

# Crossroads

Winter 1997



TRANSPORTATION Information Center

University of Wisconsin-Madison

## Making roadsides safer

Running off the road killed 263 people and injured another 14,545 in 1995 in Wisconsin, according to WisDOT crash data. Trees, embankments, guardrails, bridges, utility poles, and mailboxes were the most frequently cited obstacles struck in these crashes.

It is easy to overlook potentially dangerous obstacles along roads unless you go out hunting for them. Making the hunt easier and more systematic is the goal of a new T.I.C. booklet: **SAFER — Safety Evaluation for Roadsides**. The booklet has more than 100 photographs showing obstacles, unsafe conditions, and good practices. They are grouped into categories including: roadsides, intersections, railroad crossings, geometrics, signing, pavement markings, road maintenance, and special conditions.

"The goal is to help locals systematically review safety conditions on their roads," says T.I.C. Director Don Walker. "Then they can set priorities and decide which conditions need action right away and which to put into plans for future improvements."

The T.I.C. is also offering workshops on safety evaluation in January at which the new SAFER booklet will be distributed and discussed. **SAFER workshops will be held January 8-10, and 21-24 at seven locations around the state.** See Calendar for details.

*The slope of a roadway embankment can become a hazard if it is steep. This steep slope will carry an errant vehicle down to hazardous trees.*



*Large tree close to the travel lane is a hazard. Tree damage indicates previous vehicle accidents increasing the desirability of removing the tree.*



*Above: Exposed ends of heavy bridge railings are a hazard. Being located close to the travel lane makes impacts even more likely. Protection with approach guardrail would help.*



*Top: Utility poles located very close to the edge of the shoulder are hazards. It's a good idea to relocate the poles to the tree line.*

*Bottom: This very old warning sign is obviously in poor condition. If a warning is justified, then adequate signing under day and night conditions is necessary.*

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## Idea Exchange

### Flashing stop/slow paddle gains fans

Patrolmen and flaggers in Chippewa County have taken a real shine to the new stop/slow paddles with flashing lights, according to Highway Commissioner Bruce Stelzner.

"They feel that motorists are paying more attention to the signs and that's making the work zone safer for them," Stelzner says. "They're a great tool."

The paddles, which were developed under a FHWA program called SHRP (Strategic Highway Research Program) are still being evaluated according to WisDOT's Bob Fasick. The four models under consideration range in cost from \$125 to \$450. They are available commercially from several manufacturers.

*For more information on the paddles and their evaluation contact WisDOT Highway Operations Engineer Bob Fasick, P.O. Box 7986, Madison, WI 53707-7986, phone: 608/266-3438, e-mail: fasick@mail.state.wi.us.*

### Double the blades and halve the time

Mounting a second blade at the back of a grader has made shouldering operations safer and more efficient, says Walworth County's Highway Commissioner Ben Coopman.

"It's faster and it's safer. You don't have to put a grader on the pavement in live traffic," Coopman says.

The second blade, which is a small moldboard with a standard cutting edge, mounts at the back using the same controls and hydraulic hoses as the benching wing blade. A small "bogy" wheel supports the blade allowing it to be raised or lowered to match the slope of the shoulder.



*Trailing a second blade eases shoulder repairs*

"One operator went around our whole 200 mile system this year, and went back in the fall to hit some bad spots," says Coopman. "Usually two graders only do about 150 miles."

*For more information, contact Kray Brown, Patrol Superintendent, or Shop Foreman Larry Hensel at the Walworth County Highway Department, 414/741-3114.*

### Writing better bid documents

Ensuring high quality work and reasonable cost for road projects is a challenge. Getting competitive bids, as required on most road projects, can add to the challenge, especially if bidders have different understandings of the project.

The bid documents you prepare are your primary way of communicating with contractors. These written materials describe the nature of the project so that all bidders have the same understanding and can offer fair and competitive prices. To help local officials with preparing these documents, the T.I.C. has developed some guidelines and sample bid documents.

**Initial decisions** A checklist for highway and street owners in sample documents prepared by the T.I.C. reminds you of the critical decisions you must make. Talking with contractors and other knowledgeable experts can help you make these initial project decisions. You decide on the **type** and **quality** of the work. It's usually a good idea to let the contractor decide **how** to do the work.

**Timing** The warm summer months are the best time to complete asphalt paving and sealcoating. The owner needs to ask for bids early enough in the spring or winter to let the contractor finish the project in favorable weather.

