

CROSSROADS



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

Accurate pavement ratings key to budget planning

LOCAL ROAD OFFICIALS are busy this year rating pavements under their jurisdiction and submitting the results to the Wisconsin Department of Transportation. Due every two years, the ratings give WisDOT a credible way to analyze the condition of the state's local highway system. The snapshot helps WisDOT understand the need for local street and highway improvements and spot trends in pavement conditions on the local system.

The more accurate those ratings are, the more they communicate a realistic picture of what local public agencies are managing, says Wisconsin Transportation Information Center Director Steve Pudloski. TIC hosts webinars and workshops for public road agencies on

effective use of the PASER rating system and WISLR analysis tools. Find information about upcoming summer programs in the Calendar on page 12 and under Workshop listings at <http://tic.engr.wisc.edu>.

Pudloski encourages raters to take the training so they can avoid over-rating their pavements, a tendency that affects local planning but also the data's usefulness in making a case for local road funding in the state budget process.

Cost-effective strategies

Joseph Nestler, Director of the Bureau of State Highway Programs for WisDOT, agrees about the value of having accurate pavement condition data for funding decisions at the state level and suggests that same detail is

equally important for establishing cost-effective strategies at the local level. "Public agencies succeed at providing the best roads for the money when they can base their choice of maintenance and improvement activities that achieve minimum lifecycle cost on good information."

Some public road agencies in Wisconsin use PASER to rate conditions on every road surface and, after submitting the data to WisDOT, evaluate pavement condition and pavement management information using the WISLR Pavement Analysis Tool. Users then

create road segment-specific estimates for repair and rehabilitation. They project future pavement condition according to the strategies selected. These projections, based on averages of statewide pavement deterioration data, help highway and street departments set priorities and decide on the best treatment.

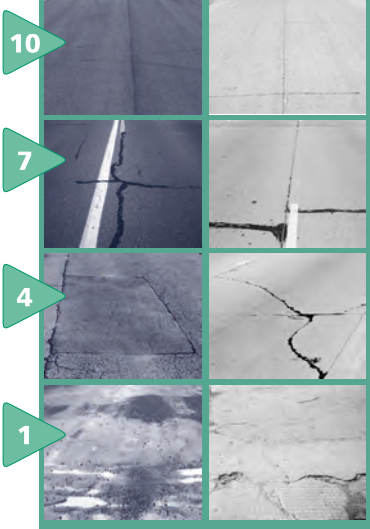
Ratings imply action

Ratings need to mean something, says Nestler. When they do, they imply action. PASER ratings correlate with the type, severity and

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PASER RATINGS

Pavement Surface Evaluation and Rating



The more accurate pavement ratings are, the more they communicate a realistic picture of what local public agencies are managing.



Rating this asphalt pavement a 4 on the PASER scale due to longitudinal cracking in the wheel path indicates the need for structural improvement with an overlay or full-depth reclamation. Choosing a maintenance or improvement approach that effectively extends the life of a road depends on an accurate condition rating.

Farm equipment study weighs impact on roads



“It became apparent that current road and bridge designs, and existing statutes are out of date with development of agricultural equipment, so there was a strong impetus to learn more so we could recommend and promote necessary changes in public policy.”

AGRICULTURAL EQUIPMENT traveling on town and county roads in Wisconsin is getting bigger and heavier. Understanding the impact of these loads on local roads and public policies that regulate weight limits on roads statewide is the focus of a task force established in 2012 by the Wisconsin Department of Transportation.

The *Implements of Husbandry Study Group* emerged from awareness of the conflict between the increasing size and weight of agricultural equipment and the ability of the existing road system to handle the impact, says Rory Rhinesmith. Deputy Administrator of the WisDOT Division of Transportation System Development and a study leader, Rhinesmith notes, “It became apparent that current road and bridge designs, and existing statutes are out of date with development of agricultural equipment, so there was a strong

impetus to learn more so we could recommend and promote necessary changes in public policy.”

Richard Stadelman, Executive Director of the Wisconsin Towns Association, is an active member of the study group, which enlists a diverse cross-section of individuals representing the farming industry, equipment manufacturers, law enforcement, transportation research, public policy, state transportation programs and others who speak for local government. Stadelman says the effort is both critical and timely as local road agencies in Wisconsin struggle to maintain the roads they manage and deal fairly with the expectations of all road users.

