

# CROSSROADS



WISCONSIN TRANSPORTATION INFORMATION CENTER – LTAP at the University of Wisconsin–Madison

## Early response to tree disease eases budget impact



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Channels under the bark indicate the presence of emerald ash borer larvae in an infected ash tree.

*The challenge for local officials who manage and maintain the trees along public roadways is to address EAB before hundreds of dead or dying ash trees pose a safety hazard, requiring a response that overwhelms financial resources.*

**THE SPREAD OF** emerald ash borer (EAB) in Wisconsin has been news since forestry officials identified the first infestations in the southeast area of the state in 2008. The larvae of the invasive beetle attack ash trees by boring beneath the bark and feeding on important conductive tissue. Findings so far indicate that infected trees die within two to four years.

In Wisconsin's urban areas, ashes make up an estimated 20 percent of the trees. As of September, 11 Wisconsin counties that had evidence of EAB infestation were under quarantine. The action restricts movement of hardwood firewood, ash nursery stock, logs or timber out of the quarantined area.

The challenge for public works directors, street supervisors and other local officials who manage and maintain the trees along public roadways is to address EAB before hundreds of dead or dying ash trees pose a safety hazard, requiring a response that overwhelms financial resources.

### Start with inventory

Communities inside and outside the quarantined counties are acting to minimize the impact of EAB and preserve the urban forest, an important capital asset. Trees help reduce runoff from storms, contribute a traffic-calming element and improve air quality, among other benefits.

An inventory of public trees is critical to an informed approach that includes the systematic removal of diseased or at-risk trees and a program to plant replacements.

Local governments can apply for an Urban Forestry Grant to help defray the costs of expanding local tree management efforts—which include conducting or updating a tree inventory. The Wisconsin Department of Natural Resources Division of Forestry sponsors the grants program, which requires a 50/50 match. It currently favors applications for EAB readiness and response projects.

Besides regular forestry grants of up to \$25,000 to improve an existing program, the department

offers "startup grants" between \$1,000 and \$5,000 for communities without an active tree program.

### Get ahead of threat

The City of Sparta in western Wisconsin offers an example of a local government that is getting ahead of the threat. Director of Public Works Jordan Skiff applied for and received an Urban Forestry Grant in 2008 to fund an ash tree inventory and hire a forestry consultant to develop a plan of action.

It was August of that same year when authorities reported Wisconsin's first known infestation of EAB in the southeast area of the state in the Village of Newburg in Ozaukee County. Skiff says Sparta's response began about three years earlier when he heard a DNR presentation about EAB.

"I was surprised to hear with such certainty how widespread and devastating the threat would be," he recalls. He learned that quarantines and treating affected trees did little to arrest the spread of the

*Continues on page 4*



Planting a single kind of public tree runs the risk of losing every one at the same time when the species succumbs to a tree disease like EAB. When the expected borer infestation kills this row of young ash trees in a Sparta neighborhood, the city will replace them with a more diverse mix of trees.

## Idea EXCHANGE



*The idea about dairy brine emerged as Norby investigated alternatives to magnesium chloride as a de-icer in the county's plowing operations.*

## Positive results from dairy salt brine test on winter roads

**IDEAS** that improve winter road maintenance and save money are important to highway and street departments in Wisconsin. Add beneficial reuse of existing local materials and the idea becomes a "win-win."

That is Emil Norby's description of a pilot program the Polk County Highway Department conducted in the 2008-2009 winter season to use salt brine from a cheese-making operation as a pre-wetting agent. Norby is Technical Support Manager for the department. The idea about dairy brine emerged that year as Norby investigated alternatives to magnesium (mag) chloride as a de-icer in the county's plowing operations.

"Someone suggested that cheese factories produce their share of wastewater brine," Norby says. "Would that work for roads?"

He contacted F&A Dairy in the Village of Dresser—about 17 miles from Balsam Lake, the county seat—to explore the possibility of using their salt brine for snow and ice control. The dairy manufactures 900,000 lbs of milk per day into cheese. They pay hauling and disposal fees to deal with the waste brine from cheese production. When the county inquired about recycling a portion of that wastewater as a road treatment, F&A was interested.

### DNR approval

The company calculated they could supply Polk County with up to 5,000 gallons of salt brine per week, free of charge. They would filter the waste brine to produce a cleaner product. The county planned to send its own trucks to pick up the material from the nearby cheese plant or pay for delivery by a third party.

The dairy agreed to send brine samples to a lab for testing to determine the chemical makeup, including salinity and BOD (biochemical oxygen demand). The tests showed high levels of BOD, which indicates the amount of organic matter in the liquid. So Norby asked the Wisconsin Department of Resources for advice on how to proceed. He learned they needed a Conditional Grant of Low Hazard Exemption Permit from the DNR to use the waste brine on the highways.

F&A requested the permit and the county submitted a proposal for testing the effectiveness of the waste brine on one state road and one county road during the 2008-09 season.

Polk County began the pilot in January 2009 and subsequently received DNR approval to expand it to more roads in the northern half of the county. Norby recorded the salinity of every load of brine,

and details about test conditions like road temperature and wind speeds. He included that information with maps and photos in a final report to the DNR on the pilot in April 2009.

### Road results

Results from the pilot were positive. The wastewater salt brine proved a beneficial pre-wetting agent for snow and ice control on the test stretches of state and county roads Polk County maintains, saving money and materials.

The standard winter road treatments in this northwestern Wisconsin county are salt on state roads and a salt sand mix for county highways. Operators apply 200 or 400 lbs of salt per lane mile depending on storm intensity and temperatures.

The DNR permit approved using 8 gallons of waste salt brine per ton of salt or sand. It calculated

*The wastewater salt brine proved a beneficial pre-wetting agent for snow and ice control on the test stretches of state and county roads Polk County maintains, saving money and materials.*



Photos taken during the pilot show the results on a county road, left, treated with salt sand only (600 lbs per lane mile) and one with salt sand (400 lbs per lane mile) plus the recycled salt brine, right. Fifteen minutes after application, the salt brine road was 50 percent clearer than the one without the de-icer.

