

CROSSROADS



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



Wisconsin statutes require that local governments base all speed limit changes on a traffic engineering study.

INSIDE

- 2 **IDEA EXCHANGE**
Sprayer truck does double duty

- 3 State releases speed management guidelines

- 4 Stricter diesel emission rules affect truck replacements

- 4 TIC resources stretch training budgets

- 7 **RESOURCES**

- 8 **CALENDAR**

Speed studies strengthen local partnerships for safety

SPEEDING is a major safety problem on Wisconsin’s local and state roads. But simply lowering speed limits is not the answer and setting them too low usually makes the problem worse. It is better to *get the facts* through a speed study, then use the information to set and enforce safe and rational speeds.

A strong partnership between local highway and street departments and local law enforcement is critical for this to work. New *Statewide Speed Management Guidelines*, recently released by the Wisconsin Department of Transportation (see story page 3), present a best practices approach—including a detailed review of methods for conducting effective speed studies—that both groups can use to address the question of whether to raise or lower existing speed limits.

Wisconsin statutes require that local governments base all speed limit changes on a traffic engineering study. Such a comprehensive study incorporates speed study data with crash statistics and information on road design, signage and other roadway characteristics.

Data from a speed study is valuable on many levels. It provides local law enforcement with facts they can apply to improving effective use of patrol resources. Road and street officials gain knowledge about speed and safety problems. And traffic engineers have a timely snapshot of issues that affect maintenance and design projects.

Representatives from local governments across the state

attended speed management workshops in May to learn about the guidelines. In this article, several participants describe how they use speed studies.

Perceived safe speeds

People tend to travel at speeds that feel comfortable and safe regardless of posted limits. They judge their ability to drive safely by factors like the physical design of the roadway, how well they know the route, traffic volume and visual cues like parked vehicles or seeing a patrol car.

Speeds perceived by motorists as reasonable often exceed the statutory or posted limits. Referred to by experts as the “safe and rational speed,” the 85th percentile is the speed at or below which 85 percent of drivers travel.

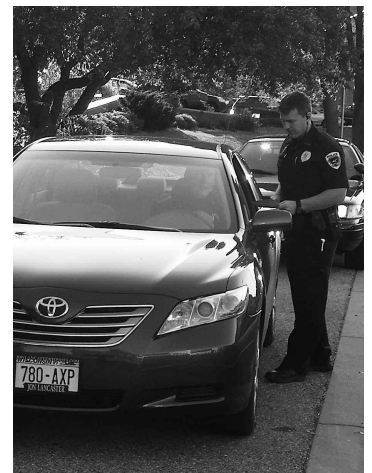
Monroe County Highway Commissioner Jack Dittmar, Hudson Police Chief Marty Jensen and Operations Lieutenant Frank Fenton from the City of Monona Police Department, all use 85th percentile speeds as a guide for proposing a revised speed limit or enforcement activity.

Chief Jensen considers evaluating study information based on the 85th percentile a wakeup call for communities to reduce their tolerance for speeding and rethink their approach to enforcement and traffic planning.

Facts trump guesswork

The Monona Police Department uses a post-mounted radar recorder to gather information

on speed trends they factor into the focused enforcement that is central to traffic control operations in the Dane County community.



Traffic stops are part of a focused enforcement strategy for the Monona Police Department.

“Technology keeps us from guessing about how to deploy resources,” explains Lieutenant Fenton. “With actual data, our actions are not arbitrary, but rooted in fact.”

Positioned largely out of sight and functional year-round, Fenton says the device detects all vehicles passing in both directions. It records the number of vehicles, vehicle length, speeds and time of day. Officers download the data to their hand-held or laptop computers via a wireless connection, then transfer it into a spreadsheet program to analyze and organize.

“We move the tracking device around to test for a problem when there are complaints or pick

Continues on page 6

Sprayer truck does double duty

“Equipment purchases are necessary major costs, so where we can come up with alternatives that work, it’s a bonus.”