“This issue heated up over the past few years because of the size increase but also the incidence of some intense hauling of commodities like manure in certain places and at certain times of the year,”

Stadelman notes. He says that Wisconsin is “ahead of the curve in the Midwest” by examining the equipment side of the issue and looking for solutions.

Explore issues, find balance

WisDOT prepared the group for its work by introducing members to the issue from all viewpoints represented on the panel. They explored where their interests intersect and discussed how Wisconsin can balance the needs of an important industry with the limitations of existing statutes and the transportation infrastructure.

Rhinesmith says they set out to address several closely linked key issues:

- meet the demands of a competitive agricultural industry that must conform to weight restrictions
- keep roadways safe for the traveling public
- protect public transportation infrastructure from premature deterioration or catastrophic failure
- modernize state statutes
- apply weight-restriction laws fairly and consistently

Recommendations

Chief among preliminary findings reported to the Secretary of WisDOT in January 2013 was the need to create or amend definitions for all classes of implements of husbandry, or IoH. The purpose is to identify if a vehicle, piece of equipment or trailer is designed for agricultural purposes and used exclusively for that purpose. The study singled out four categories of equipment for expanded or new definitions:

- 1) farm tractors
- 2) self-propelled implements
- 3) converted motor vehicles/CMVs
- 4) components towed, trailered or pulled in a vehicle train



MINNESOTA ROAD RESEARCH FACILITY

Equipment like the sprayers pictured above and tractor tanker combination below are examples of the implements of husbandry sharing Wisconsin roads with other vehicles. A WisDOT study recommends redefining agricultural equipment categories to establish consistent and enforceable limits related to size, weight and use.

The last of these is the largest and heaviest, Rhinesmith says, so identifying which are allowable and which are not is important.

A second recommendation would establish an identification and fee system for vehicles defined as self-propelled CMVs used only in farm operations. Law enforcement could use the system to identify both compliant and non-compliant vehicles. Any fees the system generates could help fund improvement projects through state-administered programs.

The study group also outlined the need to establish a range of maximum widths and maximum allowable length and height limits for various implements operated on public roadways as defined under the four categories in recommendation one.

Other proposals called for statutory changes that allow broader authorization of alternatives like pipelines for liquid manure and the creation of a "standing forum" to continue the conversation about transportation needs related to agriculture.

Observations

The challenge of managing large agricultural loads on roads goes beyond Wisconsin. It is an issue in other agricultural states and in countries across the globe, from Canada to China. Michael Weber represents the Association of Equipment Manufacturers (AEM) on the loH study group and notes that members of his association serve farm businesses in all those markets. Manager for Technical and Safety Services with AEM, Weber says he and others from the industry found the loH discussions a good opportunity to hear other concerns and weigh in on the recommendations.

Weber reports on the discussions and results to an internal AEM committee he created on the topic of agricultural equipment and roads. He notes the Wisconsin study is of interest to many and he hears from people in other markets who want to adopt similar categories and rules.



Consequences of bigger, heavier, wider ag equipment traveling on local roads include tangling with utility poles and wires, damage to pavements and causing a bridge collapse. Local governments try to intercept potential problems through a range of best practices that serve the public and meet the needs of commerce.

Manufacturers are looking for balance and fairness, Weber observes, as the study group identifies and proposes changes to state regulations that fit with how farms operate these days and advances in equipment design.

Equipment makers do not yet see a major shift in product design because local laws have a more-direct impact on the equipment user and, Weber notes, it is the user who decides to take a piece of machinery on the road.

Study group member David Vieth, who is Director of WisDOT's Bureau of Highway Maintenance, agrees that the issue is ultimately local. He works with local governments on road issues and says they often feel uncertain about what is a realistic weight limit posting as they make trade-offs between tight budgets and serving the needs of commerce.

Vieth references a recommendation the study group made about greater use of best practices. "One of those is intercepting a potential problem by having early discussions between farmer and local road officials to resolve a problem or find temporary solutions," he says, suggesting alternatives already in evidence around the state, like setting seasonal limits, establishing temporary one-way roads or securing a performance bond from a farm operation or hauler.

Reasonable and scientific

Vieth, Stadelman and Weber all say the give-and-take between participants gave them a broader view of the ag equipment issue as the study group reviewed available research and developed their recommendations.

