

# Crossroads

Winter 2003



TRANSPORTATION Information Center — LTAP

University of Wisconsin—Madison

## Making streets and highways safer



Who is responsible for reviewing signing and markings in your shop? Do they know what to look for and what to do? The T.I.C. is offering

**Highway Safety workshops** around the state in February to help update and inform staff about signing and roadside safety hazards (see *Calendar*, page 3, for details). Following are some timely signing and safety topics.

### Court rules negligence in obscured Stop sign case

Signs are important roadway safety tools for guiding driver behavior. Your responsibility for them has been further defined in recent Wisconsin Appeals Court decision. The Court found a county, a town, and a property owner all negligent in an auto crash where a driver ran a Stop sign that was obscured by an overgrown tree (see photo below).

In the case, *Physicians Plus vs. Midwest Mutual Insurance et. al.*, the Court ruled that all three were guilty of maintaining a public nuisance, saying that the condition had existed long enough that



they should have known about it and removed it. A public nuisance is defined by the court as “anything that encroaches on the safe use of a public space.”

The Court rejected the County’s three defense arguments: 1) although the county had erected the sign, they were not responsible because the road was maintained by the town, 2) the tree was on private property and the County had no right to trim it, and 3) the County did not know there was a problem.

“This decision puts towns, villages, cities, and counties on notice that **they are all responsible** for sign safety,” says Deborah Garrett, claims manager at Wisconsin Municipal Mutual Insurance Company which supplies liability coverage for many local municipalities. By applying the concept of public nuisance the Appeals Court made it difficult if not impossible for defendants to claim municipal immunity, she notes.

“On the up side, it has also given these entities the ability to remove private encroachments on the right of way, which they’ve been reluctant to do,” she says. The concern is that this ruling may also apply to equipment and vehicles parked in the right of way, political signs, and other encroachments, she states.

How can local agencies keep signs and roadsides safe and prevent liability claims? Garrett recommends developing a way for workers who are out on the roads every day to document safety hazards and to correct the condition. Records should also be kept of the corrective action taken. In addition, they need a system for notifying others who might also be responsible: the private property owner or another unit of government.



### Sign vandalism

Sign vandalism and theft can be costly, both in replacement and inconvenience or hazard to drivers. Special hardware and anti-graffiti sheeting can help.

Vandals seem to prefer some signs and locations. “We have trouble with parking lot signs and with large arrows because they are low to the ground,” says Dick Jerdee, City of Madison Traffic Operations Manager. “Where we really have a problem is stealing of street name signs, especially the intersection of “Hooker Avenue” and “Pleasure Drive,” he says.

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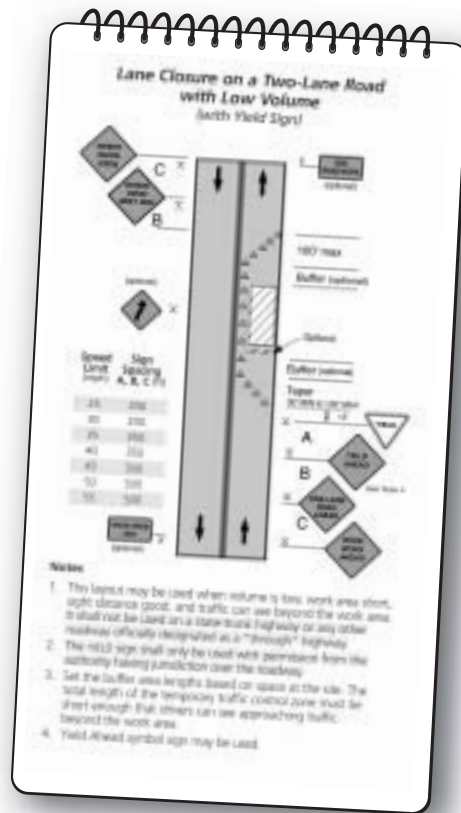
## Work zone signing

Setting up work zones is a special challenge. The signs, arrow panels, drums, and other traffic control devices you put out should be designed to protect workers by safely guiding drivers through an unfamiliar roadway situation.

