WINTER 2005

TIC CROSSROADS

http://tic.engr.wisc.edu

WISCONSIN TRANSPORTATION INFORMATION CENTER– LTAP

"Too often I see trucks and workers in the public right of way without proper signing."

INSIDE

Wisconsin adoption of MUTCD affects work zones

WISCONSIN DOT expects to publish its Supplement to the 2003 federal MUTCD (Manual on Uniform Traffic Control Devices) shortly after the beginning of 2005. That will put the rules and guidelines of the 2003 MUTCD into effect in the state.

"There are almost 300 changes in Part 6 of the Manual, though the major ones don't take effect for a few years," says Consultant Don Gordon. He teaches the TIC's January Work Zone Safety workshop along with Jim Schneider. They will cover this year's changes, how to set up work zones for common maintenance situations, and the basics of flagging. (See Calendar on back page for times and locations.)

The MUTCD's work zone guidance has been developed using research on how people respond so they can understand, prepare, and react, Gordon says. To keep drivers and workers safe, signs, flaggers, arrow panels, drums, cones, and other items need to:

- command attention
- have a clear simple meaning
- give adequate time for response

"A lot of folks, especially county highway departments, are doing a good job with work zones," says Gordon. "But, way too often I see trucks and workers in the public right of way without proper signing. Often it's contractors doing water or sewer or cable TV work."

FAR LEFT *The new MUTCD has changes for work zones and flaggers.* LEFT *Flaggers now must have ANSI standard reflective vests.*

Unfortunately, there are no work zone police, he notes, and it's municipalities who will get sued if there's an injury or death.

The TIC invites local officials and maintenance supervisors to publicize the Work Zone Safety workshop to their contractors, and encourage them to send a representative.

"If the timing isn't convenient, or they want to train a lot of people, we can present the workshop on their site," says Steve Pudloski. He coordinates work zone programs for the TIC.

Changes for flaggers

Several changes in the MUTCD pertain to flaggers and other workers.

Illumination The Manual requires that the flagger station shall be illuminated with floodlights when flagging takes place during hours of darkness, except in emergency situations. Streetlights and vehicle headlights do not meet this standard, and the lights can't be shining into the eyes of approaching drivers. "We have been training flaggers to use a flashlight," says Gordon, "but that does not meet the illumination requirement." This takes effect when Wisconsin adopts the MUTCD in early 2005.

Stop/Slow paddles The new Manual expands the options available for incorporating flashing lights into the Stop/Slow paddle to supplement the message. It now allows white or red flashing lights on the Stop side; white or yellow on the Slow side; and expands the allowable patterns for arranging lights on the paddle.

Safety vests It is now mandatory for flaggers to wear apparel that meets ANSI Class 2 standard for the amount of reflective striping and background material. Class 3 apparel should be considered when flagging at night. Other workers exposed to traffic or construction equipment should (guidance) wear apparel that meets ANSI 107-1999 standard.

For readers unfamiliar with the MUTCD, information is presented as mandatory (a "shall" statement), strong guidance (a "should" statement), or suggested (optional; a "may" statement).

MUTCD . . . continues on page 3

Idea EXCHANGE

Patcher plugs potholes, permanently

WHEN FREEZING, thawing, and traffic pound pavements full of potholes, City of Beloit plugs them permanently. Operators Nolan Garcia and Eligha Boatner wave a wand over the damage and it's gone in seconds. It's not magic, just the business end of their Wildcat spraypatch road repair machine.

The system is faster, safer, and less dependent on the weather than cold patching with a truck and shovel. "You're not out there in the middle of traffic, carrying shovels full of material across intersections, then running them over with the truck," says Garcia.

With a hydraulically operated hose, large feed tube, and quieter more powerful engine, the 2-year old machine is ergonomically designed and safer for the operator to use.

Mounted on a trailer, the machine has a 90 gallon heated tank of emulsion, a hopper of clean chip stone, and a compressed air sprayer. The operator first clears the pothole with a blast of air, then jets it full of emulsion-coated rock at a speed of 50 mph. The patch is fully compacted and ready for traffic right away.

"With our streets getting older and money getting tighter, there's not enough money to overlay the streets. We keep the crew busy patching pretty much full time all year round," says Richard Kinzer Beloit Streets Supervisor. In 2003 they repaired nearly 23,000 potholes, using up 8622 gallons of emulsion and about 240 tons of chip stone. They got their first patcher in 1997. The new one cost $45,000 in 2002, equipped with lighted arrow board.

The most important feature, though, is the quality of the patch. "It's about as close to a permanent repair as you can find. Our patches are much better by far than a cold patch," says Garcia. "We have places that we patched six or seven years ago that are still in good shape."

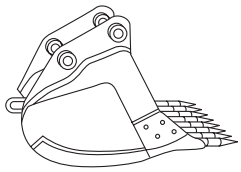
They found the spray system can be used to overlay pavement sections with bad alligator cracking. "It lets you get a few more years out of a pavement," says Garcia. "Five years later when they go to tear out the old pavement the patch is still there." Also, they save money on repairing pavement around manholes and have even used it to fix broken curbs.

They still use some cold patch, however, when there is a pothole "epidemic," such as after the first spring thaw and rain. "We send three or four crews out, patching holes, to get a handle on them. Later we send the patchmobile out to those locations to seal them permanently," says Kinzer.

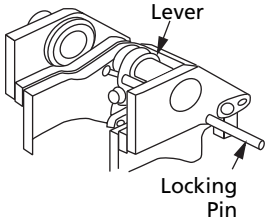
"The machine needs employees that take a serious interest in running the machine," he says. "They must be well trained and have good eye hand coordination so they can make patches with smooth transitions." Apparently Garcia and Boatner have the right stuff. In 2004 they were patching 19 holes an hour, on average, up from 17.3 in 2003.

For more information on Beloit's spray patcher, contact Richard Kinzer at: 608/364-2929.

Quick coupler release hazard



Quick couplers make it easy to switch attachments.



Locking pin or other safety device prevents unintended release.