"There was a sense that public and private interests can strike a balance so farmers get a fair return on their investment in equipment and local governments have the tools to protect the taxpayer's investment in good roads."

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Farm equipment study

from page 3

"I'm optimistic because through this process, I've seen all sides engage with the question of how to reduce the impact of heavy loads on roadways," Veith says. There was a sense, he adds, that public and private interests can strike a balance so farmers get a fair return on their investment in equipment and local governments have the tools to protect the taxpayer's investment in good roads.

Discussions in Phase II of the project will concentrate broadly on issues specific to weight limits, responsible permitting and highway safety. Three work groups will focus on equipment definitions, examining the special impact of manure hauling operations and developing materials to communicate study results. A second and final report is due out at the end of July 2013.

The loH Phase I report is available at <http://www.topslab.wisc.edu/workgroups/waiioh.html> along with information on the full study group membership and background material provided to the work group panels.

"Our approach brings together a knowledgeable group of people who are committed to taking a reasonable and scientific look at how public policy can respond effectively to the impact of modern agricultural equipment on our roads," Rhinesmith says. "This includes weighing changes that, applied in the right measure, we hope will produce long-lasting solutions." ■

Supervisory and management training a practical resource

PEOPLE WHO MOVE UP through the ranks in public works and highway departments in Wisconsin have a valuable resource in two supervisory and management training programs offered by the Wisconsin Transportation Information Center (TIC) in cooperation with the American Public Works Association (APWA) Wisconsin Chapter. The 15 courses in two programs teach practical skills to individuals who supervise people and manage projects, or aspire to take on more responsibility in their agency.

In local government, most public works supervisors and engineers earn promotion because of their technical skills and strong work ethic, but few have the opportunity to consider how best to fulfill their leadership role within a public organization. The *Public Works Supervisory Academy* (PWSA) and *Public Works Management Institute* (PWMI) programs give them the chance to focus on those roles and responsibilities. They learn from a seasoned instructor and alongside others who are on the same journey in a collegial and problem-solving environment.

A closer look at the programs and impressions from participants illustrate the value of professional development in fostering effective local government operations, no matter the size or scope of the agency or the program.

From the basics to advanced

The training programs use lecture, case studies and discussion to cover a range of relevant topics. These include employee supervision, leadership skills, work-place safety, purchasing and inventory control, local government organization and personnel systems, ethics and communication skills. PWSA grounds lead workers, first- and second-line supervisors, and new managers in the funda-

mentals through nine one-day courses. Public works managers and seasoned supervisors can apply for or follow up with PWMI, a five-class advanced program.



Wisconsin TIC Director Steve Pudloski congratulates Jenny Schultz, City of Columbus Public Works, on completing the PWSA certificate.

One of the required PWMI courses is a two-day course offered by UW-Madison. *Municipal Engineering for Non-Engineers* gives supervisors and managers working in public agencies a better understanding of the concepts, methods and vocabulary of municipal engineering so they can make informed decisions related to alternatives guided by good engineering practice. It explores the basics of how streets, water, sewer and utilities work together, budgeting for projected capacity and use, and other operational issues.

Jerry Benzschawel, Field Supervisor in the City of Sheboygan Falls Department of Public Works, describes the *Municipal Engineering* seminar as a real benefit to him and his agency. Benzschawel supervises work for the streets department, the water utility and wastewater services.

Having served in every capacity during his 13 years with the department, he says he brings a "well-rounded view" of operations to his supervisor role. What can someone with Benzschawel's years of experience gain from these



courses? "Public agencies today are subject to intense scrutiny from many quarters so managers need to keep their skills sharp and geared toward good problem solving," he says. Tapping into targeted training programs, like PWSA and PWMI, is one way he does this.

Among benefits from course presentations and discussions, Benzschawel picked up new ways to manage operational and personnel issues that he put right into practice and felt the reassurance that his agency is doing many things right.

Skills for advancement

Another program participant with years of experience at many levels in her department is Jenny Schultz. Currently a Maintenance Worker with the City of Columbus, Schultz received her PWSA certificate in May and plans to pursue the PWMI program next.

She started with the Columbus Public Works Department 17 years ago in a part-time position that evolved to fulltime. Her goal today is promotion to Crew Leader, managing day-to-day jobs and taking more responsibility for budgets and personnel.