**Qualification** You must assure that the contractor can do quality work on your project. It may be easiest just to require that all bidders be pre-qualified by the Wisconsin Department of Transportation. If this excludes qualified local contractors, however, you must check their qualifications yourself. Check their references, determine that they have the equipment needed for the job, and find out how much experience the work force has.

**Preparation work** On paving and sealcoat projects there can be confusion over who is responsible for pavement repairs and exactly what will be done before the overlaying or

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### Crossroads

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# Getting unsafe mailboxes off highways

Two WisDOT Districts have taken action to reduce the number of unsafe mailboxes along state trunk highways. In District 4, student engineers spent the summer of 1995 surveying unsafe boxes and supports. They found 1,052 of them that were too heavy, too high, protruding too far into the road, in unsafe bases, etc. On the district's 1,350 centerline miles of road, that's about one every 1.3 miles.

"We left them a letter and pamphlet to let them know they had a roadside hazard," says Dan Grasser, Chief Maintenance and Traffic Engineer, District 4, Wisconsin Rapids. By Christmas 1995 about 500 of the hazardous boxes had been changed. The letter advised homeowners to return an enclosed follow-up card as evidence of removing the hazard. Otherwise, if a crash occurred and the box were unchanged, the homeowner might be liable for damages. Several counties in District 4 have begun a similar effort on their county trunk highways.

"I was impressed with how bad the situation was," says Jim Voborsky, Maintenance Supervisor in District 7, Rhineland. "Over the years we'd been trying to eliminate mailboxes that obviously would kill somebody, but then we decided to bite the bullet and do them all. It was unbelievable! There were a lot more than we had estimated."

Counties in District 7 assigned the job to a patrol superintendent, a beat patrolman, or another worker. On every hazardous mailbox they hung a plastic bag with a letter and informational brochures. The mailbox was photographed and recorded as well. "We put notices on everything that was bigger than the dimension size lumber. I'd guess there were around 1,500 in the eight counties," says Voborsky. District 7's letter also included a return mail form with a deadline for sending it back.

The number of vehicle-mailbox crashes keeps going up across the country. When you start looking systematically at your area's mailboxes you understand why. Surveying the boxes and notifying the owners seems to be the most effective approach to making roads safer.

Contact the T.I.C. for copies of Voborsky's letter and the informational brochures **It's Nice to Be Different**, and **Mailbox Safety**. Mail or fax the form on page 7, call 800/442-4615, or e-mail: [ranum@engr.wisc.edu](mailto:ranum@engr.wisc.edu)



Top left: Milk can mailboxes may cause rollovers.

Top right: Loosely attached planks can fly through windshields. This one has the District's advisory letter.

Far left: Loose concrete block behind mailbox could easily penetrate car's windshield.

Left: Installing a safe mailbox support is relatively simple.

## Writing better bid documents

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sealing phase. Be careful to clearly define the extent of the work and to assign specific responsibility. This will help ensure that bids are fair and competitive.

**Specifications** All bid documents should require that work be done in conformance with the Wisconsin Department of Transportation Standard Specifications for Road and Bridge Construction. Local officials will need to make some additional specification decisions because the standard has many options, some of which are not appropriate for local roads. For example, the specs say asphalt materials may conform to HV, MV, or LV mix specifications. Most local roads would benefit by conforming to LV (low volume) specifications; materials designed for very high volume roads (HV) are generally not appropriate.

Sample specifications and sample bidding documents for small projects are available through the T.I.C. They were discussed in two ETN training sessions. Audio tapes of both sessions are available. See **Resources** for details.





# Winter maintenance ideas from workshop participants

Maintaining highways and streets in winter is hard work. It takes planning, innovation, training, and good management to meet the challenges of citizen expectations and tight budgets.

Fortunately, a lot of good ideas for better policies and better methods have been developed and used around Wisconsin. Attending the T.I.C.'s fall Winter Maintenance Workshops puts you in touch with some of those ideas, from speakers and from other participants.

Here's a summary of ideas gathered this year. For even more good ideas, see last year's winter **Crossroads**. (If you can't find yours, contact the T.I.C. for a copy.)