QUICK COUPLERS are handy devices that make it fast and easy to change the attachments on hydraulic excavators. Unfortunately, a worker died last year in Wisconsin, struck by a bucket that accidentally released from a quick coupler. A locking pin had not been manually installed to secure the connection.

An OSHA investigation revealed 14 other accidents in the last six years where excavator buckets unexpectedly released from quick couplers. There were eight fatalities. Manufacturers recognized the hazard and redesigned the couplers. They also have provided users with a retrofit locking pin.

Unintended releases continue, however, because some employers and contractors do not know about the hazard, some don't install the locking pins, and some users are not adequately trained on installing and testing the couplers. An OSHA Safety and Health Information Bulletin describes the problem and recommends actions to prevent unintended releases.

- Check your quick couplers to see if they present a hazard.
- Get and install retrofits if needed and available, or replace with new, safer model.
- Maintain and inspect couplers to prevent malfunctions.
- Test connections every time an attachment is made. Follow manufacturer's instructions.
- Train employees to use properly, inspect, and test. Require them to use proper procedures.

Hazards of Unintended Release of Buckets from Quick Couplers on Hydraulic Excavators, OSHA bulletin SHIB 08-26-2004, is available in print from the TIC. On the Web at: www.osha.gov/dts/shib/shib082604.html

MUTCD affects work zones . . . *from page 1*

"Typically, orange t-shirts do not meet that standard," says Tom Notbohm, State Traffic Engineer of Design, WisDOT Bureau of Highway Operations. Although the compliance date is December 2006, supervisors will want to be aware of the change as they are making budgets and purchasing new safety equipment.

Making work zones accessible

The new Manual Part 6 has many changes designed to better accommodate buses, bicycles, pedestrians, and persons with disabilities. "Basically the Manual now says that we have to assess the needs and use judgment to provide for effective continuity of pedestrian routes and bus stops," says Tom Notbohm. These changes have a compliance date of December 2008.

To conform to the new Manual, pedestrian features have to be consistent with the existing facility. For example, if the old walkway was paved, the work zone walkway must have a hard surface. The Manual gives the guidance that "In general, pedestrian routes should be preserved in urban and commercial suburban areas. Alternative routing should be discouraged." (6D.01)

The Manual is now in compliance with the Americans with Disabilities Act (ADA). "That has a great impact on Part 6 because of pedestrians near work zones," says Gordon, who serves on the national MUTCD advisory committee.

To accomplish this goal, there are many changes throughout the section and they require assessment and planning. For example, if you determine that pedestrians with visual impairment will need to pass through the work zone, you must provide a walkway with "detectable channelization." The walking path must have some kind of raised, continuous edge that a blind person can feel with a cane. Drums with tape strung between them would not work. Details will be covered in the January workshop.

Reviewing these changes can make it seem like setting up a work zone is impossibly difficult. While some situations are complex, following a few standard setups will take care of most work zone situations.

Working in the right of way without proper signing is a hazard that occurs frequently.

For safety in work zones

PREPARE Have on site an adequate supply of signs, cones, Stop/Slow paddles, reflective vests, and other basics.

PLAN Develop a plan and train a lead worker in proper work zone set up.

TRAIN Teach proper flagging and work zone set up to the workers.

SUPERVISE AND INSPECT Ensure that workers and contractors are using proper procedures and work zone set ups on the site.

Plowing champions

THE WINNING TEAM at the APWA Snow Plow Roadeo in September was Manitowoc #1, Kerry Krajnik and Paul La Croix.

Second place went to Sheboygan Team #1, Scott Buboltz, Mark Oldenburg, and Mark Pawasara (mechanic).

Third place winners were a combined team consisting of Tyson Barnes from Jefferson County and Rod McGee from Polk County.

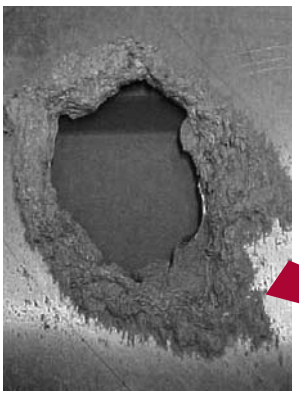
Competition was stiff with 52 teams participating—the highest number ever. Next year the Roadeo will be back at Lambeau Field on Wednesday, September 21, 2005.

Kerry Krajnik (l.) and Paul LaCroix, Manitowoc's championship plowing team.

PHONE
800.442.4615
FAX
608.263.3160
EMAIL
tic@epd.engr.wisc.edu
WEB SITE
http://tic.engr.wisc.edu

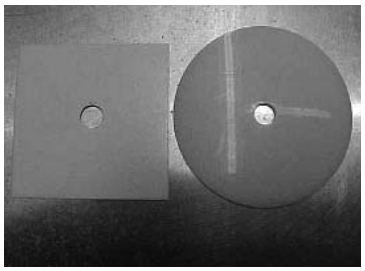
Wisconsin LTAP

Wood preservative corrodes signs

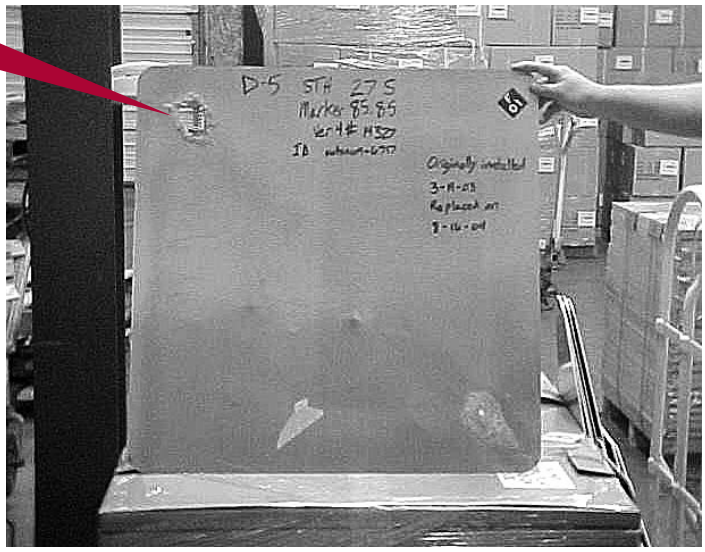


Copper in wood preservative corrodes aluminum signs.