0.8 gallons of pre-wetting liquid per lane mile at the 200-lb per lane mile rate and 1.6 gallons of brine per lane mile at the 400-lb per lane mile rate.

Norby says the department tried mag chloride for pre-wetting before but, due to cost, only as temperatures dropped. Plow drivers put the low-cost dairy brine to work throughout an entire winter season and applied less salt and salt sand overall, saving 30 to 40 percent on those materials. The department also saved about \$40,000 by replacing the mag chloride exclusively with the recycled brine.

Besides saving on materials, Norby reported the dairy brine did improve the effectiveness of winter road treatments, much like a brine product specifically made for pre-wetting roads. Surfaces where the county applied salt brine showed measurable improvement over roads where they did not. "Fifteen minutes after a pass combining the salt brine with salt sand on the section of county road we tested, the pavement was 50 percent clearer than on sections treated with salt sand alone," he says. The state route treated with salt saw similar results and quicker reaction time for melting as the brine helped keep the salt on the road.

Norby says the salt-by-weight of brine loads from the cheese factory averaged 24.5 percent during the pilot, giving it a freeze

point of 5.95 degrees (F). Salt brine made for the purpose usually is mixed to 23.3 percent by weight with a freeze point of 6 degrees below zero. During the pilot winter, Norby placed a container of the dairy brine outside and found it did not freeze until after two consecutive days when the low temperature reached minus 21.

County crews saw the fastest results with a road temperature of 10 degrees or higher, Norby says. But even at lower temps, the test de-icer helped keep the abrasives from bouncing off the surface.

### Low-cost delivery

The department used both a trucking company and its own equipment to haul brine from the cheese factory to storage containers at its shop. Hauling it in their own tanker trucks reduced the cost by 9 or 10 cents per gallon from the 18 cents per gallon charged by the company. Norby compares both to the \$1.29 per gallon price the county paid the previous year for delivery of mag chloride.

During the pilot, the county stored the dairy brine in two 6,000-gallon tanks where plow trucks came to fill up before a snow event. They plan to store in tanks at outlying sites as they expand application of the pre-wetting material.



*During a February snow event with high wind conditions and road temperatures of 18 degrees F, Polk County Highway Department compared results on a county road treated with salt sand (500 lbs per lane mile), left, and another where the plow operator applied salt sand (300 lbs per lane mile) with dairy brine, right. The brine helped the application work better, faster and at lower amounts.*

### Creating a new source

Norby says the experiment got the attention of plow operators and other technicians in the department when they saw the salt brine in action. They liked how it produced a cleaner, safer pavement for their efforts and they were eager to use it.

Polk County continued using the dairy brine last winter with the same success as the pilot year and plans to apply the recycled material on all state and county roads this season. They will start hauling loads from F&A in October to tanks at the main shop and satellite locations.

The dairy continues to hold the permit allowing use of its wastewater as a de-icing agent. According to Norby, the DNR decided that issuing the permit to F&A would allow other counties, cities and towns to get waste brine from the cheese company for the same purpose. One permit covers multiple local users.

"Working with the dairy and the DNR to see this through was very satisfying," Norby says. "We set out to find a cost-effective way to manage our snow and ice control budget and discovered a solution with wide-spread benefits. It really was a win-win." ■

*Besides saving on materials, Norby reported the dairy brine did improve the effectiveness of winter road treatments, much like a brine product specifically made for pre-wetting roads.*

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### Resource

<http://www4.uwm.edu/shwec/>

Solid and Hazardous Waste Education Center website with information, education and technical assistance related to beneficial and efficient use of sustainable natural resources in Wisconsin.



*Norby monitored the roads used in the pilot for deposits of salt brine in the spring and found no residue on the pavements test treated during the winter.*

## Early EAB response eases budget impact

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*“The inventory allows us to identify trees to be removed, track the progress of our various programs and may help us spread out future removals.”*



*Homeowners plan to pay for treating this ash on the public terrace near their property, an option Sparta gives residents who want to extend the life span of a mature tree.*

ash borer, which has no natural enemies in North America. Skiff shared these facts and got support from elected officials to pursue a grant to fund a measured response.

Sparta invested just over \$12,000 to develop an EAB plan. Bluestem Forestry Consulting of Drummond, the firm hired to do the plan, reviewed relevant city ordinances and recommended changes to aid the city's EAB response. They conducted a complete inventory of all public ash trees, interfaced the data with Sparta's GIS system and estimated the costs for managing this threatened population.

The response plan also included a proposal for a marshalling yard, or waste wood processing and staging site to handle felled timber. A list of recommended replacement trees became the cornerstone of a replanting program. Finally, the consultants outlined a process for removing a manageable number of city ash trees annually over several years to reduce the impact on the city budget.

Skiff was dismayed to learn from the inventory that about half the trees on city boulevards—more than 1,900 trees—were ashes, “a large percentage for a community our size.” He says the long-ago practice of planting a monoculture of trees was a lesson in what not to do. Sparta's replanting program now features a variety of species.

The inventory proved the most useful part of Sparta's EAB plan.

“It allows us to identify trees to be removed, track the progress of our various programs and may help us spread out future removals,” Skiff says. His long-range plan is to add data about other public trees to the inventory, enhancing its value as a management tool.

### Pre-emptive strategies

Richard Rideout, State Urban Forestry Coordinator with the DNR's Forestry Division, confirms the arrival of EAB is a certainty wherever ash trees are growing in the state but says it is hard to predict how fast the insect will spread. “We're still learning about this exotic pest and finding better



*Large healthy ash trees, like these public trees near the Sparta courthouse, might benefit from treatment and remain standing safely for a few more years as part of a measured EAB response plan.*

ways to detect new infestations,” he explains. “What we do know is that the quality of the local response is important in slowing its spread.”