The T.I.C. has revised and expanded the **Work Zone Safety** flip book to include new guidance from the 2000 **MUTCD**, and the **Wisconsin Supplement**. Specific standards from the Manual are highlighted in yellow in the text so users can see clearly what is required. Also, there is new information on reducing speeds in work zone areas.

Several typical diagrams have been modified to reflect **MUTCD** changes and others have been added to show more situations including:

- Closing one lane of a 2-lane road, a common situation when paving or patching roads in rural areas.
- Working near railroad/highway grade crossings.
- Surveyors working in the roadway.



*Copies of the book will be distributed in the T.I.C.'s January Work Zone Safety workshops (see Calendar on page 3 for details).*

## Idea Exchange

### Phone system speeds snow removal

An automated telephone system helped get cars off the streets during snow emergencies in the City of Beloit, according to Chris Walsh, Director of Operations and Transit. The software runs on a PC and delivers an automated message via telephone to residents in a designated area.

"It's slick," she says. "We targeted three areas in the city where we have a lot of cars parking. The system started making calls in the morning and by the time we called a snow emergency at 6:00 p.m. most of the cars were off the street." It cut out most of the extra time and manpower needed to ticket and tow parked vehicles and plow again.

Beloit bought the commercial system about three years ago with grant money and has used it about 100 times since

then. It can be used for a variety of municipal communication needs from meeting announcements for street reconstruction to hazardous material spill evacuations, says Captain Bill Tyler of the Beloit Police Department. It cost about \$25,000 to buy and set up the system and the city pays for each local call. They can make about 500 calls an hour with it. Bigger systems could make more.

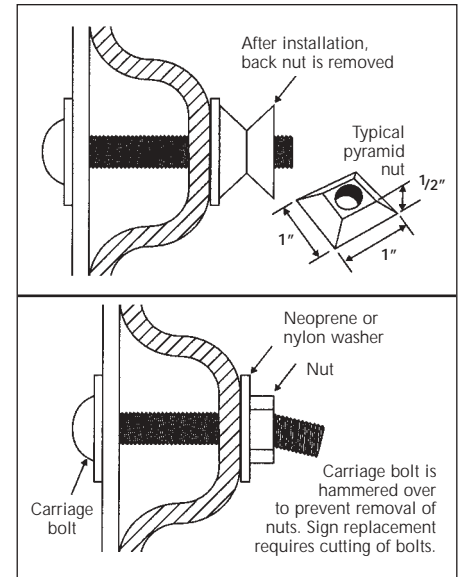
"The accuracy rate for telephone numbers is about 75%–80%," says Tyler. The Department uses a variety of sources to build up the database, including tax role information and purchased number lists. The 911 database would be more accurate but is not available to them, he says.

*For more information contact Chris Walsh at 608/364-2929, walschc@ci.beloit.wi.us or Capt. Tyler at: tylerw@ci.beloit.wi.us*

## Sign vandalism

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A different street name might help, but meanwhile the city uses vandal resistant hardware such as breakaway nuts, expanding aluminum rivets, and double pyramid nuts. Even hammering over the end of a carriage bolt can prevent removal of the nut.



Madison also uses a square channel post inserted in the round post along with double street name plates that are wrapped around the channel post, riveted together, welded, and bolted with extra hardware down through the round post. They also weld the bottom of the steel post to the steel insert in the concrete base.

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## Crossroads

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## Calendar

"That slows them down," says Jerdee. "But if they really want the sign bad enough, they'll come out with a pipe cutter. Or a group of them can pick up the whole thing. It weighs about 200 pounds with the base."

Putting special sheeting over signs helps with sprayed-on graffiti. The technician can clean the sign on its post using solvent or graffiti remover and not damage the underlying reflective sheeting or ink. "We restrict it mostly to critical signs like Stop, Do Not Enter, and yield, and use it on signs with more expensive high intensity or VIP grade sheeting," says Jerdee.

"The special sheeting saves labor and time because the person can clean off the graffiti in the field instead of having to bring the sign back to the shop," says Jerdee. Another trick is to squeegee transfer tape onto the protected sign then pull it off. It will remove the graffiti without any chemicals and doesn't harm the sign. The city uses 3M 1160 Transparent Protective Overlay film which also has protection against UV light to help prevent fading of sign colors, especially red.