Jefferson County’s sprayer truck works road projects during the summer months, adding moisture to base materials.

TAKE ONE tanker truck with sprayer. Add two county highway departments and mix in a good measure of cooperation and shared interest. The result is an efficient return on investment for one county, and an economical way to test a snow and ice application for another.

Jefferson and Waukesha counties initiated an equipment sharing agreement two years ago that keeps Jefferson County’s sprayer truck busy year round. Jefferson

found what he needed right next door—Jefferson County’s truck sprayer sitting idle during the winter months. Rauchle got in touch and the two counties set up a lease agreement he describes as a win for both sides.

“All of us are looking for ways to spend budget dollars more efficiently,” Rauchle says. “Equipment purchases are necessary major costs, so where we can come up with alternatives that work, it’s a bonus.”

Use it or lose it

The bonus for Jefferson County was generating welcome revenue from underused equipment. Fleet Manager Erik Coonen says putting billable hours on the equipment helps justify keeping it or replacing it when the time comes. Coonen inherited the agreement with Waukesha County when he joined the department earlier this year and considers it a positive example of making useful equipment pay for itself.

Both fleet managers cite other sharing or contracting agreements that help them get things done or keep equipment profitably in action. Jefferson County recently contracted with Dodge County for road striping and they routinely send their chip spreader, an operator and supplies of chips to other nearby counties for road projects. And, when Coonen’s road sweeper was out of commission this summer, he surveyed the list of counties Jefferson County cooperates with to locate a fill in. Columbia County had one he could lease on a short-term basis.

It takes planning and negotiation to set up agreements that suit both parties, Rauchle says. He is looking for additional opportunities to cooperate with other agencies on equipment lease or purchase.

Paying the state rate

Under the tank sprayer agreement, Waukesha County takes possession of the truck from about mid-October through mid-April. They modify it slightly to accommodate nozzles for spraying a salt brine mixture. So far, the anti-icing operation is producing the results the county was after.

Jefferson County currently does anti-icing on bridge decks with a smaller truck and spray tank that Coonen says “gets around quicker.”

Waukesha County pays Jefferson County the standard State Highway Maintenance Classified Equipment Rate for use of the tank sprayer, the same rate the state uses to reimburse counties for maintaining state roads. Jefferson County carries liability coverage on the equipment through its participation in the state-administered Local Government Property Insurance Fund that extends to its use by another agency. Each department handles maintenance on the truck and sprayer equipment during the months they use it.

Communication a key ingredient

The equipment exchange between Jefferson and Waukesha counties demonstrates how closer local government ties benefit everyone. Rauchle notes that the emphasis these days on better emergency preparedness and mutual aid has improved communications county-to-county and between cities, towns and villages.

As they share information and resources for managing local roads, public works and highway departments can test new ideas and make capital investments in spite of a tight bottom line. ■

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County was using the 2500-gallon tanker truck exclusively during the summer months for dust control and to add water to base materials to optimize moisture content for compaction on road reconstruction or rehabilitation.

Neighboring Waukesha County wanted to test anti-icing methods on the state and county roads it maintains in winter before committing tight budget dollars to a major capital purchase. Fleet Manager Robert Rauchle searched to see if other agencies had equipment the county could rent for an affordable trial run. He

State releases new guidelines for speed management



RECENT RELEASE of the new *Statewide Speed Management Guidelines* by the Wisconsin Department of Transportation Bureau of Highway Operations gives transportation officials around Wisconsin step-by-step recommendations for studying and setting safe, enforceable speed limits.

The guidelines review factors related to traffic speed that influence road safety, such as public policy and rates of compliance with existing limits. The publication's main focus is a detailed look at the process of conducting an effective speed study and using the findings to establish or modify a speed zone. It is important to note the guidelines are a resource, not a mandate. But state statutes require officials to conduct a speed study before there is a change in speed limit.