Rideout advises that pre-emptive planting of new public trees at the same time communities remove ash trees is a smart move. “An inventory of public trees tells you where you can plant now so when it's time to remove more trees at risk of EAB, you have a head start on replacements,” he says.

Sparta's plan includes those strategies. The city began in late 2008 to remove boulevard ashes in poor condition before they become infested. At the same time, they replanted a diverse selection of replacement trees recommended in their EAB plan. Skiff says the trees they removed were not an immediate threat to traffic or pedestrians but a deliberate approach made it easier to use department crews rather than hire the project out. Removing less desirable trees also helped reduce the ash population without creating a public relations nightmare.

Street projects accounted for other tree removals and Skiff notes the city also responded to requests from residents to remove their boulevard ash trees.

Around 18 percent of the city's marginal or small ash trees are gone now, a total of 350 trees. Next up: removing mature, healthy ash trees. The plan is to distribute

the removal and replanting program evenly to avoid decimating a single neighborhood in a clear-cut operation.

### Scheduling time and costs

The schedule for completing the removal of Sparta's ash trees depends on how quickly the borer moves. If EAB holds off for five to eight years, Skiff plans to draw the ash population down gradually so city crews can integrate that work with other jobs. “But if it's here already or closer than we realize, we may need to accelerate our timeframe and get it done in three to five years.”

Ash trees quickly become brittle after they die. Once the city ashes show signs of dying, it becomes imperative to remove them without delay. Pre-emptive removals now allow Sparta to keep the work and costs in-house.

Skiff says he expects to spend about \$100,000 for tree operations in 2010, covering crew time plus benefits. He allocated another \$7,000 for a contractor to do waste wood processing. Spring tree planting costs totaled about \$18,000. Some removals and replacements this year involved non-ash trees that died but Skiff estimates about 80 percent of the budget addressed EAB.

Treating trees with chemical injections is not in Sparta's current EAB budget. But the city does give

residents the choice of paying for treatments to a public tree near their property as long as it is not yet a hazard. That and a partnership with Chamber businesses that agree to “adopt” a tree for treatment involve the community in the process and keep some larger trees healthier longer.

### Toolkits and guidelines

Rideout says there is a growing body of knowledge available to help local governments understand the implications of EAB.

A good comprehensive source is a website [emeraldashborer.wi.gov](http://emeraldashborer.wi.gov) hosted by the Wisconsin DNR Division of Forestry in association with UW–Extension, the Wisconsin Department of Agriculture, Trade and Consumer Protection, the U.S. Department of Agriculture and the U.S. Forest Service. The site is a clearinghouse of information on



The need to remove a row of infected ash trees on a residential street, left, leaves a stark landscape, right.

EAB, existing regulations, management options, other resources and ongoing statewide efforts.

Rideout also highlights two DNR Forestry publications created to help local governments control costs and the management of valuable public trees. One is the *Emerald Ash Borer Toolkit for Wisconsin Communities*, available in hard copy or as an electronic download. It contains useful checklists and details on everything from detecting EAB and assessing local resources (inventories, equipment, debris handling, mutual aid agreements and other considerations) to dealing with the media.

A new 13-page *Guidelines* publication about managing ash in Wisconsin’s urban forests and reducing the impact of EAB assists communities in setting tree management goals and customizing their response. DNR Forestry is releasing the *Guidelines* in electronic format only to make updates easier. “This information depends on the ever-changing science and practice of dealing with EAB,” Rideout says. “We’re asking communities who use the guidelines to supply us with feedback on how they adopt or adapt the ideas so we can keep the information current and answer questions that arise.”

Because dealing with a complicated threat like EAB benefits from expert help, smaller local governments without a forester on staff can contract with a certified arborist to advise on the condition of their ash trees. Rideout reminds communities that the DNR’s

regionally based Urban Forestry Coordinators are available to work with them on an EAB response. The coordinators also connect local officials responsible for tree and forest management in a region to each other so they can share EAB information and resources.

Skiff describes the coordinator in his area as a great source for practical and timely training and a range of advice. “She recognizes that small communities lack the designated budget and staff for forestry issues that a larger community may have and provides expertise to fill that void,” he says.

### Informed is prepared

Communities across Wisconsin and in other affected states are implementing EAB response strategies that range from treating all public ash trees to sequential removal of their entire population of ash trees over a five to ten year period. Knowing the extent of the threat helps these cities, towns and villages restructure annual tree maintenance operations and make provisions to manage the impact of this insect. Most base their approach on data from a tree inventory that records the quantity, location and condition of all threatened trees.

As EAB spreads, local governments can prepare for its arrival by exploring DNR Forestry recommendations and resources, seeking grant support for program improvements and learn from what others are doing. ■

*Knowing the extent of the threat through an inventory helps cities, towns and villages restructure annual tree maintenance operations and make provisions to manage the impact of this insect pest.*

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### Resources

<http://dnr.wi.gov/forestry/uf/leabl>  
Link to *Emerald Ash Borer Toolkit for Wisconsin Communities* on Wisconsin DNR Forestry site.

<http://dnr.wi.gov/forestry/uf/pdf/ManagingUrbanAsh8-3-10.pdf>

Link to ash management guidelines for reducing the impact of EAB in Wisconsin’s urban forests.

<http://www.emeraldashborer.info/index.cfm>

Multinational website with information about the spread of EAB in the U.S. and Canada.

## Readiness Checklist

**Steps to preparing a plan from EAB Toolkit.**

- Learn about EAB
- Create readiness team
- Inform elected officials
- Review tree ordinances
- Conduct tree inventory to determine risk
- Estimate costs and adjust budgets
- Survey trees for EAB
- Plan for wood disposal
- Develop a public awareness campaign
- Review tree care or removal contracts
- Explore market for ash residue

# Strategies for safe roads subject of workshop

*Locating, inspecting and recording information on all traffic signs helps set realistic priorities and budgets during the phase-in period for bringing signs into compliance.*



*Faded and with little or no retroreflectivity, this STOP sign is past due for replacement.*

## LOCAL GOVERNMENTS

need a clear strategy on how to budget for and implement road safety efforts that include meeting important changes in federal sign requirements and reducing crashes on local roads.