Bullet holes and shotgun blasts are common sign damage in rural areas. The holes can be pounded flat and the sign left in place if it is still legible. You should check it for night time retro-reflectivity, however.

Leaving damaged signs in place is what City of Milwaukee mostly does. "We've tried all the solutions and there's really nothing better or worse than anything else," says Paul Piotrowski, Traffic Services Manager, City of Milwaukee DPW. "More often than not, we replace them and in a couple weeks they're covered again. So we generally leave them unless it's a Stop sign that's so marked up it is obscured."

Leaving a damaged sign in place may encourage more gun shots and other vandalism, says an FHWA publication on sign maintenance. They are difficult to read and do not demand the respect and attention of a driver.

*The FHWA booklet **Maintenance of Signs and Sign Supports for Local Roads and Streets: A Guide for Street and Highway Maintenance Personnel**, FHWA-RT-00-00, is available on the Web at: [http://www.fhwa.dot.gov/safety/media/pdf/sign\\_support.pdf](http://www.fhwa.dot.gov/safety/media/pdf/sign_support.pdf) or from the T.I.C. if you don't have Web access.*

### T.I.C. workshops

*Specific details, locations and registration forms are sent to all Crossroads recipients nearer the date of each workshop. Registration begins after announcements are sent.*

#### Basic Work Zone Traffic Control

For road supervisors and maintenance personnel who plan and set up work zones. Covers traffic control devices, the parts of a work zone, and a variety of work zone set-ups including mobile operations, plus pedestrian, worker and flagger safety. Participants will set up work zones using the Wisconsin Pocket Guide to Work Zone Safety.

Jan 13 Tomah	Jan 17 Green Bay
Jan 14 Eau Claire	Jan 22 Barneveld
Jan 15 Cable	Jan 23 Brookfield
Jan 16 Rhinelander	Jan 24 Brookfield

#### Highway Safety

This workshop reviews the basics of signing and marking, highlighting good sign installation and maintenance practices on local roads. It will help you identify roadside safety hazards and understand and use crash information to improve the safety of local roads.

Feb 10 DePere	Feb 14 Tomah
Feb 11 Rhinelander	Feb 17 Brookfield
Feb 12 Hayward	Feb 18 Barneveld
Feb 13 Eau Claire	

#### Road Maintenance

This workshop presents maintenance, repair and reconstruction options for your local roads and streets, including asphalt, concrete and gravel pavements. It will also emphasize good practices for maintaining and improving drainage to extend pavement life.

Mar 13 Mineral Point	Mar 19 Hayward
Mar 14 Brookfield	Mar 20 Eau Claire
Mar 17 DePere	Mar 21 Tomah
Mar 18 Rhinelander	

#### Local Transportation Issues (ETN)

The T.I.C. and UW Local Government Center present a series on transportation over ETN, Thursdays 10:30 a.m. to 12:20 p.m. Call 608/262-9960 for details.

**Road Design Standards – Jan 16** Review Federal and Local Road Improvement Program (LRIP) standards for road cross-sections. Learn when exceptions to the standards may be appropriate and how to seek them. Discuss how narrow streets and traditional neighborhood ordinances can coexist with the standards.

#### Local Transportation Funding – Feb 13

Get the latest information on state and federal funding programs for local projects. Review funding programs, hear about recent changes and discuss funding issues.

#### Solving Subgrade Problems – March 13

Often pavement problems are caused by poor subgrades. There are a variety of solutions, but selecting the most cost-effective one requires an understanding of soil mechanics and the options available. Learn basic soils concepts and review several methods to solve subgrade problems, including soils stabilizers, undercutting and back filling with select material, geotextiles, and improving the drainage.