ALUMINUM SIGNS started falling off their wood posts in less than a year after WisDOT switched to posts treated with ACQ (Ammoniacal Copper Quat). Previously, they had used posts treated with the preservative CCA (Chromated Copper Arsenate). The change took place about two years ago because of a US EPA requirement.



Putting a plastic spacer behind sign will protect it.



"We're also recommending use of stainless steel lag bolts and washers to mount the signs."

If you have questions about this issue, contact Matt Rauch at 608/266-0150.

"The problem is the copper in the preservative reacts with the aluminum in the signs," says Matt Rauch, WisDOT State Signing Engineer. "Where CCA has about 16% copper, ACQ has 66%."

As of December 2004 WisDOT has returned to using only CCA treated posts and is alerting municipalities and signing contractors to the problem. Some counties have also reported the problem, which also affects wood guardrail posts and bridge timbers.

First, find out if you have a problem. Check posts in stock, invoices or posts in the field for the type of preservative. They will have a tag on one end specifying the treatment ("ACQ" or "CCA"). If you have a sign inventory, you can locate wood posts installed since ACQ sign posts became widely available in 2002.

Removing posts is not necessary, Rauch says. "We have 25,000-30,000 signs already on these posts." You can seal signs that are corroded, if the base material is still good, by cleaning with a wire brush and spraying with XIM-400, or equivalent product, which is a clear metal primer for aluminum. Then put plastic or foam spacers between the sign and the post. DOT is using 3½" x 3½" square plastic spacers.

"We're also recommending use of stainless steel lag bolts and washers to mount the signs," Rauch says. "We have seen corrosion and deterioration on galvanized bolts and washers." You can use up existing stocks of ACQ-treated posts by installing signs with spacers and stainless hardware.

Municipalities and state agencies can purchase CCA-treated wood for roadway uses. However, EPA has not eased its rules for residential uses; ACQ treated wood is required for wood decks and other home projects.

California study: low cost sign fixes make rural roads 41% safer

IN JUST SIX YEARS, total crashes dropped from 601 to 348 on 676 miles of rural low volume roads in Mendicino County, California. At the same time, crashes rose by 27% on comparable roads not included in the safety project. This spectacular improvement owes much of its success to regular safety reviews and upgraded signing.

"It was nothing scientific by any means," says Gary Kennedy, Manitowoc County Highway Commissioner. "It was a matter of reviewing their roads, looking at the crashes, and putting up the right signs." He and Commissioner Roger Laning, Sheboygan County Highway Department, attended a national rural road safety meeting in Mendicino County last September.

"They just did the things we've known for 20 years should be done," Laning agrees. "Get the signing in good condition—checking for placement, proper marking, making sure the signs were reflective—and reviewing crash data. The same things are covered every year in our Highway Safety workshops."

The TIC Highway Safety workshops, held February 21-March 1, review the basics of signing and marking, highlight good sign installation and maintenance practices, and help participants identify roadside hazards to improve local road safety. (See Calendar, back page)

What Mendicino County did

Mendicino County lies in a mountainous region on the north coast of California. There is no town government so the county manages the rural roads; nearly all are winding and hilly; 40% are

gravel. With no money available to pave, straighten roads, or realign intersections, the county DOT had to take a low tech, low cost approach to making their roads safer.

They invested $8,000–$10,500 a year in annual, systematic safety reviews that covered a third of the county and about 220 centerline miles of road. In a three-year cycle they reviewed 676 road miles, examining all the arterials and collectors, and selected local roads chosen through crash records. In addition, improvements cost an estimated average of $100/sign.

The county Traffic Engineer first reviewed accident reports and maps to identify patterns in locations, causes or types of accidents. He prepared a paper record for each road marked with locations of particular interest. Driving the road, he used a tape recorder to describe deficiencies, locations, and recommended corrective actions. The notes were transcribed later into a database.

In the first three years of the project, they identified and corrected significant deficiencies, concentrating on improved signing for curves and turns. This produced a decrease of 34% in total crashes. Other improvements in the second three year cycle resulted in an additional 8% reduction.

What you can do

Start by making safety a priority. Learn to identify common roadway safety and signing hazards by attending the TIC workshop and reviewing the TIC's ***Safety Evaluation and Rating (SAFER) Manual.***

This spring, when you rate pavement conditions, set aside time to rate some roads for safety as well. It is especially valuable to review crash data on roads chosen for maintenance or improvement work in the coming construction season. You can include safety improvements at little extra cost. You could also review the most heavily used corridor, choose your community's main arterials, or select a group of roads based on crash frequency.

Each county has a Highway Safety Committee which meets quarterly and a DOT highway safety coordinator attends each meeting. The committee should ask the safety coordinator for an Excel spreadsheet listing all crashes in the county. The data can be supplied on a computer CD. All crashes reported in the county are listed by road name with data on type, location, driver, weather, and roadway characteristics. Data for 2004 will be available in March or April 2005.

On low volume roads you will need to look at data from a 3-5 year period in order to spot patterns and trends. You should be able to get this data for any group of roads from the county or District in electronic spreadsheet format.

"Most town road intersections may not have enough traffic or crashes to calculate a statistically valid crash rate, but the listing can still be used to compare one intersection to another." says Richard Lange, WisDOT Safety Analysis Engineer. "You could get some idea of what's good or bad, however."

Early next year his office will be publishing tables which give some guidance on what is a "normal operating crash rate" at an intersection. By comparing local crash rates to those in the table, you may be able to identify local intersections with higher than "normal" crash rates.

Just do it

You can make your roads significantly safer at almost no extra cost. Do it by looking at signs all the time, and while you are doing other things. Make it a continuous process. Any time you look at a road, no matter what the reason, look at signs too; just always do it.