A series of upcoming *Highway Safety* workshops sponsored by the Transportation Information Center (TIC) get down to the basics of creating a systematic plan to meet new requirements by the compliance deadlines in the 2009 MUTCD (*Manual on Uniform Traffic Control Devices*) and making low-cost safety improvements at dangerous locations. TIC will hold seven workshop sessions across the state starting November 11. See the schedule on page 7 and in the *Calendar* page 12.

This article explores some of the topics featured in the November workshops. From ways to develop an effective sign replacement plan to timely recommendations for good sign installation and maintenance, the program answers questions for all of those involved in making local roads safer.

## Know compliance dates

Tom Heydel, Traffic Engineer with the Wisconsin Department of Transportation Southeast Region, will lead a review session about changes and updates in the 2009 MUTCD that apply in particular to local roads. He also plans to identify existing rules local officials need to follow and discuss the minimum sign retroreflectivity standards adopted in 2008.

A member of the national review committee for the 2009 edition, Heydel suggests local road officials track the implementation deadlines as they budget time and money for sign replacements. "It really helps to keep the requirements and deadlines in mind since many managers or supervisors might decide to update a certain class of signs well before the MUTCD compliance date for safety or budget reasons," he says.

The compliance dates give road and street departments a chance to institute an orderly replacement process. Briefly, these are the milestones on the workshop agenda.

### BY JANUARY 2012

– Have a plan in place that includes a way to track the location and condition of existing signs in preparation for meeting 2015 and 2018 deadlines for minimum sign retroreflectivity.

– Replace post-mounted street name signs with ones that meet new lettering requirement, a combination of 6" uppercase and 4½" lowercase letters.

### BY DECEMBER 2013

– Remove any signs mounted on the back of STOP signs that obscure the octagon shape.

– Install 36" STOP signs on streets with posted speed of 45 mph that intersect with a multi-lane road to improve visibility.

### BY JANUARY 2015

Replace all regulatory, warning and ground-mounted guide signs with sign materials that meet new retroreflectivity standards. Heydel recommends starting with STOP signs and wrong-way movement signs then updating the "horizontal alignment signs" that include curve or turn signs, reverse curve or turn signs and chevrons.

### BY JANUARY 2018

– Replace street name signs on multi-lane roads with speeds of 45 mph or faster with 8" uppercase and 6" lowercase lettering.

– Make sure all street name signs meet minimum retroreflectivity standards.



*Replace all-uppercase lettering on post-mounted street name signs, like this one, with a combination of uppercase and lowercase letters by January 2012.*

## Signs need replacing

Many signs currently in service on town roads in Wisconsin are due for replacement. TIC Director and workshop leader Steve Pudloski notes that in his travels around the state he sees lots of regulatory, warning, work zone and street name signs that no longer meet the MUTCD minimum retroreflectivity requirements. TIC's Safety Circuit Riders, Jack Gerlach and Pete Rusch, confirm his impressions from field reviews of local roads in eight counties.

"What we're seeing indicates how important it is for local road officials to get a clear idea now of the signs on their roads and create a plan for replacement," Pudloski says. He adds that locating, inspecting and recording information on *all* traffic signs helps set realistic priorities and budgets during the phase-in period for bringing signs into compliance.

Pudloski will discuss methods for developing a sign inventory, including one that works well for town officials with a limited number of signs—a simple windshield survey using a map and inventory sheet on a clipboard. Workshop handouts will include a survey inventory form.

Having a comprehensive list of signs is the foundation of any replacement plan that allows local officials to adopt budgets that balance safety and infrastructure needs during the next four to five years. Local officials can compare the MUTCD compliance dates with signs on the list and schedule replacements on a regular basis. Workshop discussions also allow participants to share strategies and find an approach to follow.

Several minimum retroreflectivity assessment methods require a nighttime inspection. But yellow, orange, and green engineer grade signs in service for more than a few years will not meet MUTCD standards so supervisors can skip inspections after dark or taking measurements on these signs. Regardless of deterioration, they belong on the replacement list.

## Worthwhile improvements

According to reports from the Circuit Riders, many town roads in Wisconsin are short on advance warning signs at horizontal curves and at intersections to inform drivers of a dangerous condition. Research nationally on low-cost safety improvements shows that having warning signs at curves and turns and at intersections helps reduce road crashes, especially at night. Pudloski will review these and other findings at the workshop sessions and present examples from around the state.



*Tree sap and shots from a paint ball gun make this TURN sign difficult to see both day and night.*

Among new recommendations Pudloski and Heydel will cover in detail, are several that provide guidance for local road officials.

- Stronger requirements for installing signs on curves to reduce crashes.
- Guidelines for establishing safe speeds and installing the appropriate warning signs.
- Updated criteria that requires an engineering study to determine the safe speed on a road where changes in vehicles, traffic volume and other factors indicate existing speed is set too low or too high for safety; use information as basis for installing advisory speed plaques on horizontal curves.

## Deeper into the MUTCD

The workshop program helps participants become more familiar with the 2009 MUTCD. Digging deeper into the manual, Heydel will review the recommended and required sheeting types. He points

out that because new materials are more durable than previous sheeting, local governments will find it easier to justify upgrading signs ahead of the deadline dates since the new sign materials last longer.

Heydel will revisit some federal traffic safety requirements that date to earlier MUTCD editions. One is a rule about installing an ALL WAY plaque under STOP signs at four-way-STOP-sign intersections. He notes the rule dates to 2005 but there remain many examples of non-compliance on Wisconsin's local roads.