## Policies and publicity

- ❄ Combining local newsletter articles with an ordinance prohibiting private snow removal operators from pushing snow onto the roadway has helped curb the problem in Town of Washington, says Administrator Michael Peterson.
- ❄ Appearing live on a local radio show, Richland County Highway Commissioner John Huth informs citizens about safety around snow plows, timing of plowing operations, and how to make good winter driving decisions. The county's patrol superintendent and one of the patrol truck operators join Huth on the radio.
- ❄ Having a clear written policy has saved time for office staff who now receive fewer calls and complaints, says Charles Smrcka, streets foreman for the City of Rice Lake. Staff also can answer questions better and elected officials understand what's happening.
- ❄ Policies needn't be elaborate. Richland County's is just two pages. In it are hours of operation (4:00 a.m. to 10:00 p.m.) and the statement, for liability purposes, that crews will cover all the roads in the county.
- ❄ Leave the shoulders white (with a small residue of snow) is in Adams County's policy. Highway Superintendent Donald York says this helps protect gravel shoulders, especially in the fall and spring before the ground freezes.
- ❄ Owners of unsafe mailboxes routinely get notifications from Adams County, and City of West Bend refuses to

replace mailboxes that were not installed according to guidelines in a local ordinance.

- ❄ Prohibiting county equipment from towing private vehicles, and having a copy of the policy in the truck, lets drivers blame "the bosses" for not helping friends or acquaintances in stranded vehicles. Towing is unsafe, says Portage County Patrol Superintendent Dale Peterson. Patrol trucks are not equipped to tow vehicles. Besides, their primary mission is to open the roads.

## Equipment and methods

- ❄ Don't skimp when you order patrol trucks, says Micheal Peterson, Town of Washington administrator. A plow driver himself, he knows firsthand the safety benefits of such items as right-side power windows, and heated mirrors and wipers that clear fog quickly and prevent snow and ice buildup. On tri-axels he also specs engine "Jake" brakes and a steerable pusher axel.

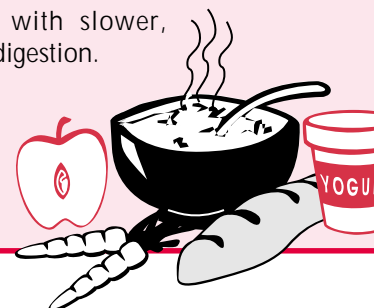
Interiors with fabric headliners cut down on noise and keep the cab warmer, and air ride seats provide comfort and support to the driver during those 16 to 20 hour plowing days. Air conditioning and stereo radios with tape decks are also standard equipment on patrol trucks. "These items added about \$4000 to the \$94,000 cost of the newly ordered Ford L9000 Tri-Axel, 13-speed trucks," says Peterson. "The additions also bring greater trade-in value."

## Watch what you eat on snow-plowing nights

Road crews often battle snow and sleet throughout the night, but usually for only a night or two. That means they are also battling sleepiness since their bodies are adjusted to the usual daytime shift. Sleepiness can be dangerous. At least 10,000 accidental deaths a year are sleep-related and 200,000 traffic accidents annually are due to driver fatigue.

Recent research on sleep deprivation shows that what you eat before and during nighttime work can affect sleepiness. Since the body slows down at night, it does not want to digest a donut, a "Big Mac", or most other fast foods. Greasy, heavy, protein foods bring on sleep according to information in *The Shiftworker's Handbook*.

Drivers can still enjoy eating, though. Take light, well-balanced meals and eat snacks that are compatible with slower, nighttime digestion.



- ❄ Contracting out for graders and operators saves on capital costs and fringe benefits, says Jack La Plant, Green Bay's streets superintendent. Some graders stay in the city equipment yard all winter while others stand by at the contractors. Payment is for actual hours worked, plus \$150 a month for equipment parked on site. All contract operators have a CDL. They are paid to attend an evening safety and how-to session and to drive the route once in daylight before the first snowfall.
- ❄ Rental trucks haul snow from downtown areas in West Bend, says Street Superintendent Richard Heisler. Cul-de-sac plowing is also under contract, and drivers from other city departments help extend operations during continuing snowstorms.
- ❄ Naming each plow route after its regular driver promotes pride and ownership, says Stevens Point Street Superintendent Howard Kriewski.
- ❄ A written form for each plowing event records the equipment, driver and route when a backup driver plows a Stevens Point route. If someone complains, Kriewski checks the form and sends the responsible driver back to fix the problem.
- ❄ Snow plow "roadeos" help train drivers in Adams and Portage Counties, and they promote good public relations.
- ❄ Carbide tips on grader moldboards really cut into the ice, say Patrick Bonney, Ashland County's Patrol Superintendent and James Harer of St. Croix County. The "stingers" are individual tips costing about \$11 each which fit into holders on a steel strip bolted on the moldboard in place of the blade. "We space them four inches apart for compacted snow and ice," says Harer. "They also work to recycle old blacktop in summer." The initial system costs about \$3000 for a 14 foot moldboard. "It ends up being cheaper than blades," Harer says.
- ❄ Prewetting sand with calcium chloride helps anchor it to ice, says Portage County's Dale Peterson.
- ❄ Prewetting salt with regular salt brine (23% solution) saves money and makes it easy to ensure a constant supply, according to Columbia County Assistant Commissioner Wayne Cornford. It doesn't work as well as calcium chloride in colder temperatures, however.
- ❄ Dumping snow from downtown areas at approved sites keeps debris and contaminants out of waterways, says Rice Lake Streets Foreman Charles Smrcka. West Bend's Richard Heisler reports they will be building a new snow dump site next year that was designed with the help of non-point source pollution specialists from DNR.