"You don't need crash data to go out and look at signs and keep them in good shape," says Gary Kennedy. "Look for locations that are obvious to anybody — curves, turns, blind intersections. There is a pay back for this. It is simple, low cost, and it can make a difference."

Improved signing on curves and turns cut crashes 34% in Mendicino County.

"It was nothing scientific by any means. It was a matter of reviewing their roads, looking at the crashes, and putting up the right signs."

Signing for Local Roads, TIC Bulletin No. 7, is a good general introduction to when, where and how to use signs.

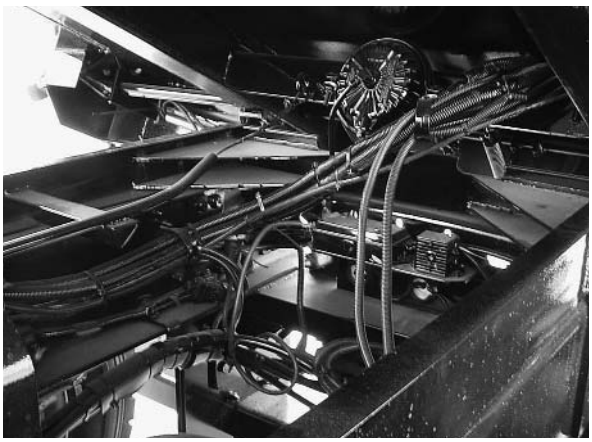
*The **SAFER Manual** offers a practical, systematic approach to identifying safety hazards on local roads. Both are available in print from TIC and on the TIC Web page.*

Tips for winter mainenance

WINTER MAINTENANCE—plowing, deicing, sanding—puts a lot of strain on equipment. The best way to ensure your operations are smooth and reliable is to do regular, preventive maintenance. Adding new equipment also can make the job easier and save costs, sometimes for relatively little outlay.

Dave Lyga, Shop Superintendent with the Trempealeau County Highway Department, offered a number of suggestions at the TIC's Winter Maintenance workshops last September. Some highlights are described here. Details and specs are in the workshop packet (extra copies available).

Deicing chemicals can corrode and damage wiring.



Protect wires by using plastic loom.

Electrical Salting and anti-icing liquids are making it more and more difficult to prevent electrical corrosion. Lyga recommends using quality (sxl) wiring designed for marine and salt usage, and sealed connectors (Weatherpak or equivalent). Completely seal all connections and splices with good quality epoxy-lined butt connectors that shrink when heated. Protect wires by running them inside a plastic loom.

Be careful with testing. Don't poke wires with a test light; corrosion will start almost immediately. Also, use a multi-meter whenever possible to protect sensors and other functions that require fewer than 12 volts.

Hydraulics Keep moisture and contamination out of the hydraulic system. Check all the hoses, change filters every year, and change the oil if it's milky white from moisture. When attaching snow equipment let a small amount of oil leak out to flush any dirt or contamination before hooking up the hoses. "It's kind of like cleaning a wound on your arm before putting on a bandage," says Lyga.

Fuels Change fuel filters annually, and check for moisture. Fuel after plowing when the tank and fuel are both cold. Avoid putting cold fuel in a warm tank to minimize condensation. Use anti-gel products only if necessary, or purchase a blend of #1 and #2 diesel to prevent fuel gel. The blend has less power and fuel economy, however. Add cetane boosters to diesel to increase power and cut exhaust smoke during morning start-ups.

Bio fuel—diesel blended with 5% soybean oil—works well Lyga has found. It already has cold weather gels, and it runs more smoothly with less hesitation and less smoke than straight diesel. "The power is as good, or better, than standard grade diesel fuel and we're getting 5–7% better mileage," Lyga says. Though it costs 2–3% per gallon more, the better mileage produces a net savings.

Air Keep air filters clean. Check all clamps on the air to air aftercooler tubes and hoses. Air leaks here can cause significant engine power loss. Keep outside fins clean and repainted and clear out any dirt and debris that builds up between the radiators.

Flush liquid system tanks and pumps thoroughly.

Lubrication & flushing Have plow drivers grease often. "You have to push the moisture and salt brine out of the joints and replace it with fresh grease," Lyga says. Keep clutch adjuster rings free so you can adjust when necessary.

Vacuum the throttle pedals to clear out salt from your boots and lubricate with penetrating oil to eliminate problems like engine service warning lights due to faulty throttle sensors.

Flush out liquid system tanks and pumps thoroughly. Add two gallons of windshield washer solution and leave it in the tank until you are ready to use it.

New product ideas and specs "Don't be afraid to try new products and ideas," says Lyga. Preformed or spray-on plastic reduces drag on the plow moldboard and keeps salt moving in dump bodies. Rubber blades, or carbide blades with rubber inserts

New WisDOT lighting guidelines include HID head lamps.

Plastic reduces drag on the plow moldboard.

at the bolt holes, are great for reducing vibration and quieting road noise for the operator.

Good lighting is also very important for your safety and the public's. New WisDOT lighting guidelines include high intensity discharge (HID) headlamps, an LED light strip mounted on the rear of the truck, and an LED wing plow lamp and end marker to mark the end of the wing plow. They are required for trucks purchased after January 1, 2005 that plow snow on state highways with 25,000 or more vehicles per day and discretionary for others.

LED stop/tail/turn lights are the most effective rear lighting available at this time. It is a very good idea to upgrade current trucks with LED lights. They take less voltage and are very long lasting. The price has come down considerably and no special conversion is needed. LED clear/white sander lights are now also available.

"When ordering a new truck, do a lot of research and ask a lot of questions so you can develop good specifications," says Lyga. Specs don't have to be many pages long, but they should list the components that are most important to your needs. Be specific about what you plan to install on the truck chassis.

For your electrical needs, ask for a "body builders electrical harness" with switches already installed. Many new trucks use multi-plex wiring that sends multiple signals simultaneously to many functions. "You cannot just cut and splice wires for adding equipment any more like we used to," says Lyga.