Considering the addition of more symbol signs in MUTCD 2009, Heydel notes that while there is no deadline for replacing School Bus Stop signs with a new symbol sign, he suggests local governments use this version when replacing worn or damaged signs in the future. The workshop also considers hybrid beacons as an option at unsignalized crosswalks.

As of the 2009 edition, MUTCD standards cover private roads within shopping centers, airports, arenas and other facilities. Heydel will review implications of this rule and where, short of enforcement, public agencies can help property owners understand their responsibility.



*A better position for the large arrow sign at left is in the line of sight for an approaching driver, or about where a chevron is missing in this photo. Another solution on curves like this is to install a series of chevron signs only. Use the MUTCD as a guide for placing road signs correctly.*



Heydel also plans to preview new standards on pavement markings coming out soon in the form of an "interim approval" added to the 2009 MUTCD. Many of the changes relate to state highways but there are safety options that will work on local roads.

## Time for safety

The *Highway Safety* workshop provides local road officials with a detailed review of how to interpret and incorporate the new MUTCD standards into their sign and safety programs. It translates information on the new retroreflectivity standards into practical terms. Participants will learn more about identifying hazards and how to use crash information to improve safety on their roads. Attend one of the sessions to hear what is new, share ideas and trade solutions with others responsible for local roads. ■

*Replacing the old warning sign on the right might not provide enough information to guide drivers along this narrow curving road at night. Consider adding delineators, an advisory speed plate, chevrons or a large arrow.*

## Highway Safety Workshops

Officials responsible for managing signs and road safety in their communities have a choice of dates and locations for attending this TIC workshop. The fee for each participant is \$60.

Nov 11	Waukesha
Nov 12	Barneveld
Nov 15	Tomah
Nov 16	Eau Claire
Nov 17	Hayward
Nov 18	Tomahawk
Nov 19	Green Bay

Register at <http://tic.engr.wisc.edu/workshops/listing.lasso>.

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# Weight limit rule wins compliance thanks to education

*The ordinance requires that trucks traveling to or from a location in Hull with loads that exceed the limits apply for a permit and work with town officials to determine a suitable route.*



*Signs posted on every Town of Hull road alerting drivers to the weight limit rule are part of a proactive effort to educate haulers and improve compliance.*

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**TWO YEARS AFTER** enacting a comprehensive ordinance that imposes strict weight limits on all town roads and diverts heavy trucks to alternate routes, the Town of Hull reports that education and a convenient permitting process are behind the success of its ordinance.

Hull's awareness campaign began as a conscious effort to communicate details about the weight limit ordinance before it took effect in October 2007. That campaign evolved into an ongoing effort to promote cooperation and an efficient permitting process. Town Chair John Holdridge and Town Secretary/Deputy Clerk Barbara Brilowski say the majority of truckers and trucking firms doing business in and around the Portage County community have learned to comply.

The town instituted the new rule partly in response to a state interchange project that put more traffic pressure on one town road. The ordinance identifies all town roads as Class B, allowing a maximum total weight without permit of 48,000 lbs, or 12,000 lbs per axle. The ordinance distinguishes between new asphalt roads built to handle limited heavy loads and old roads, sealcoat over gravel, that are at greater risk of damage.

Signs posted on every town road alert road users to the rule.

The ordinance requires that trucks traveling to or from a location in Hull with loads that exceed the limits apply for a permit and work with town officials to determine a suitable route. The law outright prohibits trucks with loads above the limit from using town roads as a shortcut.

## Streamline process

Town officials consider it essential to make getting a permit easy. The goal is to provide reasonable and timely access for trucks delivering goods and services to town residences or businesses.

Brilowski, one of six full-time town employees, manages the process. She describes it as streamlined and straightforward. Operators hauling a load that is over the permitted limit request a permit via phone, fax or email. Brilowski evaluates details about their load and destination to determine the best route. Generally, that means redirecting heavy trucks to Class A state or county roads, especially when they are hauling numerous loads for one job.

Brilowski also specifies an allowable speed limit for the trip if lower than what is posted on the section of Class B road a truck is traveling. In hot weather, the permits require truckers to haul their loads in early morning before pavement surfaces soften from the heat.

The ordinance allows 24-hour turnaround for issuing a permit but in cases where Brilowski is familiar with a company's equipment, their weights and what they haul, the process goes faster. "We turn most permits around quickly so truckers can be on their way," she says.



*Before and after photos of a town road show the damage done by a contractor unloading heavy equipment. Following permit requirements, the company reimbursed Hull for the cost of repairs.*

"But it's important to do this right, to make sure they know what they're signing and abide by that agreement."

The town issued 1,081 permits from January through December 2009 and more than 469 so far in 2010.

Denying a permit can create friction, Holdridge says. But town officials explain in detail why they will not allow a specific request. In one case, the town determined the extreme weight of a proposed load would destroy a culvert under the seal-coated road in question and the hauler would be responsible for replacing it. Once the hauler understood the parameters of the ordinance and their liability, they withdrew the request to use the road.

## Testing the rules

There have been violations that tested the strength of the ordinance. According to Holdridge, it holds up well. Truckers or trucking firms receive a fine for driving on posted town roads without a permit and must pay for any damage they do. The ordinance, based on Wisconsin law, allows Hull to collect triple the costs for repeat violators, something that did occur the first year of enforcement.

The town has recovered more than \$41,000 in damages since 2007 under the ordinance and inspected several locations where a company running heavy trucks did repairs to a road after one of their drivers tore it up moving an overweight load.

Sometimes enforcing the ordinance includes collecting evidence. Logging operations are a prime example. Once the town issues a permit that diverts a logging or similarly heavy truck to Class A roads, a road foreman for the town takes before pictures of the section of Class B road at the delivery or pick-up point. If there is damage, he photographs the road after the hauling operation to record its condition. Holdridge says the pictures are persuasive.