#### ✓ Main meal before night work (5:00-7:00 pm)

Eat light protein foods like chicken, turkey, fish, or cooked beans and peas. Vegetables, fruits, breads, pasta and potatoes are good, as are low-fat milk, cheeses, and yogurt. If you're planning to sleep before work, make this a lighter and smaller meal.

#### ✓ Meals during breaks

Eat soup and salad, soup and a light sandwich, or light protein foods and vegetables.

#### ✓ Snacks before and during work

Good snacks include low-fat dairy products, fresh and dried fruit, popcorn, cereal, plain cookies, pretzels, and baked crackers.

#### ✓ Avoid caffeine and nicotine

Coffee and tea contain caffeine; smoking and chewing tobacco contain nicotine. These are stimulants at first but soon become depressants. They make the heart beat slower.

#### ✓ Do not consume alcohol before or during snow plowing operations.

Adapted from *Road Business*, Fall 1994, University of New Hampshire T2 Center. *The Shiftworker's Handbook* is by Marty Klein, PhD, SynchroTech, Lincoln, Nebraska.

## PLOWING DON'TS

*Don't make these common mistakes when plowing:*

Plow too fast

Throw snow over bridges onto traffic below

Leave snow along center line, in intersections, on railroad tracks, or in places where it can melt back onto pavement

Assume traffic knows what you are going to do

Plow a false shoulder

Plow off gravel

Plow off salt before it works

Plow against flow of traffic if it can be avoided

## Calendar

### T.I.C. workshops

*Specific details and locations for workshops are in the announcements mailed to all Crossroads recipients.*

**Using Accident Reports to Improve Traffic Safety** Street and highway engineers, technicians and managers often do not take advantage of the wealth of available information on traffic accidents in their communities and on their roadways. This workshop teaches how to access and use the information to address safety concerns and mitigate dangerous conditions.

Dec 10	Eau Claire	Dec 12	Green Bay
Dec 11	Wausau	Dec 13	Pewaukee

**Pavement Management for Local Roads, Parts 1 & 2** This workshop introduces ROADWARE 6.0 and is offered in two parts to meet a range of training needs for users of PASER and ROADWARE pavement management systems. **Part 1**, afternoon of Dec 17, covers pavement management basics, introduces the logic of ROADWARE, and teaches pavement rating using PASER. **Part 2**, all day Dec 18, includes a demonstration of ROADWARE 6.0 with an opportunity to try your hand on the computer. You can test alternate maintenance strategies by running simulations with several data bases, including your own if available. Register for either or both.

December 17-18 in Madison

**Highway Safety** This workshop helps improve safety on local roads and streets. It covers the fundamentals of highway and street signing and reviews how to make streets and roads safer by systematically evaluating and improving roadway hazards.

Jan 8	Green Bay	Jan 22	Cable
Jan 9	Brookfield	Jan 23	Eau Claire
Jan 10	Barneveld	Jan 24	Tomah
Jan 21	Minocqua		

**Gravel Road Maintenance (ETN)** Workshop reviews the keys to good gravel roads: proper materials, correct cross-section, and effective placement. Also addresses causes and correction of common maintenance problems. Presented by the UW Local Government Center and the T.I.C.