Asking for input

WisDOT traffic engineers developed the guidelines in response to goals outlined in the Wisconsin Strategic Highway Safety Plan 2006-2008. The authors reviewed current state statutes governing fixed speed limits and modifications to those limits on different road configurations. They looked at crash data findings from the TOPS (Traffic Operations and Safety) Lab at the University of Wisconsin, and researched studies done nationally on defining and setting rational speeds.

They also asked for input. WisDOT State Traffic Safety Engineer Rebecca Szymkowski and Derek Hungness, a transportation plan-

ner with SRF Consulting Group who collaborated on the project, previewed the guidelines at a speed management summit earlier this year and during a series of statewide workshops co-sponsored by the Transportation Information Center.

Szymkowski says the outreach efforts generated good discussions about the issues local law enforcement and elected officials face when managing speed issues in their jurisdictions. "Hearing first-hand how things like changing land use and resident complaints figure into decisions helped us understand their unique needs when it comes to speed management," she says. "In return, I feel the people who participated walked away more knowledgeable about how to respond with fact-based strategies."

Best practices that make sense

The "best practices" covered in the guidelines had to make sense for local governments, Hungness notes. "We developed a data-driven approach everyone can use to evaluate existing speeds and follow an orderly speed study process when they want to make a change."

The guidelines discuss the concept of 85th percentile speed, "the speed at or below which 85 percent of the observed traffic travels." Transportation engineers and other experts consider the 85th percentile a safe and rational speed, and information central to a speed study. State and local officials must use this measurement when evaluating requests to modify a speed limit.

The publication also defines the significance of design speed, speed distribution, secondary roadway attributes and other relevant data. One section features a comparison of data collection methods, everything from radar recorders to a stopwatch. Szymkowski says



The goal was to create a uniform and consistent approach to speed management across the state.

feedback from the workshops persuaded them to include a wider range of methods that give local governments more options.

Local governments also will find a speed study report in the guidelines and an Excel worksheet. Users simply enter speed data from their study and the program produces the necessary analysis.

Uniform approach

The goal was to create a uniform and consistent approach to speed management across the state. The guidelines serve as a template for gathering and analyzing data that state and local officials can use to determine whether to modify limits or take other steps to improve road safety.

"When we set speeds that are appropriate, drivers and passengers feel safer on the roads," observes Szymkowski. "The guidelines bring all the elements together in one place for doing this."

She adds that her office, the Traffic Engineering Section of the State's Bureau of Highway Operations, is available as a resource to local governments if they need help applying the guidelines.

Guidelines and worksheet are available by contacting Szymkowski at 608-266-9381 or rebecca.szymkowski@dot.wi.us, or via download from the WisDOT and TIC websites. ■



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Resource

Setting Speed Limits on Local Roads

TIC Bulletin #21. Updated in 2009 to include information from new *Statewide Speed Management Guidelines*. Reviews role of local governments in setting limits and covers a broad range of relevant speed issues. Go to the publications link at <http://tic.engr.wisc.edu> to order or download.

Stricter diesel emission rules affect truck replacements

Manufacturers talk about fuel economy in miles per gallon, a statistic that is irrelevant for agencies that measure truck use by engine hours not miles.



LOCAL HIGHWAY and public works departments preparing to replace diesel trucks in their fleets must take the next generation of clean diesel engines into consideration. The 2010 model year trucks must improve on the engines introduced in 2007 to comply with stricter clean diesel standards set by the Environmental Protection Agency (EPA) eight years ago.

Trucks sold since 2007 feature catalytic exhaust emission control devices that substantially reduce the emission of nitrogen oxide (NOx), particulate matter and other toxic gases. The EPA requires additional reductions in diesel emissions in 2010 models and on-board diagnostics to monitor

the effectiveness of the controls. EPA projects a reduction of NOx emissions of 2.6 million tons by 2030 when existing fleets are completely replaced.