Permit holders generally accept responsibility for repairs.

With enough advance notice, the town meets with companies hauling logs or other heavy loads to discuss their options and find a resolution, like waiting until winter to do the hauling.

The ordinance also gives Hull leverage to warn violators who are unaware of the rule or choose to ignore it. Written warnings to truckers or firms, with the backing of law enforcement, have helped a few local haulers make changes before incurring liability from damaging a road.

### Residents on alert

Local residents know about and support the ordinance. According to Holdridge, many see it as a way to protect the town's investment in road improvements. In an area with subdivisions and cropland where routine commerce includes installing and servicing septic systems, and hauling farm equipment and crops, residents often serve as watchdogs. When someone sees a heavy truck that is out of place or unloading big equipment in the wrong location, they call it in.

Area farmers are exempt from getting permits under the ordinance but must pay for damage that occurs from their use of a town road. Holdridge recalls an instance where the farmer himself reported damage done by an operator he hired to do a job.

### Informed enforcement

Town officials were in touch with local and state law enforcement before enacting the weight limit ordinance since they rely on help from patrol officers to enforce it. Hull contracts with the Portage County Sheriff's Department for additional patrol services from late spring through September. The officers, trained in weight limits, assisted the town in implementing the ordinance. If a trucker is hauling overweight without a permit, the town sends them a warning and information about the local ordinance.

Lieutenant Daniel Kontos, in the department's Operations and Communications Division, commends the advance work Hull did to inform both law enforcement and haulers of the ordinance before its adoption. It gave his office a chance to offer technical advice on enforcement but also to anticipate the impact of the ordinance when introduced. "Our role is to reinforce the legal standing of the ordinance, whether responding to calls or warning an operator about the rule."

Kontos does not recall any major problems with the ordinance since it took effect and adds that as people get to know the rules, the ordinance has become business as usual.

### Safety provisions

Even when damage does not occur, truck drivers traveling on town roads with loads that exceed the limits present a hazard, Holdridge says. Pedestrian and bicycle safety is spelled out in the ordinance, recognition of typical road use in an urban/suburban area. Five roads that head north out of the neighboring City of Stevens Point to become town roads are popular with walkers, joggers, bicyclists and school cross-country teams. The Town of Hull is committed to keeping those roads safe for all users.

Most of the weight limit permits Brilowski issues include underlined reminders about school bus stops and the presence of students and other pedestrians to let truckers know they must share the road safely. Fixing a damaged road is one thing, she says. Someone getting hurt or killed is quite another.

### Proving the solution

Holdridge notes that two-thirds of the town's \$1.7 million annual budget pertains to roads. Protecting the useful life of that resource is a financial necessity for the Town of Hull as for other municipalities in Wisconsin.

Aware that other towns are dealing with more and heavier trucks too, he recommends Hull's



*These photos record culvert damage at the entry and exit point after delivery of a heavy load that received a permit to travel on town roads. Such before-and-after evidence helps with enforcement of Hull's weight limit rules.*



comprehensive approach as the best way to keep good roads in service longer and increase safety. Posting weight restrictions on a single road does not solve the problem of big trucks accelerating pavement wear and tear on the entire network of local roads. They will avoid the posted road but add stress to non-posted town roads.

While the weight limit ordinance is effective, Town of Hull officials are sensitive to the challenge haulers have to move heavy equipment and cargo efficiently. They are promoting addition of a frontage road to create better truck access to Interstate 39 and continuing to refine the process for securing a permit.

"Hull doesn't want to be a thoroughfare for big trucks," concludes Holdridge. "What we do want is to make the town's weight limit rules work for everyone." ■

Learn more about the planning process behind the Town of Hull's weight limit rule in the Fall 2007 issue of *Crossroads*. Download past issues from the newsletter archives at <http://tic.engr.wisc.edu>.

*Protecting the useful life of town roads is a financial necessity for the Town of Hull as for other municipalities in Wisconsin.*

### Resources

<http://www.dot.wisconsin.gov/modes/trucks.htm>

Wisconsin Department of Transportation link to information on truck routes, weight stations and state patrol enforcement of weight limits.

<http://nxt.legis.state.wi.us>

Legislative link to Wisconsin statutes. Search for Chapter 348 on local limits and Section 349.15 for authority to set limits.

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*Occupational Safety Inspectors from the Safety & Buildings Division of Commerce will do a workplace walk-through of any local agency that requests one to help them identify and correct hazards or risks to safety.*



#### Resources

<http://www.commerce.state.wi.us/SBI/>

Link to Wisconsin Department of Commerce Safety and Building Division with information on public sector employee safety.

<http://www.osha.gov/>

Occupational Safety and Health Administration site with information on regulations, enforcement, training programs and compliance resources.

## Worker safety by the book

**LIKE ALL EMPLOYERS** in Wisconsin, local governments must maintain workplace safety, from city hall and equipment garages to roadway work zones. Requirements include developing programs, procedures and training that effectively protect the health and safety of workers and meet federal OSHA (Occupational Safety and Health Administration) rules.

The Wisconsin Department of Commerce Safety and Buildings Division is responsible for enforcement of these occupational safety and health standards for public sector employees in Wisconsin. The division provides consultations and on-site inspections for public agencies, including local governments, on meeting OSHA rules. Occupational Safety Inspectors from the Safety and Buildings Division of Commerce will do a workplace walk-through of any local agency that requests one to help them identify and correct hazards or risks to safety.

### Code compliance

The inspectors focus on 11 risk areas critical to overall worker safety. As described here, each one requires public agencies to develop a written policy related to the risk area and carry out the protections as defined in State Statutes and OSHA regulations.

**Illness and injury prevention:** Hazard identification and assessment, employee training, accident reporting and accident investigation to minimize worker illness and injury. Submit a *Summary of Work-Related Injuries and Illnesses* from the previous year by March 1.

