velocity spreaders.

"We have some features that have not yet proved themselves," says Martinelli, "but we will continue to work with them." The counties reported this past winter's experiences and data at a May WCV Committee meeting. Martinelli will have a progress report available in early summer.

For more details on WCV items and results, ask Tom Martinelli for his report after July 1 at 608/266-3745, [thomas.martinelli@dot.state.wi.us](mailto:thomas.martinelli@dot.state.wi.us)

## Signing, marking, and the new MUTCD

The Millennium Edition of the *Manual on Uniform Traffic Control Devices* (MUTCD) was the focus of a T.I.C. workshop series in April. Attendance was very good and there was a lively discussion of new and old issues relating to signing and marking on local roads. This article offers some of the highlights.

WisDOT is now preparing the *Wisconsin Supplement* to the new federal *MUTCD*—a process which should be completed by the end of this year. Both documents will become effective for Wisconsin after the *Supplement* is adopted.

Local highway and traffic engineering agencies will have to obtain their own copies of the *MUTCD*. Sources for the federal manual are listed in the *Resources* section. Print copies will not be available until errors in the draft are corrected. They should be ready this fall. To review current versions of the 2000 manual go to:

<http://mutcd.fhwa.dot.gov/index.htm>

Local officials should use this transition period to learn more about the new *MUTCD*. **Crossroads** will publish more articles in the future to help with this process. Some changes that affect local agencies include:

- The existing *MUTCD* uses the terms *shall*, *should* and *may* to indicate when

a practice is mandated, recommended or optional. In the new *MUTCD* sections called "STANDARD" contain mandated provisions. "GUIDANCE" sections have recommended practices. You may deviate from GUIDANCE provisions if engineering judgement or an engineering study shows the deviation is appropriate. Finally there are "OPTIONS" that you may choose to use. "SUPPORT" sections give additional information.

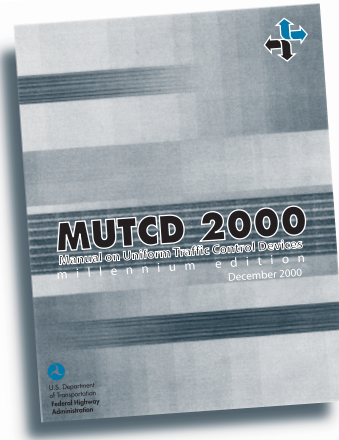
- The terms *Engineering Judgment* and *Engineering Study* are significant in the new *MUTCD*. The engineering judgment process must be done by an engineer or under the direction or supervision of an engineer. An engineering study has the additional requirement that it must be documented with written reports, data, or other supporting material.



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- Changes in the *MUTCD* that involve new signs often have a phase-in period allowing additional time before installation is required. A list of conformance dates is in the *MUTCD*.
- One example of signing and marking changes: At intersections where all approaches have stop signs, a supplemental plaque must (STANDARD) be mounted below the stop signs. *All Way* signs are preferred. The compliance date is January 17, 2004.
- Street name signs should be (GUIDANCE) installed at all urban street intersections and at important rural road intersections. The signs shall be (STANDARD) retro-reflective with uppercase letters that are 6" high and lowercase letters that are 4" high. When traffic speed is less than 25 mph, 4 inch letters may be used. The compliance date for minimum letter height is 2012.



- Parking restriction signs shall be (STANDARD) retroreflective.
- Centerline marking is required (STANDARD) on urban arterials and collectors with more than 6,000 ADT (average daily traffic). It should be used (GUIDANCE) on

urban arterials and collectors over 4,000 ADT. Centerline should be used (GUIDANCE) on rural arterials and collectors over 3,000 ADT.

- Edgelines shall be placed (STANDARD) on rural arterials with more than 6,000 ADT and should be placed (GUIDANCE) on rural arterials and collectors with more than 3,000 ADT.
- Edgelines may be used on roads where no centerline is used.
- A new part of the *MUTCD* is dedicated to low volume roads. A reduced level of signing is possible on rural roads with less than 400 ADT.

Watch *Crossroads* for developments in the new *MUTCD* and *Wisconsin State Supplement*.

See *Resources* on page 7 for how to buy print copies of the *Millennium MUTCD*.

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