Schultz credits the PWSA sessions for providing her with practices she applies to handling tricky personnel issues and implementing time management strategies. Discussions about setting budget priorities and defining leadership style helped her hone skills that are important as she advances in her career.

"Overall, I feel the training makes me a better manager and, in that way, is a real benefit to my agency," Schultz says.

Broader knowledge

Art Bahr recently completed the PWSA certificate and is close to completing the PWMI program. He calls both offerings worthwhile for someone like him who wears many hats. Bahr is Public Works Director, Utility Manager and Village Administrator for the

Village of Gresham in Shawano County. During his four years with the village, he has managed a wide range of municipal services for the community of about 600 people.

The management training programs gave him a broader knowledge of all the processes and practices required of someone in his role. "I came away with a better sense of setting up systems for doing preventive maintenance on all facilities and systems," Bahr says, adding that he also gathered information to help educate village trustees about setting priorities.

Return on investment

Assistant Supervisor of Highway Dale Poggensee is close to earning his Public Works Management certificate. Six years with the Walworth County Public Works Department, two and a half as supervisor, Poggensee says he took something away from every class that he uses on the job. "The courses opened my eyes to how things are supposed to work in local government and why," he notes. "They also gave me a fresh angle on leadership, a better sense of what it takes to motivate employees to perform and do well."

Poggensee follows in the steps of two other supervisors in his department who completed the courses and found them beneficial. The training "makes us a better team," he says, a powerful return on investment for the county.

Trading solutions

Networking with other public works professionals was another plus these recent participants valued. The sessions proved a welcome chance to learn from the experience of others and compare notes on challenges and solutions.



Posing with their certificates for completing the Municipal Engineering for Non-Engineers course in April, these eight public works and highway department supervisors all plan to complete the PWMI program in the near future.

"Trading solutions with peers in the field and hearing the creative ways people found to improve efficiency and effectiveness is a great benefit of the course sessions," Benzschawel explains. "The instructors focus on everyday topics and generate good discussions about the real issues and challenges that happen in our departments."

Low cost and available

Supervisory and management training for public works leaders is the focus of a national movement fostered by APWA. The Wisconsin program, designed in cooperation with the APWA Wisconsin Chapter, is one of the earliest approved by the national organization. TIC, which assumed responsibility for the PWSA and PWMI programs in early 2013 from the UW-Madison Department of Continuing Studies, is committed to sustaining the original program.

TIC will continue keeping class sizes small to encourage the free exchange of ideas and problem solving and make the courses available at reasonable registration fees. The plan is to offer each of the 15 courses at least once a year so participants can complete their certificates in less than two years. ■

"Trading solutions with peers in the field and hearing the creative ways people found to improve efficiency and effectiveness is a great benefit of the course sessions."

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Resources

<http://continuingstudies.wisc.edu/pda/public-mgmt/academy.htm>
UW Continuing Education page with information about Public Works Supervisory Academy.

<http://continuingstudies.wisc.edu/pda/public-mgmt/institute.htm>
UW Continuing Education page with information about Public Works Management Institute.

Accurate ratings

from page 1

Recalculating, the city found that more than 25 percent of the streets inventory required rehabilitation versus an initial estimate of 8 percent.

extent of surface distresses, and give pavement managers budget planning information that makes best use of existing resources. Accurate pavement ratings also help justify requests for road improvement grants through various state programs.

The goal of budgeting better over the long term for road projects is a good reason for local governments to improve rating accuracy. The City of Sun Prairie in Dane County and the Town of Warren in St. Croix County are two communities making changes they hope will result in more effective budget planning.

Question the accuracy

In Sun Prairie, the push for better ratings came after the city missed the cut for a Local Road Improvement Program (LRIP) matching grant. Public Works Director Larry Herman says the major rehabilitation project they proposed was a rarity for a department that concentrates the majority of road maintenance resources on crack-sealing, seal coating and complete reconstruction. As Herman explains it, they submitted the LRIP application with the rating on file for the streets in question. The PASER rating of 7 they submitted did not

support the need for rehabilitation. While the high rating sank the city's chance to apply LRIP funds to the initial group of streets, the program let them use the matching dollars on other streets.

The experience also brought a serious problem to light.