**Emergency procedures/responses:** Establish policy and train employees in safe response procedures for fire, hazardous materials incidents and other emergency situations.

**Fire prevention:** Evaluate hazards and train employees in fire prevention procedures. Include fire extinguisher inspection and training.

**Hearing conservation:** Protect employees from noise exposure equal to or greater than an eight-hour time-weighted average of 85 decibels (dB).

**Personal protective equipment:** Assess hazards requiring equipment like protective eyewear and face shields, hard hats, gloves and safety shoes. Develop policies and train employees on use, care, maintenance and limitations of personal protective equipment.

**Respiratory protection:** Identify requirements and establish work-specific procedures for respirator selection, use, cleaning, inspection and maintenance. Conduct employee medical evaluations, fit testing and training.

**Confined spaces:** Evaluate workplace for confined spaces with potentially hazardous atmosphere, risk of engulfment, entrapment or other safety issues. Establish program that prevents employees from entering confined spaces or limits entry. Provide appropriate equipment, annual training on entry and rescue procedures.

**Lock out-tag out:** Protect employees from unexpected energization or startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities.

**Bloodborne pathogens:** Evaluate potential exposure and establish policy that provides employees with personal protective equipment and annual training.

**Hazard communication:** Share information with employees about hazards related to chemical use. Include facts on proper labeling and use of Material Safety Data Sheets, and provide training on chemical hazards.

**Fall protection:** Identify hazards in the workplace. Modify or eliminate them, or provide fall-protection equipment. Train employees to recognize fall hazards and follow prevention policies.

Other codes administered by Commerce raise important additional issues for supervisors and workers on road construction and repair projects. **Exposure to traffic** addresses work zone risks for employees working on or along roadways. Public agencies must follow standards in the MUTCD (*Manual on Uniform Traffic Control Devices*) that require use of appropriate safety clothing and traffic control devices.

Documenting **medical services and first aid** for any employee exposed to corrosive materials that can cause eye or bodily injury is another rule. Compliance includes having facilities in the work area for quick drenching or flushing of eyes or body in an emergency.

The code on **machine guarding** requires employers to have guards or barriers on certain equipment to reduce risk to operators of flying chips and sparks, rotating parts, pinch points and other hazards.

### Focus on training

Most public agencies responsible for maintaining roads, streets and rights-of-way in a community use training at orientation and in meetings to keep staff current with general policies and procedures. Including workplace safety topics in regular meetings is an efficient way to improve safety training.

Local officials managing roads in Wisconsin hear about safety in every Transportation Information Center workshop. TIC's *Work Zone and Flagger Safety* workshop puts special emphasis on worker protections in the field. Find information about TIC workshops online at <http://tic.engr.wisc.edu>.

Wisconsin's municipal risk management pools offer targeted training programs that emphasize health and safety. Rick Bayer, Loss Control Manager for Cities and Villages Mutual Insurance Company, says that like other risk management pools, CVMIC provides a range of on-site and group programs for members.

Local agencies not in a risk management pool may have

access to training or technical assistance through their liability insurance provider. Or they can work cooperatively with other departments and agencies, sharing costs or leveraging the in-house expertise of another organization to create training opportunities.

Bayer says managers of municipal services frequently request injury reduction training sessions on work zones, confined spaces, back safety, slips and falls, and related topics. Work zone presentations include tabletop simulations and, occasionally, hands-on training sessions at a job site.

Other areas of interest that he sees are driver safety, fleet safety, trailer operations and managing road rage.

Bayer notes that more public sector workplaces have people dedicated to making safety a priority throughout an organization and who actively promote the value of risk prevention. ■

### Get Crossroads via email

Local governments receiving **Crossroads** can get the newsletter electronically starting with this issue. Contact Katie Pawley at [pawley@epd.engr.wisc.edu](mailto:pawley@epd.engr.wisc.edu) to get on the email distribution list.

We ask all our readers to help us keep our mailing list current by contacting Katie with changes to information or distribution preference. Thanks!

**CROSSROADS** provides road and bridge information for local officials. Published quarterly by the Wisconsin Transportation Information Center (TIC) at the University of Wisconsin-Madison, it is part of the nationwide Local Technical Assistance Program (LTAP). TIC is operated by UW-Madison and sponsored by the Wisconsin Department of Transportation and the Federal Highway Administration. Please contact us for permission to reproduce articles or graphics.

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## RESOURCES

### Publications

**Using Weight Limits to Protect Local Roads**, TIC Bulletin, 2003, 8 pp. Discusses pavement damage caused by heavy vehicle loads and provides information on implementing seasonal and year-round weight limits.

### Websites

The Wisconsin Department of Commerce site gives staff contact information and links to administrative rules on workplace safety on its Safety & Buildings Public Sector Safety Program page.

<http://commerce.wi.gov/SB/SB-PublicSectorSafetyProgram.html>

OSHA site with links to Safety and Health Topics with information on occupational safety and health regulations, useful publications and training resources.

<http://www.osha.gov/SLTC/>

The Wisconsin Department of Administration site has a link to sample safety plans and programs for managing hazards in the workplace.

<http://www.doa.state.wi.us/subcategory.asp?linksubcatid=1455&locid=2>

Link to *Emerald Ash Borer Toolkit* for Wisconsin Communities on the Wisconsin DNR Forestry site.

<http://dnr.wi.gov/forestry/uf/leab/>

Information on controlling EAB, publications, downloadable videos and facts on the spread of emerald ash borer in the U.S. and Canada.

<http://www.emeraldashborer.info/index.cfm>

Downloadable version of *Reducing the Impact of Emerald Ash Borer: Guidelines for Managing Ash in Wisconsin's Urban Forests* with guidance and recommendations on how to manage urban forests in the face of emerald ash borer.

<http://dnr.wi.gov/forestry/uf/pdf/ManagingUrbanAsh8-3-10.pdf>

Link to Wisconsin Department of Agriculture, Trade and Consumer Protection Emerald Ash Borer information page with general information on EAB, information for homeowners and links to additional EAB resources and publications.