Feb 11, 1997, 10:30-11:50 am, 100+ locations statewide

#### Maintaining and Controlling Roadside Vegetation (ETN)

Three-part series: *Workshop 1* highlights the rights and obligations of local governments and reviews important engineering and safety considerations. *Workshop 2* addresses aesthetic concerns, maintenance policies, standards, and methods. *Workshop 3* reviews pesticide use. Presented by the UW Local Government Center and the T.I.C. at 100+ ETN locations.

Workshop 1, Jan 14, 1:30-2:50 pm  
Workshop 2, Feb 18, 9:30-10:50 am  
Workshop 3, Mar 27, 10:30-11:50 am

**Roadway Maintenance** An opportunity to improve street and road maintenance operations. Includes preventive maintenance techniques, rehabilitation, and pavement failure repairs.

Mar 18	Rhineland	Mar 24	Green Bay
Mar 19	Cable	Mar 25	Brookfield
Mar 20	Eau Claire	Mar 26	Barneveld
Mar 21	Tomah		

### UW-Madison Seminars

*Local government officials are eligible for a limited number of scholarships for the following engineering courses in Madison. Use the form on page 7 for details, call 800/442-4615, or e-mail: ranum@engr.wisc.edu.*

**Highway Bridge Design,**  
Dec 9-10

**Evaluating Bridges Using Non-destructive Testing,**  
Dec 11-12

**Maintaining Asphalt Pavements,** Feb 3-4

**Traffic Signal Design and Operations,** Feb 17-19

**Improving Public Works Construction Inspection Skills,** Feb 24-26

**Writing Civil Engineering Specifications,** Mar 3-5

**Bridge Rehabilitation,** Mar 3-5

**Environmental Impacts of Highway Projects,** Mar 10-13

**Pavement Design,** Apr 7-9

**Managing Fleet Maintenance Operations,** Apr 17-18

### Other opportunities

**Highway Technician Certification Program** Testing assures that contractors and crews have met pavement specs. Thirty training sessions, one to five days long, are available to certify you in asphalt and PCC testing. These outstanding training opportunities are offered by UW-Platteville, December to June, at various locations. Contact the program for details at: phone: 608/342-1545, fax: 608/342-1566.

**Pesticide Applicator Training** Those who apply pesticides must be certified or supervised by a certified person. Two training/testing sessions for pesticide applicators in rights-of-way are offered in late January. Register before the deadline to get your training materials. Get registration cards from your county Extension office or P.A.T., Dept. of Agronomy, 1575 Linden Dr., Madison, WI 53706-1597.

Jan 27, Arlington, *deadline Jan 13*

Jan 30, Wausau, *deadline Jan 16*

### CDL news

**Not required for construction equipment** A change to state law late last spring exempted operators of graders and other construction equipment from needing CDLs. However, since CDL training and testing are designed to enhance safety, getting a CDL is still a good idea.

**Small community backup driver exemption in effect** The exemption from CDL requirements for snow emergency backup snowplow drivers in municipalities of fewer than 3000 residents took effect November 1. The rules, unchanged from those reported in the Fall **Crossroads**, require a valid regular driver's license, operating within community boundaries, and being employed (full or part time) by the community.

## Resources

Materials listed are available from the Wisconsin T.I.C. unless otherwise noted. To get your copy call 800/442-4615, use the form below, or e-mail: [ranum@engr.wisc.edu](mailto:ranum@engr.wisc.edu). Videotapes & CD-I's are loaned free through Wisconsin County Extension Offices.

**ROADWARE 6.0** There is a new, more flexible and user friendly release of **ROADWARE**, the T.I.C.'s pavement management software which implements **PASER**, the pavement rating system. With it, you can track the condition and maintenance costs of your pavements, shoulders, drainage systems, curb, and walks. You can project five years ahead and analyze how alternative street maintenance treatments, projects, and budgets will change the overall condition of your street system and whether maintenance is lower. Data in earlier versions is easily transferred to 6.0. If you do not use a pavement management system now, please call the T.I.C. at 800/442-4615.

**Jackson County Highway Department 1995 PASER Program Report**, October 1995, 43pp. An example of how one county used the **PASER** method and **ROADWARE** reports to develop and present a proposed five-year pavement maintenance and rehabilitation program to the County Board.

**Bidding Small Road Improvement Projects**, audio tapes of ETN broadcasts, 11/5/96 and 2/13/96. Discuss legal background for bidding small projects and how to use sample documents. Copies are \$6.80 each. Make check payable to UW-Extension. Request by name and date from: ETN Tape Orders, ICS-UWEX, 975 Observatory Dr., Madison, WI 53706.