Ask for a "clean frame package" if you plan on installing underbody scrapers, pusher axles, front mounted spinners, etc. Talk to your body company and find out what requirements they need to properly mount your equipment. Failure to do this will result in extra costs to you.

Using Salt and Sand for Winter Maintenance, TIC Bulletin No. 6, gives good basic information and practical tips on using deicing chemicals and sand.

Snow Equipment Maintenance packet has details and specs on winter equipment. Request from the TIC.

CDL reminders and changes

DRIVERS WHO operate snowplows and other trucks weighing over 26,000 lbs. gross vehicle weight must have a Commercial Drivers License (CDL) under federal law. This requirement took effect in 1999, but changes and clarifications over the years have produced some confusion. Also, further changes take effect as of September 30, 2005.

Instructor Gary Kreuger discussed the CDL at the TIC's Winter Road Maintenance Workshop in September. Here are some questions from participants about who is required to have a CDL.

***Q** Aren't municipal employees exempt?*

No. Regardless of who you work for, you must have a CDL if you are driving a Commercial Motor Vehicle (CMV).

***Q** Are motor graders considered a CMV?*

No. You do not need a CDL to operate a motor grader.

***Q** What about trucks that weigh exactly 26,000 lbs.?*

They are not considered a CMV. A bus designed to haul 16 or more passengers including the driver ***is*** considered a CMV, even if it weighs less than 26,000 lbs.

***Q** Do you need a CDL to drive a truck with air brakes, even if it doesn't weigh over 26,000 lbs.*

No.

Changes affecting operators with CDLs include:

Bring your Social Security card to renew your CDL. This change, made by the Patriot Act, is already in effect at some WisDOT DMV locations in the state and will be at all in 2005.

Drivers can not drink any alcohol four hours before operating a CMV; they can not have any trace of alcohol on their breath; they are considered legally drunk with a blood alcohol level of 0.04% or greater.

Several penalties and standards will be stricter as of next September. A person can lose the CDL for: a major traffic violation while driving a CMV or other vehicle; driving a CMV without obtaining a CDL or without having the proper class of CDL for the vehicle; driving a CMV without a CDL in your possession; and other conditions.

States can not issue a special, or occupational, CDL license when the CMV privilege is disqualified, nor when the non-CMV license is revoked, suspended or cancelled.

For more details, including a chart of *Wisconsin CDL Alcohol Related Offenses,* request the *CDL packet* from the TIC.

Pulverizing — a good fix for a bad base

"WisDOT pavement designers [should] use pulverize and relay ... to address severe existing AC pavement defects."

WHEN ASPHALT pavement deteriorates to a PASER rating of 3 or 2, it needs structural repairs or reconstruction. Often the base layer under the severe block cracks, frequent potholes and alligator cracking, is too thin or the subgrade soil is poor quality. You can learn about repair, reconstruction and maintenance options for local roads and streets at the TIC's Road Maintenance workshops next spring.

A recent City of Wisconsin Dells project tackled base problems: "We knew going in that the soil was marginal," says Mike Horkan, the city's Director of Public Works. Rather than undercutting and removing the wet clay, then filling with up to two feet of good stone, they chose to pulverize and add fly ash.

The contractor, WK Construction, pulverized the existing 3" of asphalt and 6" of base, mixing it with subgrade soil for a total depth of 12". To increase strength, fly ash (12%) and water were added on a second pass. The mixture was then compacted and graded to final cross section. The new base was ready for paving in two days.

"There was virtually no downtime with the roadway," says Bill Kahl, owner of WK Construction. "Instead of massive amounts of undercutting that might have closed the road tight, they got a stabilized base and paving platform in two days and every night it was open to traffic."

No stone was delivered to the job and nothing was hauled away. The pulverizer created a new base from the native soil, available base, and existing asphalt. Adding fly ash strengthened and stabilized the wet clay soil.

Fly ash contains tricalcium aluminate, the same chemical as in Portland cement. It works on clay soils much the same way; it reacts quickly with water, dries out the soil, and physically cements soil grains together. This produces a stronger base that is more resistant to water infiltration. Typical addition rates are 12–15% based on dry weight of soil. Organic soils are difficult to stabilize using fly ash.

New asphalt overlays over a pulverized base last longer than a standard AC overlay over an AC pavement, says a WisDOT study. It reports that the statewide average service life for pulverized base with AC overlay is 18 years compared to 12 for AC over AC. Although initial cost is higher, maintenance costs are lower, resulting in a lower life cycle cost.

"WisDOT pavement designers [should] use pulverize and relay ... to address severe existing AC pavement defects such as cupped transverse cracks, longitudinal and transverse distortions, block cracking, alligator cracking and rutting," the report recommends.

Pulverizing old pavement with base and subsoil provides strong support for a new asphalt layer.

Determining the Effectiveness of Pulverizing and Relay of Asphaltic Pavement and Base Course, WI-02-03, the WisDOT report, is available from the TIC.

TIC *Road Maintenance* workshops, March 16–24, present pavement renewal strategies along with best practices for extending pavement life. *See Calendar, back page.*

Frequently asked questions: Pavement ratings, PASER, WISLR

A LOCAL ROADWAY agency can manage pavements more effectively using an objective approach. This involves periodically evaluating all pavement surface conditions and using the information to set priorities and make decisions.

Recognizing the value of this approach, Wisconsin requires local governments to rate all pavements every two years and submit the data to WisDOT (Ch. 86.302(2) Wis. Stats.). The next set of ratings is due in December 2005. (Info on how to submit ratings will be out early next year.)

Nearly all Wisconsin municipalities rate their roads using PASER, a simplified rating system developed by the TIC. The information becomes part of a statewide local road information database called WISLR, managed by the Wisconsin Department of Transportation (WisDOT). This article helps explain PASER and WISLR.

What is WISLR?

WISLR (**W**isconsin **I**nformation **S**ystem for **L**ocal **R**oads) is the statewide database of local road information managed by WisDOT. It is Internet-accessible. Local governments, counties and WisDOT can all use it.