"It made us question the accuracy of all the pavement rating numbers we used to forecast the next year's rehabilitation plans," Herman says. A sample survey of ratings on a group of city streets proved many were higher than warranted. Recalculating, they found that more than 25 percent of the streets inventory required rehabilitation versus an initial estimate of 8 percent.

The review also alerted Herman to the fact the department was applying treatments to pavements based on these overratings, a potential waste of resources unlikely to produce the anticipated extension of pavement life.

Re-evaluate

Sun Prairie Public Works made the commitment to re-evaluate city streets and adopt a more-concise pavement rating process. The department introduced a two-team rating process with a mix of veteran maintenance staff members and newer employees. The teams double-check each other to verify each rating. They train with the PASER manual and a series of sessions conducted on city streets so the crews learn to identify urban surface distresses.

Herman also is examining where the previous rating process went wrong to avoid the missteps that caused inaccuracies. Were the rated segments too long? Was the averaging process error prone? Did crew members have a sub-conscious reluctance to rate low? Sun Prairie's quality assurance process is ongoing as Herman works to answer these and other questions.



Sun Prairie might have missed the need to do reconstruction on this pavement in very poor condition before the city instituted a quality assurance process designed to improve the accuracy of their pavement ratings.



*Were the rated segments too long?
Was the averaging process error prone?
Did crew members have a subconscious reluctance to rate low?*

Already on the table is a strategy to divide the inventory up and rate a portion of it each quarter rather than during a concentrated few weeks every other year. Making the process more routine should help people hone and maintain their rating skills, Herman reasons, and allow the department to review and possibly correct inaccurate ratings sooner.

Planning beats reacting

A good program of preventive road maintenance starts with a budget that emphasizes planning over simply paving any problems that crop up after the spring thaw. So says Frank Phillips, a consulting engineer working with the Town of Warren. After inputting accurate PASER ratings for the town into the WISLR inventory, Phillips downloads the WISLR data into a parallel database he designed to help identify and prioritize road projects. This system also tracks the costs of infrastructure assets and improvements for Warren's GASB 34 Compliant Report.

Since the usefulness of a road inventory system for forecasting costs depends on the accuracy of the data entered, Phillips says

the first order of business was amending the town's pavement condition ratings, many of them too high.

"Without such data, it's hard to plan rather than react, as Warren was doing before," he notes. "Now the town has a seven-year plan for preventive maintenance that takes a reasonable approach to patching or replacing roads according to their actual rated condition."

The improved inventory came in handy this spring when the town had to revise a road budget strained by late winter storms. Having a clear picture of pavement conditions helped Phillips advise elected officials about which

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The improved inventory came in handy this spring when the town had to revise a road budget strained by late winter storms.

Rate failure by section



AN IMPORTANT STRATEGY in the PASER rating process is to differentiate between the overall condition of a pavement section and failures that occur on a small portion of the section. It may not help, for example, to rate the entire stretch of the road in photo on left as POOR, or a 2 on the PASER scale, when only 200 feet of the section deserves

that rating. If the local road agency does a full-depth patch, they can rate the repaired segment based on the condition of the larger section. Consulting Engineer Frank Phillips explains this was the Town of Warren's strategy with the road pictured here. The full-depth patch on right, done

after evaluating the segment, addressed the localized failure. Raters then based the overall rating of the road on the predominant condition of the entire section. The approach allows the town to plan the most cost-effective maintenance timing and treatment for the road.

Accurate ratings

from page 7

As tight budgets become the new normal for local governments across the state, so does the requirement for good data to back up decisions about how to deploy limited resources.

projects they could afford to defer. "The fact I had good information gave them the confidence to be decisive and keep critical road improvements in the budget," says Phillips.

Another advantage is the savings that come from scheduling contractors in advance. Phillips

says Warren has seen a 10-to-15 percent reduction in project costs because they plan and let the work early. The contractor can have crews ready to begin and complete projects on time without costly delays or disruptions.

Formal and fair joint maintenance agreements Warren has

with neighboring local governments, based on an up-to-date WISLR inventory, also profit from accurate ratings. "They require a commitment to accuracy on both sides so everyone can see who owns what and determine how best to share costs," Phillips says.