<http://datcp.state.wi.us/arm/environment/insects/emerald-ash-borer/index.jsp>

### DVD/VHS/Multimedia

*Timely resources new to TIC or related to current newsletter topic.*

**Working Safely in Cold Weather**, *Wumbus Corporation*, 2007, 16 minutes, #19029 DVD. Good practical information on working in cold weather includes causes and health effects of cold stress, first aid for hypothermia and frost bite. Tips on how to protect against cold weather health problems.

**A Snowplow Operator's Guide to Snow and Ice Equipment**, Idaho Technology Transfer Center, 2006, self-paced, #18995 DVD. Interactive program discusses snowplow equipment preparation and operation along with snowplowing techniques. Short video segments with tests encourage self-paced training. Video segments come from the Iowa DOT Winter Operations Training Series.

Print copies of listed publications available free from TIC. Download or request items at **Publications** on TIC website. Video, CDs, and DVDs loaned free at county UW-Extension offices. Also see **Video Catalog** on TIC website.

### TIC website

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

**Winter Operations Training Series**, Programs 1-4, Iowa DOT, 1997, 80 minutes, #18993 DVD. Programs include Introduction to Winter Operations, Pre-Season Preparation, Equipment Operation, and Plowing Techniques. Also available in #18172, #18173, #18174 and #18175 VHS.

**Winter Operations Training Series**, Programs 5-6, Iowa DOT, 1998, 65 minutes, #18994 DVD. Focuses on Anticing and Deicing, and Winter Weather Resources, including forecasting and RWIS (Road Weather Information System). Also available as #18187 VHS.

**Sand and Salt Spreader Calibration**, Baystate Roads Program, Massachusetts Local Technical Assistance Program, 2006, 13 minutes, #18928 DVD. Explains simple procedures for calibration of salt and sand spreaders, and calculations that need to be done to determine proper calibration.

## FEEDBACK

CONTACT US VIA EMAIL, PHONE, FAX OR MAIL ►

NAME \_\_\_\_\_ TITLE/AGENCY \_\_\_\_\_

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Address change/addition  Information request  Idea/comment  Email delivery only

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“ Cheese factories produce their share of wastewater brine. Would that work for roads? ”

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## CALENDAR

### TIC Workshops

Details, locations & registration forms are sent to all **Crossroads** recipients prior to each workshop. For more information & online registration: <http://tic.engr.wisc.edu/workshops/listing.lasso>

**Highway Safety** Review basics of signing and marking, good sign installation and maintenance practices. Help identifying roadside hazards and using crash data to improve the safety of local roads. Review new retro-reflectivity standards and MUTCD revisions. FEE: \$60

NOV 11 WAUKESHA	NOV 17 HAYWARD
NOV 12 BARNEVELD	NOV 18 TOMAHAWK
NOV 15 TOMAH	NOV 19 GREEN BAY
NOV 16 EAU CLAIRE	

**Road Maintenance** Recognize problems early and apply the right methods to stretch budgets and maintain good local roads, streets and highways. Includes training on the PASER pavement condition rating system. FEE: \$60

MAR 10 BARNEVELD	MAR 16 HAYWARD
MAR 11 PEWAUKEE	MAR 17 TOMAHAWK
MAR 14 TOMAH	MAR 18 GREEN BAY
MAR 15 EAU CLAIRE	

**Work Zone and Flagger Safety** Apply effective work zone traffic controls and improve the safety of motorists, pedestrians, bicyclists and workers. Meet federal and state requirements, and minimize individual/agency liability. FEE: \$60

MAR 29 WAUKESHA	APR 6 HAYWARD
MAR 30 BARNEVELD	APR 7 TOMAHAWK
MAR 31 TOMAH	APR 8 GREEN BAY
APR 5 EAU CLAIRE	

**Using WISLR to Manage Roads** Use the web-based application to better manage pavement maintenance, submit pavement ratings to WisDOT, and create charts, graphs and maps of pavement condition and other characteristics. Also reviews process for creating a 5-year budget plan. FEE: \$60

APR 12 GREEN BAY	APR 26 HAYWARD
APR 13 MENOMONEE FALLS	APR 27 EAU CLAIRE
APR 14 BARNEVELD	APR 28 TOMAH
APR 25 TOMAHAWK	

### On-Site Workshops

Training tailored to your specific needs at your shop or office saves time and travel costs. On-site workshops let you train more people for the same cost or less. Include staff from other municipal departments, nearby communities, or businesses you contract with. Contact TIC to book a topic and date that fit for you. Workshops include:

- Basic Surveying for Local Highway Departments
- Basic Work Zone Traffic Control
- Flagger Training

### UW-Madison Seminars

Local government officials are eligible for a limited number of scholarships for these EPD courses held in Madison. Go to <http://epd.engr.wisc.edu> or call 800-462-0876 for details.

### OCTOBER 2010

- 26-27 Essentials of Hydraulics for Civil Engineers and Designers #L596
- 28-29 Practical Economics & Financial Methods for Civil Engineers & Managers #L699

### NOVEMBER 2010

- 8-9 Effective Concrete Bridge Repair Workshop #L611

### DECEMBER 2010

- 6-8 Highway Bridge Design #L698

### JANUARY 2011

- 10-11 Fundamentals of Public Works Construction Inspection #L942
- 11-12 Maintaining Asphalt Pavements #L920
- 12-14 Improving Public Works Construction Inspection Skills #L943

### Pesticide Applicator Certification

Information on categories and a schedule for the Wisconsin Pesticide Applicator Training Program are available at <http://ipcm.wisc.edu/PAT> or by calling (608) 262-7588 or emailing [PAT-program@wisc.edu](mailto:PAT-program@wisc.edu).

### Independent Study

Project Management 100: The Basics, Plus Important Insights #L742 **Enroll Anytime**