**Bidding Documents for Small Road Projects** Sample documents, prepared by the T.I.C., appropriate for simple paving or sealcoat projects. Also includes owner checklist. Documents were distributed at the 11/5/96 ETN workshop.

**Roadway Delineation Practices Handbook**, FHWA-SA-93-001, August 1994, 250 pp. Everything you ever wanted to know about traffic paint, thermoplastic, tapes, pavement markers, and post-

mounted delineators. Also discusses retroreflection, quality assurance, driver visibility needs, cost analysis, and management of the system. This handbook will help highway designers and maintenance personnel select the right delineation system.

### Video and CD-I library

**CD-I: New training tool** The CD-I (Compact Disc Interactive) Player (#17782) is an interactive training tool using a television set, a player and a training disc. Borrow a player and one of the three discs described below from T.I.C.'s library and organize individual training for your employees. You supply a TV and a quiet place for the training.

**Snow and Ice Control** (CD-I #17783) Presents the basics of materials, equipment, and methods in a question and answer format that allows users to test their knowledge. Designed for the driver, this training takes 30 to 60 minutes depending on the user's experience and knowledge.

**Work Zone Traffic Control** (CD-I #17784) Presents basics of a traffic control plan, proper devices, placement, and maintenance in three situations: two lane roadway on a curve, four lane divided, and an expressway ramp closure. Intended for design and maintenance personnel, taking 60 to 90 minutes depending on the user's experience and knowledge.

**Meetings, Bloody Meetings** (CD-I #17965) Uses humor to present the five steps necessary in conducting productive meetings. Stars John Cleese of *Monty Python's Flying Circus* fame. Designed for supervisors, managers, and project engineers who organize and conduct meetings.

**Snow and Ice Control: A Review of Innovative Practices**, Vol. I & II, (#17967), Minnesota Center for Transportation Studies. A national satellite workshop broadcast Dec. 6, 1995, highlights a wide variety of snow and ice control practices in Minnesota. Includes: planning, policy, liability, cooperative services, public relations, preventive maintenance, and new equipment. Useful for supervisors and elected officials.

## Reader Response

If you have a comment on a **Crossroads** story, a question about roadways or equipment, an item for the *Idea Exchange*, a request for workshop information or resources, or a name for our mailing list, fill in this form and mail *in an envelope* to:

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Transportation Information Center  
University of Wisconsin-Madison  
432 North Lake Street  
Madison, WI 53706

Or call, fax, or e-mail us:

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# Choosing salt hardy plants and grasses

Dead grass. Stunted, lopsided trees and shrubs. Brownd leaves, and undersized leaves, fruit or flowers. All of these may be symptoms of salt damage in roadside vegetation and the subject of citizen concern. Since road salt is the most effective and economical way to make winter roads passable, it is a good idea to find a compromise between salting and roadside vegetation. Here are some suggestions:

- Be sure you are salting at the minimum effective rates. Calibrate spreaders. Use air and pavement temperatures to time salting operations.
- Reduce or eliminate salt application where possible and substitute abrasives.
- Plant grass, shrubs and trees with high salt tolerance. For example, white ash, honey locust, and Chinese juniper have high salt tolerance. Red and white pine, American and littleleaf lindens, and euonymus bushes have low tolerance. Others are listed in a new UW-Extension publication ***Salt injury to landscape plants***.
- Plant on berms to keep salty runoff water from moving into root zones.

- Put barriers like burlap around plants to cut salt spray exposure.
- Don't pile salt-laden snow over the root-zones of sensitive plants.
- Redirect drainage away from landscape plants.

Damage to landscape plants and grasses can have other causes than salt, according to UW-Extension Specialist K.A. Delahaut, so if you suspect salt damage, take soil samples early in spring before rain washes salts out of the soil. Delahaut co-authored the new Extension publication.

Many seed companies offer salt tolerant grass mixes, but they have never been tested says UW-Extension Turf Management Specialist Amy Sausen. She planted 18 test plots on the UW Madison campus last fall. She will be evaluating their growth and hardiness, along with measuring temperature changes and other factors, over the next three years.

For a list of salt tolerant grass species, contact the T.I.C. by phone, fax or e-mail. ***Salt injury to landscape plants***, UW-Extension publication A2970, is available from county Extension offices or Cooperative Extension Publications, Rm. 170, 630 W. Mifflin St., Madison, 53703, 608/262-3346.

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