**Pesticide Applicator Training** Two sessions for Right-of-Way Applicators from 8:00 a.m.–2:00 p.m. followed by exam:

Jan 29 Milwaukee	(Pre-registration deadline Jan 15)
Jan 30 Wausau	(Pre-registration deadline Jan 16)

Pre-registration and \$25 fee (new this year) are required. The training manual is \$45. Self-study and videotapes are also options. Information and pre-registration available online at <http://ipcm.wisc.edu/PAT/> or call Rose Scott at 608/262-7588, or e-mail [PAT-program@facstaff.wisc.edu](mailto: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 unless otherwise noted.*

**Fleet Maintenance Management**  
Dec 16-17

**Maintaining Asphalt Pavements**  
Jan 7-8

**Improving Public Works Construction Inspection Skills**, Jan 9-10

**Implementing a Sidewalk Management System**, Jan 22-23

**Municipal Engineering Fundamentals for Non-Engineers**, Feb 6-7

**Minimizing the Impact of Utilities on Streets and Right-of-Ways**, Feb 10-11

**Railroad-Highway Crossings: Planning/Design/Construction to Improve Safety and Eliminate Accidents**, Mar 3-4

**Culvert Construction and Repair**  
Mar 26-28

## Tips for winter maintenance equipment

At the T.I.C.'s **Winter Maintenance workshops** in September, shop superintendents from six counties offered ideas for maintaining, equipping and operating snow plow trucks. Here is some of their advice.

### Equipment and maintenance

**Pre-season equipment check** "We completely check each truck before the season," says Dave Lyga, Trempeleau County Hwy Department Shop Superintendent. "We do a preventive maintenance, check electrical, hydraulic and brakes, and change all the filters," he says. The county brings in extra help from the paving crew to inspect trucks and mount snow equipment: the first truck is ready by October 1, the others by the 15th, and graders and wing plows operational on November 1.

**Operator training** Outagamie County requires all drivers to complete a truck driving program at Fox Valley Technical College, and to spend one day training behind the wheel on the FVTC's skid pad. "It's a heck of a program," says County Shop Superintendent Bill Fischer. "Once they go through it we're pretty comfortable that they should be good truck operators." Outagamie joins with surrounding counties to form a class of at least 10 drivers. They supply trucks and other equipment for the training.

Milwaukee County is sending all truck operators to the T.I.C.'s Winter Maintenance workshop. "It's a well-thought-out program. Topics are timely and the guys get a lot out of it," says Keith Ponath, Director of Highway Operations for Milwaukee County. Workshop handouts can be reviewed at the beginning of the next season, suggests Bob Braunel, recently retired Superintendent of Operations for Manitowoc County. "I always went back and reviewed the information on when to use salt, liquids, and/or sand," he says. "You kind of forget that from winter to winter."

**Marine wiring** Several counties use marine grade wiring (copper wire coated with tin) on winter equipment. "We spec marine grade wire for any accessory put on by a vendor," says Keith Ponath of Milwaukee County. "It adds maybe \$20 to the truck price." Trempeleau County uses SXL brand marine wire along with Weatherpak connectors with rubber gaskets, packed with "Di-electric" grease to

keep out moisture and prevent corrosion from de-icers and salt. Other techniques involve running wires inside plastic loom (corrugated plastic with a slit to snap over wires), and repairing splices with "butt connectors" covered with epoxy.

**Stainless steel hopper, spreaders and chutes** also resist corrosion. "They're about twenty percent more expensive than regular steel," says Ponath, "but using them eliminates all sand blasting, repainting, and rusted baffles."

**In-tank fuel heaters** circulate hot water from the engine through hoses inside the fuel tank. "It keeps the fuel drier and prevents it from gelling in cold weather," says Dave Lega of Trempeleau County.

A green paste called "**Tank/Tex**" detects moisture in fuel, Lega says. Placed on a stick and swished in the fuel tank, it turns red in the presence of water. "We check for water in the tank at least once a year," he says.

**Load boosters** Wing plows add considerable weight to the side of a truck. One alternative to help carry the load is air bags. "We found the air bag setup to be high maintenance," says Wayne Slegler of Manitowoc County. "We use a Timbrelen brand Load Booster instead. We've been using them since 1994 and not had to change any of them out." The device, which costs around \$500, is a solid rubber block located between the front axle and the frame of the truck to supplement the spring. It does not affect the handling characteristics or the suspension geometry of the truck when the wing is removed, Slegler says.