WISLR stores roadway data such as surface type, surface width, pavement rating, shoulder, traffic lanes, functional classification, and more.

Local communities send pavement rating data to WISLR using a variety of methods—electronic spreadsheets, paper reports, PASERWARE (v.3.0 only), and others.

What is PASER?

PASER (**P**avement **S**urface **E**valuation and **R**ating) is a simple, objective system used at the local level to visually inspect and rate the condition of pavement surfaces. It is explained with photos and text in reference booklets for each surface type: asphalt, concrete, gravel, and others.

What is PASERWARE?

PASERWARE is a computer program that stores your municipal road data and helps with local pavement management decisions.

What does WISLR do for me?

Users of WISLR can view both their own roadway inventory data and statewide roadway inventory data.

WISLR provides:

- Local control of data quality. You can update and correct local data.
- View both local and statewide data with location. See trends and display with graphics.
- Tools for rudimentary pavement needs analysis of current year data, and Geographic Information System (GIS) capability to "map" data.
- Immediate access to WisDOT forms/reports: Annual Certification Statements, Inventory Report, Construction Report Form.

What do PASER ratings do for me?

PASER ratings help local officials:

- Balance priorities and make difficult decisions
- Explain options and consequences clearly to citizens and other decision makers

What does PASERWARE do for me?

PASERWARE uses your local computer to:

- Store your local road data after it is downloaded from WISLR
- Update pavement rating data
- Perform needs analysis for 1-6 years
- Help with management decisions

Purpose of WISLR

WISLR is used by WisDOT to:

- Distribute General Transportation Aids to local units of government.
- Provide essential information for mandated federal reporting.
- Distribute county forest payments to qualifying counties.
- Store pavement ratings submitted by locals to comply with Wis. Statute 86.302(2).

Purpose of PASER ratings

PASER is an objective technique local people use to rate local roads. Reviewing all roads together and using ratings to make choices helps manage pavement more effectively.

Purpose of PASERWARE

PASERWARE provides "what if" charts. It can project up to six years into the future and show the effects on road condition of different budget, project selection, and maintenance decisions.

Who may use WISLR?

Local government officials, county officials, those employed by local governments and counties, and WisDOT may use WISLR.

Who uses PASERWARE?

About 600 Wisconsin towns, villages and cities currently use a version of PASERWARE. The newest version, PASERWARE 3.0, is compatible with the WISLR database, It can send pavement rating data to WisDOT. You do not need to use PASERWARE 3.0 to submit pavement ratings.

How do I gain access to WISLR?

Officials can access WISLR at the WisDOT WISLR page: http://www.dot.wisconsin.gov/localgov/wislr/index.htm

Scroll down to: ***How to access and get started using WISLR.*** Once you have received WISLR privileges, access WISLR at: https://trust.dot.state.wi.us/wislr/

How do I get PASERWARE v. 3.0?

Current PASERWARE users who want to upgrade to v.3.0 can get the program only in a TIC training session.

You can continue using older versions of PASERWARE for aiding local management decisions and submit 2005 ratings directly to WISLR as a separate process.

PASER Manuals to help you evaluate and rate roads are available on the TIC Web page or in print (see page 10).

PASER videos show how to evaluate and rate pavement conditions using PASER ratings and manuals (see page 10.)

Asphalt PASER, 46 min. #17761

Gravel PASER, 15 min., #18385

Sealcoat PASER, 13 min., #18386

PASER Series 74 min. #18390 (all three together)

Learn to use WISLR with a computer-based training CD. E-mail your requests to wislrinfo@dot.state.wi.us

RESOURCES

Print copies of publications are available free from the TIC while supplies last. Electronic copies may be downloaded from the TIC Web site.

Videos are loaned free through county UW–Extension offices.

Print copies of the current TIC Video Lending Library Catalog were distributed this summer. Videos are also listed on the TIC Web site.

TIC Web site

http://tic.engr.wisc.edu/

Publications

The *SAFER Manual*, TIC, 1996, 40 pp., provides practical information for identifying hazards on your roadways and prioritizing safety improvements.

Comprehensive Intersection Resource Library is a CD that includes many federal and state guidelines and other publications that are useful in the design of signalized and unsignalized intersections, roundabouts, rail grade crossings and other intersection designs. The CD also has publications on pedestrian and older driver considerations for intersection design. A limited number of CDs are available from TIC.

The Nature of Roadsides and the Tools to Work with It, FHWA discusses Integrated Roadside Vegetation Management best practices. Includes information on working with native plants and controlling invasive plants. It has an excellent list of reference books and Web sites related to roadside vegetation management. Also online: www.invasivespecies.gov/docs/roadsides/

Managing Beavers and their Dams A packet of information providing information on best practices on management of beavers and beaver dams. The information compiled by the Vermont Fish and Wildlife Department includes details on simple countermeasures to reduce beaver damage.

REVISED ***Culverts – Proper Use and Installation,*** No. 15, TIC, 2004, 12 pp. Discusses conditions to review in selecting and sizing culverts, design considerations, installation methods, environmental concerns and required permits, and critical maintenance factors.

Glasgrid® Pavement Reinforcement Product Evaluation, FEP-03-03, is a 10-year evaluation by WisDOT of a test installation on State Trunk Highway 57 in Sheboygan. Online at: www.dot.wisconsin.gov/library/research/ docs/finalreports/tau-final-reports/glassgrid2.pdf

Aluminum Sign Corrosion Investigation, WI-06-04, WisDOT, discusses early corrosion problems in aluminum sign blanks in Wisconsin and identifies Alkaline Copper Quatenary (ACQ) preservative in wood signposts as the problem. Recommends changes in specifications for signs and sign hardware, and installation procedures. Available from TIC.

Websites

The Deer-Vehicle Crash Information Clearinghouse at the University of Wisconsin–Madison, www.deercrash.com/index.htm, is a great source if you are looking for information to help in dealing with the problem of deer vehicle crashes. The Web site includes a Counter-measure Toolbox at www.deercrash.com/toolbox/index.htm that summarizes research on countermeasures and products that claim to reduce deer-vehicle crashes. You can select a particular deer-vehicle crash counter measure and learn more about what research has shown about its effectiveness.