Exhaust system options

All manufacturers are introducing systems that meet the 2010 requirements. Some are improving on current technology with an Advanced EGR (exhaust gas recirculation) system. Others are adopting SCR (selective catalytic reduction) in their diesel trucks, a newer technology currently used in vehicle fleets in Europe.

Advanced EGR circulates a higher percentage of exhaust gases back to the engine cylinders

where it mixes with incoming air, a process that lowers the combustion temperature and limits the production of polluting emissions.

SCR incorporates an after-treatment system that reduces NOx levels by injecting diesel exhaust fluid (DEF) into the exhaust. DEF is a blend of urea and deionized water that combines with the engine exhaust to form nitrogen gas and water. DEF is nontoxic but it is corrosive to unpainted aluminum.

Additional maintenance on SCR-equipped trucks involves managing a DEF supply and training drivers to keep the fluid at adequate levels so the engine does not power down unexpectedly. ▶

TIC resources stretch training budgets

Regular training programs sustain good performance, productivity and safety on the job.

Fee increase

TIC will charge \$60 for its regularly scheduled workshops beginning January 1, 2010. The fee increase helps maintain the quality and reach of the workshops, presented in multiple locations around the state on topics of current interest. This is the first increase since 2002.

REGULAR TRAINING sustains good performance, productivity and safety on the job. Even when budgets are tight, local highway and street departments find a way. The Transportation Information Center (TIC) on-site workshops and lending library are two low-cost, flexible resources available to local governments who want to stretch their training dollars.

On-site workshops

TIC's flexible on-site programming lets departments schedule workshops for their own workers or as joint programs with other agencies for only \$800. Local agencies can work with TIC instructors to tailor a basic course to address specific issues in a format that benefits the most people at one time.

The program Forest County Highway Commissioner John Rogers put together last May is a good example. Rogers organized a customized TIC *Work Zone and Flagger Safety* on-site workshop to provide part of an annual "Day of Safety" his department regularly co-hosts with three other counties

and three local communities. The seven agencies split costs to create a strong educational program for about 80 people.

"We wanted to address safe flagging operations for the road crews and TIC was the only place with a program that fit our needs," recalls Rogers.

The Oneida County Highway Department booked a *Basic Surveying* workshop with TIC last year. The department had little previous training setting elevations for culverts and ditches, says Patrol Superintendent Freeman Bennett. "It helps to have the whole crew on the same wavelength and that's what the workshop accomplished."

Lending library

TIC provides another training resource in its lending library—free to local governments and highway agencies in Wisconsin and others who provide them with contract and professional services. The library features DVDs, CDs and videotapes on road construction, maintenance, safety issues

and a range of other topics produced by transportation technology centers, highway agencies, equipment companies and other sources.

Bev Hanefeld, Program Assistant in the Fond du Lac County Highway Department says her agency uses tapes from TIC for safety training days held in fall and spring. The programs combine the taped presentations on topics like winter maintenance and snow plowing, work zone operations and vegetation in the right-of-way with a question/answer period. Hanefeld calls the programs an affordable resource that helps drivers and mechanics keep their skills sharp.

The City of Antigo Public Works Department does a big push in spring and fall to train new people and give others a refresher course. Safety and Program Coordinator Julie Zack says the training tapes from the TIC library stretch the budget and give the department flexibility to schedule group sessions when they anticipate down time. "Glad it's out there," Zack says. "We take advantage of every resource that's low cost or free to keep people trained and ready."

Advanced EGR should take less training to operate and does not require DEF.

Performance remains great unknown

It is too soon to tell how the upgraded systems will perform in public works and highway maintenance trucks. Industry reports generally indicate SCR will have the advantage over EGR in fuel economy but the additional cost for DEF may reduce or cancel out the operational savings.