**Plow blades** "We've had success with a *carbide blade imbedded* in the snowplow blade," says Wayne Slegler of Manitowoc. "It had very good ice cutting abilities and very good wear characteristics. Since trying the first one, we now have them on 10 trucks." Outagamie County mounts *serrated blades* on graders to remove ice and hard pack. "Then we take them off and go back to regular blades," says Bill Fischer.

*Rubber segmented blades with carbide inserts* conform to the road better than a regular blade, says Keith Ponath of Milwaukee County. They have a longer life, are quieter running, and make a better cut. "They're about four times the cost and life expectancy seems to be about 3-4 times that of regular blades,"

he says. The cost is about \$1200 for a standard plow. Others have not had such good experience, finding them less durable on their roads.

**Toe end chains** are an effective low-tech tool. A chain welded to the slide at the toe of the wing plow hooks onto the wing's front support post. It lifts the wing front of so it doesn't dig into a soft shoulder. "In rural areas when they're winging to get snow off the shoulders, we lift it a bit," says Bill Fischer of Outagamie County. The wing supplier installs the chain. **Curb guards** protect the plow end when it bumps into a curb. They bolt on the front of the blade, cost about \$36.50, and last almost as long as the plow blade, says Fischer.

**Snow shields** mounted on top of the front plow help keep the radiator and windshield clean. "They're very effective, but not a hundred percent," says Lee Sauer of Marquette County.

**Dual salt spinners**, one on each side, are "an effective alternative to the tailgate spreaders," Sauer says. "It's controlled from inside the truck by an electric switch and lets us place material on the left or right side of the truck." Marquette County also uses **stainless steel chloride tanks**, mounted behind the cab under the shield. They have the ability to add liquid chloride for pre-wetting right in the auger tray, he says.

**Lights** A lighted arrow stick mounted on the airfoil on the box can direct traffic right or left, or simply flash on and off, says



Sauer. Other attention getters are: alternating LED flashers facing to the rear and also forward on the truck's mirror brackets. They also run two mini-light-bars on the cab shield on top of the box.

"It gets people's attention and keeps them awake when meeting a truck," Sauer says. For plowing, they use "Hella" brand fog lights mounted below the plow lights as a low-cost alternative to HID lighting.



**Regular washing and re-greasing** after a snowstorm prolongs truck life, says Dave Lyga of Trempealeau County. Re-greasing protects joints by pushing out moisture and salt. "With so many new anti-icing and pre-wetting chemicals, it's important to do it often," he says. "It doesn't take drivers long, usually two hours on their regular shift."

Drivers should also keep the insides of their cabs clean, Lyga advises. "They drag sand and salt in and if it stays there you can have problems with throttle pedals and things that are bolted to the floor." They try to do it three or four times a winter.

**Wash liquid chemical tanks** inside and out with "Neutra-wash" to neutralize salt and flush them well to prevent corrosion, Dave Lyga advises. Then pour about two gallons of **windshield washer solution** into the tank and run the motors until the solution is in all the impellers and pumps. The solution stays in place during the off-season to prevent corrosion. "Otherwise, if you don't get it perfectly clean, corrosion will start and the motors will burn out when you use them in the fall," he says.

## Specs for truck equipment

Model plow truck specs and specifics for all equipment tested on the eight WisDOT Concept Vehicles were distributed at the Winter Maintenance Workshops. Prepared by Bob Braunel, recently retired Superintendent of Operations for Manitowoc County, they list 24 pieces of equipment with their vendors—items from airfoils on snow plows to rear-mounted cameras—with original prices from 1999-2001.

Braunel recommends that specs require vendors to provide annual training for operators and to warranty equipment for two full winter seasons, in case a dry winter prevents an effective test of new equipment. "Every vendor has to provide training and technical support because there's a lot more computerization now," says Braunel. "Vendors must also supply all telephone numbers for parts, service, and technical information 24 hours a day, especially for new electronic equipment."