Sound data make a strong argument

Due by December 15, the 2013 ratings are the basis for a fact-based assessment of needs on the local road system as a whole. Closer to home, sound data collected and analyzed through a simple but systematic process



*Among Sun Prairie streets that rated a 6 on the PASER scale, the one pictured here from two perspectives exhibits instances of longitudinal and transverse cracks with quarter to half-inch openings and slight raveling **LEFT**, and slight raveling and occasional patching in good condition **RIGHT**. With accurate pavement condition data, Public Works can budget appropriate time and money for preservative treatments.*



A PASER rating of 3 for this Sun Prairie street takes into account the appearance of longitudinal and transverse cracks with crack raveling and erosion.



The alligator cracking, potholes and patches in poor condition visible on this pavement section justify a PASER rating of 2 and a place on Sun Prairie's list for reconstruction.

can improve budget planning and appropriate resource allocation. Phillips and Herman both see accurate pavement condition information strengthening their arguments locally for adequate funds to manage and maintain town roads and city streets.

As tight budgets become the new normal for local governments across the state, so does the requirement for good data to back up decisions about how to deploy limited resources. Accurate pavement ratings are part of that. They provide local road officials with an unambiguous representation of the roads they manage that supports realistic long-range maintenance and reconstruction plans. ■

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Resources

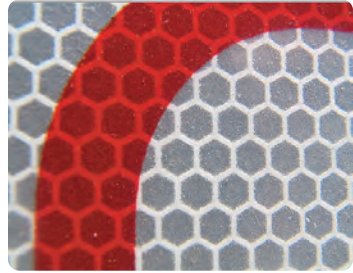
<http://www.dot.wisconsin.gov/localgov/wislr/index.htm>

Link to WisDOT information about WISLR, the Wisconsin Information System for Local Roads, including how to start using it.

<http://ttic.engr.wisc.edu/Workshops/index.lasso>

Workshop listings on the TIC website include PASER/WISLR webinars in July and August.

Keep sign retroreflectivity in view



SIGNS THAT ARE CLEARLY VISIBLE

both day and night help make roadways safe for all users. Public road agencies responsible for maintaining traffic signs at minimum retroreflectivity levels have a compliance deadline coming up that is part of ensuring safety-critical signs meet federal standards. By June 13, 2014, street and highway departments in Wisconsin and nationwide must establish and implement a management or assessment method to monitor and maintain the condition of regulatory and warning signs.

The rule is outlined in the latest Manual on Uniform Traffic Control Devices (MUTCD), which also notes that while the standard does not require road agencies to include **all** traffic signs in the methods they implement, those signs still must meet minimum retroreflectivity levels.

Helpful fact sheet

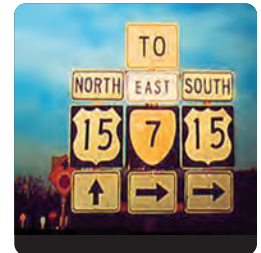
Local governments across the state can turn for guidance to a fact sheet published by the Wisconsin Transportation Information Center (TIC) in conjunction with the Wisconsin Department of Transportation. An updated version of *Meeting Minimum Sign Retroreflectivity Standards* features a comprehensive comparison of three

management methods and two assessment methods, and discusses how to work effectively with a combination of methods. There is information on the evolution in sheeting materials and recommendations for a sign inventory to augment any chosen method.

"TIC has always stressed the importance of inspecting and maintaining signs to assure visibility day and night," says TIC Staff Engineer Director Ben Jordan. "The new retroreflectivity standards provide more certainty about minimum retroreflectivity levels and what constitutes an acceptable sign maintenance, assessment and management program."

For agencies that already have programs in place, he notes, adjustments will be minor. Agencies starting a new program will need to budget for sign replacement as they begin implementing the management or assessment methods.

See the links under Resources to order or download the TIC fact sheet and learn more about the MUTCD at the Federal Highway Administration website. ■



Resources

http://lepfiles.engr.wisc.edu/pdf_web_files/tic/bulletins/B1tn_023_Retroreflectivity.pdf

Digital copy of TIC Bulletin 23 in the Publication section of the TIC website.

<http://mutcd.fhwa.dot.gov>

FHWA site with links to details and downloads of the Manual on Uniform Traffic Control Devices.