T. J. Sorensen, Equipment Superintendent for the Green Bay Department of Public Works, notes that manufacturers talk about fuel economy in miles per gallon. This statistic is irrelevant for agencies that measure truck use by engine hours not miles, he says. The

Wisconsin Chapter of APWA (American Public Works Association) and others have asked truck and engine manufacturers to come up with more useful fuel-saving information.



Sorensen is requesting bids now on trucks equipped with Advanced EGR, SCR and the current technology so he can do a side-by-side comparison for his 2010 truck replacements. (Local agencies can contact him for his specifications.)

While Sorensen knows the older technology is cheaper, he wants to see the cost differential for himself to determine if EGR or SCR offer advantages that make them worth paying more. "I'd also like to study what other agencies learn from running these systems."

Recent price information from truck and engine manufacturers indicates the 2010 requirements may add from \$6000 to \$8000 more per truck.

With two trucks in operation that meet 2007 emission standards, Sorensen knows educating drivers is essential to avoid costly repairs and downtime on the newer systems. Diesel particulate filters require regeneration, for example, to run efficiently.

Less leeway for new vehicle set ups

A critical issue for fleets is upfitting new trucks for public works or highway department use. Upfitters need to coordinate the location of the new emissions equipment and exhaust on the chassis cab and frame rails to mount dump bodies, underbody plows, front discharge spreaders with cross conveyors anti-icing tanks or other maintenance equipment.

Tom Schuh is Shop Superintendent for the Truck Equipment

Division of Monroe Truck Equipment based in Monroe, Wisconsin. The company handles upfitting for many state and local departments. Schuh says although every new model year poses a challenge, designs for the latest compliant exhaust systems provide less leeway for modification. In spite of this, he is confident about meeting all upfitting requests, in part because each manufacturer offers more than one configuration of the emissions equipment and exhaust system. Customers choose the configuration that accommodates the equipment they will add.

"It calls for more planning ahead than usual," Schuh says. "We encourage people to anticipate future needs so when they have the budget to add equipment two or three years from now, the vehicle they own is easy to modify a second time."

Schuh reports most of his big customers, states and large counties, are following the changes and have more examples of the new technology in their fleets. He agrees fuel economy remains a concern for everyone.

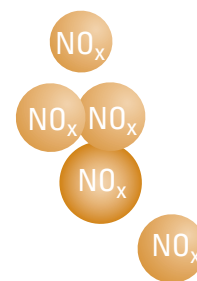
Smaller local governments who use Monroe Truck for upfitting have less experience with the new equipment. Schuh says they generally get educated when they start the bid process or contact him about modifications.

Early adopters a resource

Equipment managers need to consider their options when it comes to current vehicle replacement strategies. They can work with suppliers to locate trucks with 2007 engines, delay purchase to learn from the experience of early adopters or evaluate the cost of rebuilding existing equipment. In each case, their goal is to have trucks that do the job and are easy to maintain at a reasonable cost.

Crossroads will continue to follow this topic. We invite local road officials in Wisconsin who have the newest clean diesel technology in use to contact us and share their experiences. ■

"We encourage people to anticipate future needs so when they have the budget to add equipment two or three years from now, the vehicle they own is easy to modify a second time."



Worthwhile investment

Agency commitment to training is important, says Dave Wepking, Safety and Training Coordinator for the City of West Allis. "When top management promotes the concept as a worthwhile investment, there's more of an expectation among employees that training will happen."

Besides educating employees on equipment maintenance and operation, scheduled training helps the city decrease liability for equipment or property damage—important during a budget crunch.

The West Allis Department of Public Works uses vendor training, TIC library resources and other approaches, like having experienced operators train new recruits. Quality training is the goal, Wepking says, to establish the basics and make safe operation second nature to people.

Contact TIC at 800-442-4615 or tic@epd.engr.wisc.edu to learn more about on-site workshops. Find the video catalog online at <http://tic.engr.wisc.edu/>. ■

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Resource

<http://www.epa.gov/otaq/diesel/index.htm>

Environmental Protection Agency site with information about the clean diesel campaign, and links to updates on the new rules and related financing programs.