Choose equipment that keeps drivers safe and comfortable, advises Lee Sauer

of Marquette County. He specs power, **heated mirrors** and **electric windows** all around for good vision. An upgraded interior with **sound deadening** and **air-suspended cab** help reduce driver fatigue. Other items are: AC because it defogs windows faster; an adjustable, telescopic, tilt steering wheel; and an air seat with lumbar support. "A comfortable worker is a productive worker," says Sauer. "They spend a lot of time in the seat and we don't want them to end up with bad backs."

Marquette County also orders extra heavy duty 46,000 lb. trucks with

20,000 lb. front axles and matching heavy-duty 20-ply tires, hubs and brakes. "It probably costs up to \$30,000 more, but we look at the truck being in our fleet for 20 years," says Sauer. "That's why we build the way we build." The trucks cost about \$140,000 complete.

*Sample specs from the workshop are available from the T.I.C. See Resources. For details on other ideas reported here, please contact: Bob Braunel, 920/824-5060; Bill Fischer, 920/832-5380; Dave Lyga, 715/538-2221; Keith Ponath, 414/257-6566; Lee Sauer, 608/297-9131; Wayne Slegler, 920/683-4348.*

## Resources

*The following publications are available free from the T.I.C. while supplies last.*

**REVISED Signing for Local Roads**, No. 7, has been revised to conform to the current Manual on Uniform Traffic Control Devices (MUTCD) and the new Wisconsin Supplement to the MUTCD.

**Roadway Management and Tort Liability**, No. 18, includes information specific to liability associated with signs and other traffic control devices. It also includes general information on liability and provides other specific examples including liability associated with sidewalks and snow and ice removal.

**Model plow truck specifications** and specifics for all equipment tested on the eight WisDOT Concept Vehicles, distributed at the T.I.C.'s Winter Maintenance Workshops. Lists two dozen different pieces of equipment with their vendors and original prices from 1999-2001.

**WisDOT's Channel Erosion Control Matrix, Slope Erosion Control Matrix, Inspection Form, and Erosion Control Order** form are available via e-mail or as print copies.

The **Executive Summary** of the South Dakota Department of Transportation Study **Effects of Off-Road Equipment Tires on Flexible and Granular Pavements** describes damage to test pavements. The report is also available for download at: [http://www.state.sd.us/Applications/HR19ResearchProjects/oneproject\\_search.asp?projectnbr=SD1999-15](http://www.state.sd.us/Applications/HR19ResearchProjects/oneproject_search.asp?projectnbr=SD1999-15) (The full report is 131 pages, a 4.4 MB pdf file.)

The T.I.C.'s 2002 **Video Lending Library Catalog** is online at <http://tic.engr.wisc.edu/>. A limited number of print copies are available on request, but otherwise it will

not be distributed this year. It lists a number of useful new videos.

**Websites** *No Internet access? Many public libraries offer it free. Or ask local schools/colleges. If you can't access the Internet or have trouble getting a resource listed here, contact the T.I.C. and we will try to supply it.*

The **WisDOT Erosion Control Product Acceptability List** is available online at: <http://www.dot.wisconsin.gov/business/engrserv/pal.htm>. It lists WisDOT-accepted erosion control products with installation guidelines and charts showing appropriate applications for the accepted products.

Details of **DNR stormwater rules and descriptive fact sheets** are on the Web at: <http://www.dnr.state.wi.us/org/water/wm/nps/admrules.html>.

Fact sheets on the National Pollutant Discharge Elimination System (NPDES) Phase II, including general information, minimum control measures, and permitting, are available from US EPA at: <http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm>

**Videotapes** *The following is new to the T.I.C. Lending Library. Videos are loaned free through county UW Extension offices.*

**Profit Through Prevention – Best Environment Practices for Fleet Maintenance**, #18588, USEPA, 1999, 35 min. Practical procedures to reduce waste and save money in fleet maintenance operations. Has information on water-based parts and brake cleaning, oil analysis, increased oil change intervals, reusable filters, and best practices for housekeeping in vehicle maintenance facilities. Examples of these practices in municipal fleets with cost saving details. Includes the *Pollution Prevention Toolkit*, a series of related fact sheets.