The National Invasive Species Council at www.invasivespecies.gov has information on invasive species and their management and links to other resources on invasive species.

Videotapes

NEW ***Poisonous Plant Safety,*** The Training Network, 1990, 8 min. #18737. This short video shows examples of poisonous ivy, oak and sumac and gives tips on identification and treatment for field personnel.

Snow and Ice Control (series), IL DOT, 2001, 59 min. #17625

Introduction and Plows, 10 min. Shows basic types of plows and their use.

Hopper and Tailgate Spreaders, 8 min. Types and details on controls, hookup, loading and calibration.

Weather Forecasting, and Chemical Application, 8 min. Use of salt and calcium chloride, storage and both dry and liquid applications. Types of weather forecasting tools including DTH and RWIS.

Pre-Storm Preparation, 13 min. Stresses importance of taking care of equipment. Includes preseason check, daily equipment checklist, radio use, dry run, and appropriate clothing.

Plowing and Spreading Techniques, 12 min. Highlights challenges with storm types and safe operating techniques. Includes truck plows, wings, and graders.

Final Clean Up, 3 min.

A Snowplow—Cool! Minnesota Local Road Research Board, 2001, 9 min. #18679. This public information video covers the dangers of children building snow forts and playing in snow piles next to a public street. Intended to educate children and snow plow drivers

Asphalt: PASER, UW–Madison, 1995, 46 min., #17761. Investigates pavement distress, performance, and causes. Identifies asphalt pavement failures and classifies pavement condition on PASER rating scale. Also discusses repair or rehabilitation.

Gravel: PASER, UW–Madison, 2000, 15 min., #18385. Describes common distress in gravel roads and uses distress to rate gravel roads in PASER rating system. Intended as a review for local agency officials.

Sealcoat: PASER, UW–Madison, 2000, 13 min., #18386. Describes common distress in gravel roads with an asphalt chip seal surface. Covers evaluation and rating. Intended as a review for local agency officials.

PASER Series, UW–Madison, 2000, 74 min., #18390. Combines the *Asphalt-PASER, Gravel-PASER,* and *Sealcoat-PASER* training videos. Use to learn how to evaluate and rate pavement conditions using PASER system and manuals.

Getting Across—Aquatic Organisms and Road-stream Crossings: A Brief Introduction, U.S. Forest Service, 2003, 6 min. #18665. Brief introduction to the impact of road culverts in stream habitat. Provides awareness of the issue and problems to a general audience.

Getting Across—Aquatic Organisms and Road-stream Crossings: General Overview, U.S. Forest Service, 2003, 17 min. #18666. Shows details of the impact of road culverts on stream habitat and aquatic species. Examples of good culvert installation are provided. Intended for general, non-technical audience.

Plant Site Safety, Iowa State University, 1997, 11 min. #18630. Shows typical hazards at concrete, asphalt and crushing plants. Advice intended for plant workers, crane or truck operators. Good for new employees or as a refresher.

Drainage Pipe Installation, PA DOT, 18 min. #18667. Reviews the basics and details of proper culvert installation. Steps for planning the installation are covered. Details and examples of excavating, removing, placing, and backfilling culverts are shown. The benefits of good compaction are demonstrated. Intended for field crews.

Safe Tree and Brush Removal, IL DOT, 2003, 19 min. #18668. Good training video. Begins with information on why to remove trees and brush. Shows details on daily maintenance, sharpening and tips for safe operation of chain saws and brush chippers. Also illustrates safe skills for tree cutting, stump removal and tree trimming.

Safe Mowing Procedures, IL DOT, 2003, 17 min. #18669. Describes when and where to mow according to Illinois DOT policy. Has good details on daily equipment inspections and safe mowing operations.

On Again, Off Again: A Guide to Mounting and Dismounting Heavy Equipment, Association of County Commissioners of Oklahoma, 2003, 18 min. #18670. A good review of the basic safety rules. Includes 8 steps for safe mounting of equipment. A few ideas presented with humor. Useful for all equipment operators.

Videos make great training tools

IF A PICTURE IS WORTH a thousand words, a videotape must be a thousand times better. And when you can choose from over 300 of them …. priceless!

Take advantage of our video resource for all your training and orientation needs. Have a new snow plow driver? Show him safe operations with "Winter Operations Training Program," a five part set from Iowa DOT, or review techniques in 23 minutes with "Plowing Tips from the Pros."

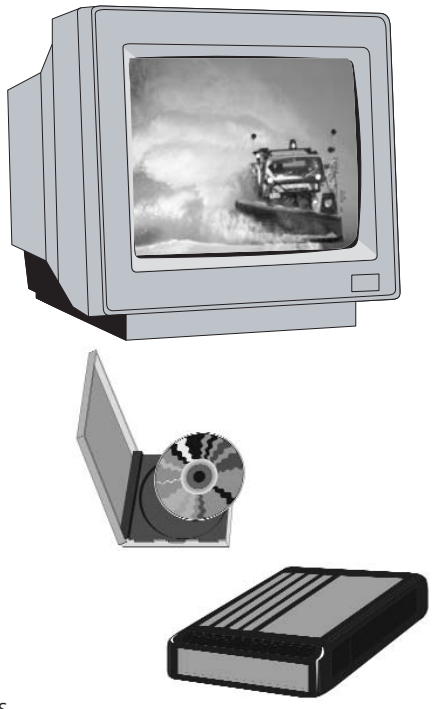
The TIC has over 300 titles in our Videotape Lending Library, covering the range of roadway operations from asphalt pavement maintenance to motorgrader operation, to "What is Anti-Icing?"

"Videotapes are short and practical," says TIC Director Don Walker. "You can fit them into your training schedule. And the only cost to you is return postage."

A new catalog of videotapes was distributed a couple months ago to all local agencies. It includes titles, descriptions and running time for each tape, along with how to order and return them. Tapes are grouped by subject, and there is also a title index. The same information is on the TIC Web page.