Speed studies strengthen local partnerships for safety

continued from page 1



"The more we document travel conditions on our roads, the easier it will be to address questions about safe speeds and come up with effective solutions."

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trouble spots for random testing," Fenton notes. "The readings help us determine if there is a genuine speeding issue or not."

Monona is creating a panel of citizens and elected officials to review neighborhood speed complaints. They will examine speed study data, weigh different solutions and recommend appropriate action. Fenton says it is a way the community can work together on traffic safety issues.

Enforcing safe speeds in Monona involves multiple officers monitoring traffic along a specific stretch of road or street and pulling speeders over. They often concentrate on school zones and rush hour routes. The department also stations visible patrols on a major thoroughfare undergoing reconstruction, watching for work zone violations.

Research before reacting

Public information as a deterrent figures in the speed studies conducted by Hudson police. Chief Jensen describes the speed trailer his department uses as serving a dual purpose: it provides local officials with accurate speed data and draws drivers' attention to how fast they are really going.

A digital display on the trailer shows the legal posted speed and the speed of individual vehicles. The tracking feature gathers data on the number of vehicles per day,



the average speed, how many vehicles travel over the speed limit and how many exceed it by a substantial margin. Officers sometimes disable the read-outs and use it solely to track speed data on free-flowing traffic.

The department moves the trailer to perceived problem areas or in response to a specific complaint—"People love to see it out there." Jensen says their ability to track conditions *before* mounting a complete response makes a difference. Instead of reactively increasing patrols when a complaint comes in, they do their research.

"Put patrols out on the street and the problem goes away, but only for as long as the patrols are present. We needed to know, what are the facts, are people really going as fast as complaints indicate and is it all the time."

Communicate with stakeholders

Communicating the facts is an important part of local speed management. Monroe County Highway Commissioner Jack Dittmar recalls a landowner's request to lower the 35 mph speed limit on a county trunk highway that had become densely residential. Dittmar took the opportunity to educate. He explained the 85th percentile concept and the rationale for maintaining the existing limit on a road designed to funnel traffic from local streets to the state highway. "Studies have shown," he wrote in response, "that most motorists drive a reasonable speed based on how open or congested the highway is and will slow down if it gets more congested with

vehicles and/or development. Posted speed limits lower than a reasonable motorist would drive will mainly result in reasonable drivers getting ticketed. The chances of catching a driver who races through a section of highway are very remote and if they are driving that irresponsibly, a speed limit change of 10 mph will not make a difference." Unreasonable legal speeds breed disrespect for all posted speed limits, he added, noting it is better to let the majority use reasonable judgment. The resident thanked Dittmar for the analysis and said it persuaded him the posted speed was in fact prudent and safe.

In Jensen's experience, data from a speed study also takes the emotional element out of decisions by local officials pressured to redesign roads or add traffic calming devices. He cites the example of a 2-way stop controlled intersection in the St. Croix County community that was the scene of a car/pedestrian accident. The first response was to change it to a 4-way stop intersection. Later, after evaluating information from a speed study, officials decided to restore the intersection to its original 2-way stop design and added more warning signs.

Because adequate signage is essential for safety, the Hudson police work closely with other city departments to establish clear policies for evaluating speed issues and requests to modify signs or traffic controls.

Organized process includes stats

Like other local officials, Commissioner Dittmar believes in gathering the facts before installing more signs or changing a speed limit. The Monroe County Highway Department uses a radar gun as part of its traffic safety program.

Dittmar says the simple tool serves them well, providing unbiased statistics on vehicles traveling on the county's mostly rural roads. The fact that one size does not fit all is a strong argument for getting the facts, he notes. Where traffic is relatively light, a perceived speeding problem may not conform to standard definitions or textbook fixes.