## Erosion control rules, aids developed

A multi-year, multi-agency effort to rewrite erosion control rules is bearing useful fruit along with some new requirements. Local road agencies and contractors will find WisDOT's revised and expanded Best Management Practices (BMPs) help take the headache out of erosion control planning for most construction situations. The BMPs are summarized in two matrix charts developed by WisDOT. In addition, WisDOT's new Product Acceptability List (PAL) can help with choosing effective, economical erosion control products.

Erosion control is especially important for construction sites since the average site produces 30 tons of sediment per acre. They also usually have ditches and storm sewers that efficiently deliver sediment to waterways, making them the largest source of sediment pollution to state waters, by far.

"The old rule just said you had to minimize sediment loss. It needed interpretation," says Dan Scudder, of WisDOT's Bureau of Environment. "The new rules raise the bar a bit for erosion control and stormwater management, and they clarify for everybody what is expected of them." The details are incorporated into the BMPs and DNR has agreed that choosing and using the appropriate ones, performing required inspections, and properly maintaining erosion control devices, constitute compliance with the rules.

The revised regulations benefit everybody, points out Carol Holden, DNR's Non-Point Source Education Coordinator. "The biggest benefit is better water quality," she says. "That's especially important in areas that depend on tourism."

### Smaller sites affected

The new rules are NR 151 which sets performance standards, NR 216 which covers storm-water discharge permits, and TRANS 401, the DOT's version of



NR 151. They were approved in October along with a package of other related rules addressing priority watersheds, grants programs, and agricultural and urban best practices.

TRANS 401 covers any project directed and supervised by DOT. NR 151 covers locally funded projects and some local projects with federal money. Before construction begins, local projects must secure permits through DNR under NR 216, while DOT projects are covered under a blanket permit. Both rules require written erosion control plans and weekly inspections. WisDOT-managed projects also require inspections after a rainfall of a half-inch.

The regulations took effect October 1, 2002 for new construction sites. They require sites of five acres or more to control 80% of the sediment load. Starting March 10, 2003, the size drops to one acre. On transportation projects they also specifically address such concerns as minimizing tracking; proper use and storage of chemicals, cement and other compounds; minimizing sediment discharge from de-watering; sediment clean up; and sewer inlet protection.

Some transportation projects are exempted. One exemption, according to Federal regulation, is ditch cleaning "to maintain the original line and grade, hydraulic capacity, or original purpose of the facility" (40 CFR 122.26 (b)(15)(i)).

"If the local unit of government is doing erosion control currently — and they should be — they will see very little

difference," says Dan Fedderley, former Highway Commissioner for St. Croix County and now Administrative Coordinator for the Wisconsin County Highway Association. Several groups will be offering erosion control planning workshops this winter, in preparation for the 2003 construction season.

The goal is compliance by cooperation not regulation, Fedderley points out. "We encourage local government units to get together with the local enforcement folks to identify any potential problems ahead of time," he says. Work groups developing the BMPs and standards have focused on making compliance easy and routine for most sites, he notes.

### Finding products that perform, at a good price

Some erosion control products work better than others, and new technologies are coming out all the time. Now there's help for choosing among them. WisDOT has a Product Acceptability List (PAL) with specifics on which products and vendors meet their performance criteria. It is updated three times a year and available on the Web (see below).

"The PAL has done a couple of important things," says Gil Layton, erosion control stormwater specialist with WisDOT's District 4. "It has ensured both a high level of performance and uniformity in performance. Furthermore, it has drastically lowered our costs, particularly for some of the erosion mat items." Performance standards are developed

### Erosion

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by the Standards Oversight Council with members from various state agencies.

Because of the PAL, competition between vendors who offer the same product with similar rankings has brought prices down. "On average we have seen the prices of erosion mats drop by over 25%," Layton says.

Local agencies or designers can spec erosion control products based on the category within the PAL. That lets contractors find the lowest cost product that meets the performance standards.

The PAL also helps assure that new technologies are both effective and safe for the environment. *Polyacrylamide*, a kind of spray glue for open soil, is a good example. It bonds fine soil particles while enhancing water penetration, at about one-tenth the cost of erosion mat. But is it toxic? In which conditions will it work? The Oversight Council includes DNR and Natural Resources Conservation Service staff so testing, performance and application standards address those concerns. (See below for Web address.)