"It's a good idea to schedule ahead, especially for the more popular titles," Walker says. One of the most popular is "Plowing Tug Hill 1939," an oldie-but-goodie that makes a humorous introduction to winter maintenance training.

Check your office for the 2004 catalog to order videos for training, or look online at http://tic.engr.wisc.edu. Recently released videos are highlighted in *RESOURCES* on page 10.



New look for Crossroads

CROSSROADS newsletter takes on a new look in this issue. The TIC staff joined with editor Lynn Entine and graphic designer Susan Kummer to create a new style and layout. Our new banner includes an outline map of Wisconsin to emphasize our strong ties to those involved in managing streets and highways at the state, county, and local level. We have always tried to bring you articles with good ideas and accurate, practical information. Sometimes we have had to leave out good material because space was tight. This issue expands to 12 pages, giving room for more of those stories, and more photos to go along with them. Future issues will be 8 or 12 pages as necessary to cover the topics we think you would like to read about. We hope you find our new design attractive and easy to read.

CROSSROADS provides information on roads and bridges for local officials. Published quarterly by the Wisconsin Transportation Information Center (TIC)—the nationwide Local Technical Assistance Program (LTAP)—with assistance from the Federal Highway Administration, WisDOT, and the University of Wisconsin–Extension. For permission to reproduce articles or graphics, please contact us.

Don Walker DIRECTOR
donald@engr.wisc.edu
Steve Pudloski STAFF
pudloski@engr.wisc.edu
Ben Jordan STAFF
jordan@epd.engr.wisc.edu
Keith Knapp STAFF
knapp@engr.wisc.edu
Susanna Fuerstenberg PROGRAM ASSISTANT
tic@epd.engr.wisc.edu
Lynn Entine WRITER/EDITOR, ENTINE & ASSOCIATES
Susan Kummer GRAPHICS, ARTIFAX

PHONE
800.442.4615
FAX
608.263.3160
EMAIL
tic@epd.engr.wisc.edu
WEB SITE
http://tic.engr.wisc.edu

Wisconsin LTAP

FEEDBACK

Please fill out this form and fax or mail (in separate envelope) with the mailing label below.

NAME _____ TITLE/AGENCY _____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

PHONE _____ FAX _____ EMAIL _____

☐ Mailing list change/addition ☐ Information/resource request ☐ Idea/comment

_____

_____

_____

_____

☐ Other

_____

_____

_____

_____

_____

_____

_____

CROSSROADS

Wisconsin Transportation Information Center
University of Wisconsin–Madison
432 N. Lake Street Room 805
Madison, WI 53706

Nonprofit Org
U.S. Postage
P A I D
Madison,WI
Permit No. 658

CALENDAR

TIC Workshops

Specific details, locations and registration forms are sent to everyone on the CROSSROADS mailing list before each workshop. Call 800/462-0876 for details and registration information or go online at http://tic.engr.wisc.edu/enroll.html.

Work Zone and Flagger Safety For road supervisors and maintenance personnel who plan and set up work zones. This workshop covers traffic control devices, the parts of a work zone, and a variety of work zone set-ups, including mobile operations and flagging operations. Participants will set up work zones using the *Wisconsin Pocket Guide to Workzone Safety and Flagger's Handbook*. Fee: $45

Jan 12	Tomah
Jan 13	Barneveld
Jan 14	Brookfield
Jan 18	Eau Claire
Jan 19	Cable
Jan 20	Rhinelander
Jan 21	DePere

Highway Safety A review of the basics of signing and marking, good sign installation, and maintenance practices on local roads. Learn to identify roadside safety hazards and understand and use crash information to improve safety on local roads. Fee: $45

Feb 21	Tomah
Feb 22	Eau Claire
Feb 23	Cable
Feb 24	Rhinelander
Feb 25	De Pere
Feb 28	Brookfield
Mar 1	Barneveld

Road Maintenance Find out what to do this spring to maintain your roads and the options for repair and reconstruction of local roads and streets. Stresses best practices for extending pavement life including cracksealing, proper drainage, adequate pavement thickness, and shoulder support. Fee: $45

Mar 16	Tomah
Mar 17	Eau Claire
Mar 18	Hayward
Mar 21	Barneveld
Mar 22	Menomonee Falls
Mar 23	DePere
Mar 24	Rhinelander

Local Transportation Funding (WisLine) – Thursday January 13, 10:30 am–12:20 pm. Receive the latest information on state and federal funding programs for local projects. Review funding options, hear about recent changes, discuss example projects that use funding programs effectively, and ask questions about funding opportunities and issues. Presenters: Scott Bush and Steven Coons, WisDOT; moderator: Ben Jordan, TIC. To register call 608/262-9961 or visit www.uwex.edu/lgc

Pesticide Applicator Training for Right-of-Way Applicators Live training sessions at Waukesha, January 27; Wausau, January 28. Pre-register by 14 days ahead. For information on these live training sessions, to pre-register online, or to learn about obtaining manuals and videotape training visit http://ipcm.wisc.edu/PAT/training/, call Rose Scott at 608/262-7588, or e-mail, PAT-program@facstaff.wisc.edu

UW–Madison seminars

Local government officials are eligible for a limited number of scholarships for the following Engineering Professional Development courses held in Madison.

JANUARY 2005

25-26 Fundamentals of Railroad-Highway Crossings

FEBRUARY 2005

14-15 Improving Public Works Construction Inspection Skills

16-17 Maintaining Asphalt Pavements

28-1 Municipal Engineering Fundamentals for Non-Engineers

MARCH 2005

14-15 Implementing a Sidewalk Management System

14-15 Solving Neighborhood Traffic Problems

APRIL 2005

12-14 Repair of Concrete

18-19 Open Channel Design

20-22 Mastering the Hydraulic Design of Culverts

25-27 Designing and Implementing Roundabouts

25-27 Effective Roadway Lighting

27-28 Bicycle and Pedestrian Facilities

 Printed on recycled paper