He also takes an engineer's view of the impact that signage, maintenance and road design have on speed compliance. "Most people drive at speeds they feel are safe," he observes. "Lowering the limits in response to a perceived problem turns normal drivers into criminals."

The county requires a formal petition from local landowners who request a change. Then they do a speed study to record the 85th percentile speed, number of vehicles and vehicle types, and a reasonable representation of traffic patterns on the roadway at specific times of day.

Dittmar reviews findings from both petition-related studies and

others done at random with the county's Traffic Safety Commission, and shares data with local officials in villages and towns across the county. "The more we document travel conditions on our roads, the easier it is to address questions about safe speeds and find effective solutions."

He welcomes the guidelines as an aid in analyzing study results and an endorsement of using speed studies to back enforcement and planning decisions.

Proactive produces results

Research by the National Highway Traffic Safety Administration (NHTSA) and other groups show that focused enforcement affects compliance and helps reduce travel at unsafe speeds. Communities that combined enforcement with drive-safe messages experienced measurable speed reduction in targeted areas. Traffic calming measures (like pavement markings and speed humps) also help modify driver behaviors.

Finding resources to take proven, proactive traffic safety improvements is a challenge. WisDOT's Bureau of Transportation Safety offers grants based on crash data analysis for local agencies to use in traffic safety education and enforcement.

Shared responsibility the key

What is common to successful state and local measures to improve speed compliance is collaboration between law enforcement and the officials responsible for maintaining roads and streets. Gathering and sharing useful data helps strengthen that partnership as decision makers at every level gain a better understanding of the facts they need to implement coordinated safety efforts. ■

RESOURCES

Print copies of publications listed in this issue are available free from TIC while supplies last. Download or request items at Publications on TIC website. Video, CDs, and DVDs loaned free through county UW-Extension offices. Also see the Video Catalog on TIC website.

TIC website

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

Publications

Flagger's Handbook, 28 pp., 2007. Latest pocket-sized handbook on flagger safety includes important changes in the federal *Manual on Uniform Traffic Control Devices (MUTCD)*.

Work Zone Safety: Guidelines for Construction, Maintenance & Utility Operations, 55 pp., 2006. Illustrated handbook reviews temporary traffic control applications that promote safety for vehicles, pedestrians, workers and equipment.

Setting Speed Limits on Local Roads, TIC Bulletin #21, 6 pp., updated 2009. Available from TIC. Reviews the role of local governments in setting limits. Update includes information from new *Statewide Speed Management Guidelines*.

Web Sources

Transportation Information Center site features download of new *Statewide Speed Management Guidelines*.
<http://tic.engr.wisc.edu/>

Environmental Protection Agency website page with links to state and local resources and information about emission reduction strategies—including

the clean diesel campaign—incentive-based programs, funding sources and other assistance.

<http://www.epa.gov/otaq/stateresources/>

Links to background information on DEF (diesel exhaust fluid) and its use in SCR emission systems, one compiled by Colonial Chemical Company, the other by Cummins.

<http://www.urea-scr.com/faq.html>

http://www.cumminsfiltration.com/pdfs/product_lit/americas_brochures/MB10033.pdf

Commercial Carrier Journal "Update on 2010 Engines" presentation is archived on the web. Scroll down to February 2009 webinar presentation.

<http://www.ccjwebinars.com/archives.html>

DVD/VHS/Multimedia

Timely resources new to TIC collection or related to current newsletter topics.

NEW *Working Safely in Cold Weather*, Wumbus Corporation, 2007, #19029, DVD, 16 min. Practical information on working in cold weather, including causes and health effects of cold stress, first aid for hypothermia and frost bite, and protecting against cold weather health problems.