### Future requirements

In addition to the construction site rules, NR151 also includes standards for post-construction including reducing total suspended solids runoff and maintaining protective areas such as vegetative buffers. These rules will take effect in

two years, and will apply only to roads and highways that seek stormwater discharge permit coverage under NR 216 after October 1, 2004.

"These new standards will apply to new roads or total reconstructions, but not to resurfacing and other maintenance projects that stay within the existing paved area," says Eric Rortvedt, DNR stormwater coordinator.

Between now and 2004, DNR and WisDOT will be developing specific technical standards and best management practices to support these performance standards. Education and information programs will be offered around the state as the deadlines draw nearer.

In general the rules will require retaining 80% of the total suspended solids that would normally run off the site and will limit peak discharge rates. This will result in designs that slow water movement to allow sediments and other pollutants to settle out and for some infiltration into the soil.

On roadways this requirement could be met by building and maintaining vegetated swales that slow down water to 1.5 feet per second for a distance of 200 feet, Rortvedt points out. In curb and gutter areas the goal will be to minimize impervious areas and route storm water over vegetated areas or into wet detention ponds to promote infiltration.

Although implementation is delayed, those who are beginning work on



projects that will be let after October 1, 2004 should be aware of the requirements. Also, agencies planning to build new vehicle maintenance areas after that date should be aware of forthcoming requirements that they control runoff to remove all visible sheen.

"Municipalities that will be buying street sweepers in the next couple years also might want to think about the requirements that are coming down the road," says Carol Holden of the DNR. "Since that kind of equipment has such a long life, they should look at purchasing sweepers that are more effective at picking up smaller particles than older types to meet the next set of standards."

*For copies of the WisDOT erosion control matrix, inspection form and erosion control order form, see Resources page 5. For training sessions using the erosion control matrix, contact Dan Fedderly at hwype@wwt.net. For Product Acceptability List: <http://www.dot.wisconsin.gov/business/engserv/pal.htm>. Stormwater rules and fact sheets: <http://www.dnr.state.wi.us/org/water/wm/nps/admrules.html>. Polyacrylamide standards: <http://www.wi.nrcs.usda.gov/otg/section4/dnr1050.pdf>*

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# New law, study on vehicle load limits

Heavy truck loads are known to shorten the life of roads, and overloaded trucks cause even more of a problem. Local road officials have a responsibility to be aware of truck use and take action where it is feasible. However, this effort is often frustrated by pressure from local road users, misunderstandings over the real impact of truck loads, and limited staff to enforce load limits.

Designating Class B highways has been one tool available to local officials to protect weaker roads from heavy trucks. The regulations on Class B highways have changed recently, and local officials need to understand how the changes affect their road postings.

The rules now allow local pick-up and delivery of full legal loads on roads classified as Class B. Previously, local deliveries were not exempt, and all loads were restricted to 60% of normal legal loads. Since it is difficult to enforce a regulation with this exemption, local officials may now have to decide if they

should provide additional protection to roads in weak condition.

To protect roads at the same level as under the old Class B designation, the local agency now has to post the road with a reduced load limit, such as a 24-ton limit. Specific load limits below the normal legal load would also be needed to assure protection from loads traveling with annual and single trip permits issued by WisDOT under *Section 348.27* of the statutes.

“Off road equipment” like that used in agriculture and construction can also be a concern. It has been commonly assumed that these large loads would have little adverse affect because they have flotation tires or treads that allow them to work in soft soils.

The South Dakota DOT field tested pavements, subjecting them repeatedly to equipment with large loads and low-inflation tires. It looked at the relative impact on the roads of tire pressure,



tread type, axle load, travel speed, road roughness, and vehicle suspension.

The most important impact found is related to axle loads. Loads that exceeded legal limits were shown to damage the asphalt, seal coat, and gravel roads evaluated in the study and shortened pavement life. The pavements showed early distress in the form of fatigue (alligator) cracking, rutting, and surface disintegration. The study recommends that no additional axle loads be allowed because of off road-type tires.

*See Resources, page 5, for how to get copies of the SD DOT report.*

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