NEW *Defensive Driving: When Good Weather Goes Bad*, Wumbus Corporation, 2008, #19026, DVD, 19 min. Good review of driving in bad weather with emphasis on hazards in heavy rain storms, including hydroplaning, poor visibility and

flooding. Also covers snow, ice, wind and fog conditions, along with tips on tire safety and the safe following rule.

NEW *Pre-Trip Inspection: A Circle of Safety*, Wumbus Corporation, 2008, #19027, DVD, 14 min. Comprehensive review of all inspection points a driver should cover in his/her pre-trip walk around. Useful for comparing with existing pre-trip checklists.

NEW *Backing, Parking, and Intersections*, Wumbus Corporation, 2006, #19024, DVD, 19 min. Defensive driving tips for backing and parking, two situations that account for many fender benders. Includes tips on negotiating safely controlled, uncontrolled and blind intersections.

NEW *Chainsaw Safety*, Wumbus Corporation, 1999, #19025, DVD, 13 min. Good introduction to practical basics of chainsaw safety for the new employee, program also serves as a check for self-taught users and a review for the old hand.

NEW *Tree Trimming Safety*, Wumbus Corporation, 1999, #19028, DVD, 20 min. A good safety review of tree trimming equipment including chainsaws, ropes, belts, climbing gear, ladders, pole saws, aerial trucks, chippers and personal protective gear. Covers safety procedures, crew size, and operation planning for trimming, felling and bucking near electric lines, buildings, and the public.



CROSSROADS newsletter provides information on roads and bridges 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 is sponsored by the Wisconsin Department of Transportation and the Federal Highway Administration. For permission to reproduce articles or graphics, please contact us.

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CALENDAR

TIC Workshops

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

Road Maintenance Learn to recognize problems early and apply the right methods to stretch budgets and maintain good local roads, streets and highways. Includes review of new regulations for stopping the spread of invasive species and how to incorporate those efforts into ROW maintenance operations. Fee: \$60

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|-------------------|-----------------|
| Mar 11 Barneveld | Mar 17 Hayward |
| Mar 12 Pewaukee | Mar 18 Tomahawk |
| Mar 15 Tomah | Mar 19 De Pere |
| Mar 16 Eau Claire | |

Work Zone and Flagger Safety Learn to apply Wisconsin standard practices and other guidelines for good work zone traffic control using strategies that will improve communication between departments involved in work zone activities. Presented at eight locations in early April. Check TIC website for updates. Fee: \$60

On-Site Workshops

Save time and travel costs by bringing instruction that is tailored to your specific needs to your shop or office. On-site workshops let you train more people for the same cost or less, including staff from other municipal departments, nearby communities, and businesses you contract with. Contact TIC to book the program and date you want. On-site 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 Engineering Professional Development courses held in Madison. Go to <http://epd.engr.wisc.edu> or 800-462-0876 for course details.

NOVEMBER 2009

- 9-10** Introductory Principles of Engineering Project Management #K965
- 11-12** Management Skills for Engineering Capital Projects #K966
- 13** Computer Tools for Engineering Project Management #K967
- 16-17** Storm Sewer Design #K760
- 18-19** Designing Storm Water Detention Basin Facilities #K761

DECEMBER 2009

- 7-9** Highway Bridge Design #K856
- 7-8** Using Bio/Infiltration to Improve Storm Water Management #L269
- 10-11** Developing an Effective Sidewalk Program #L155

JANUARY 2010

- 19-20** Maintaining Asphalt Pavements #L030
- 21-22** Improving Public Construction Inspection Skills #L034

FEBRUARY 2010

- 2-3** Soil Engineering for Roads and Pavements #L275
- 4-5** Pavement Thickness Design #L277

MARCH 2010

- 1-2** Comprehensive Practices for Effective Construction Management #K034
- 3** Principles and Practices of Construction Project Scheduling #K035
- 4-5** Principles and Practices of Estimating for Construction and Design Professionals #K036

Independent Study *Enroll Anytime*

Project Management 100: The Basics, Plus Important Insights #K205