ARTICLE INDEX

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This index features articles from the last eight issues of *Crossroads* newsletter, listed by topic, title and issue date. Download these and other issues of the newsletter at <http://tic.egr.wisc.edu> or call the Wisconsin Transportation Information Center (TIC) at 800-442-4615 to request copies



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Publications

How Vehicle Loads Affect Pavement Performance, TIC Bulletin #2, 4 pp. Describes pavement fatigue and discusses how wheel loads, number of truck axles and truck tires, various pavement characteristics and weather affect pavement condition.

Using Weight Limits to Protect Local Roads, TIC Bulletin #8, 8 pp., 2003. Reviews causes of spring weakness in roads, how heavy loads do damage and the characteristics of vulnerable roads.



Setting Speed Limits on Local Roads, TIC Bulletin #21, 6 pp., 2009. Contains information about researching reasonable speeds on local roads, summarizes statutory limits and reviews the process for changing and enforcing limits.

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 ARTIFAX, PUBLICATIONS BY DESIGN

PASER Manual Series. Pavement Surface Evaluation and Rating manuals provide help with road ratings process; review of surface condition and repairs for most road surface types, describes and illustrates common defects. Includes surface rating system that links type, number and severity of defects with maintenance methods. Six manuals available from TIC.

- Asphalt-PASER Manual**
39 pp., 2002
- Brick and Block-PASER Manual**
8 pp., 2001
- Concrete-PASER Manual**
48 pp., 2002
- Gravel-PASER Manual**
32 pp., 2002
- Sealcoat-PASER Manual**
16 pp., 2000
- Unimproved Roads-PASER Manual**, 12 pp., 2001

Web Sources

Sign inventory management system spreadsheet, available for download, includes drop-down menus for sign description, sign position, sign materials and sign and post condition. Follow link below to News Items road sign and look under LTAP News/Events for the spreadsheet, also a sign field inspection form and instruction manual.

<https://www.dot7.state.pa.us/LTAP>

The American Concrete Pavement Association and Federal Highway Administration offer two no-cost online training programs, with certificates of completion available, on *Safety on Concrete Pavement Construction Sites* and *Proper Use of Stringless Paving Technology*. Follow link to register using "Pavement1" coupon code.
<http://acpa.scholarlab.com/>

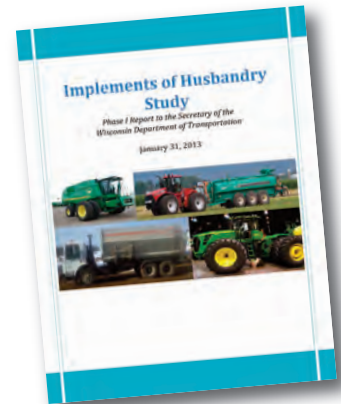
Effects of Implements of Husbandry (Farm Equipment) on Pavement Performance, April 2012 report by the Minnesota Road Research Facility on study investigating the effects of farm equipment on the structural behavior of flexible and rigid pavements.
<http://purl.umn.edu/122668>

Impacts of Overweight Implements of Husbandry on Minnesota Roads and Bridges, December 2004 report.
http://www.intrans.iastate.edu/reports/implements_husbandry_mn.pdf

Phase I Report from Implements of Husbandry Study Group released January 2013 by WisDOT.
<http://www.topslab.wisc.edu/workgroups/waiioh.html>

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>



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- 1 Accurate ratings guide planning
- 2 Farm equipment study weighs impact on roads
- 4 Supervisory and management training a practical resource
- 9 Keep sign retroreflectivity in view
- 10 *Crossroads* Article Index
- 11 Resources
- 12 Calendar

“It made us question the accuracy of all the pavement rating numbers we used to forecast the next year’s rehabilitation plans.”

– page 6

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CALENDAR

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

WEBINARS

Using PASER and WISLR to Manage Your Roads

Four 90-minute sessions on effective use of online tools to rate pavement conditions and manage data on road maintenance, repair and rehabilitation. Fee per site, per session: \$25. For one-day workshops, see below.

JUL 16 How to Rate Your Roads Using PASER

Learn use of system for rating pavement condition, how to identify the cause of deterioration and select appropriate maintenance treatments.

JUL 23 WISLR 101: The Basics

Get access to WISLR road data and learn how to modify it. Includes discussion of using WISLR data in the yearly certified mileage process.

JUL 30 How Do I Submit My Pavement Rating

Improve knowledge of WISLR tools and forms, use system to input pavement ratings, modify road data based on field inspection and plan maintenance work.

AUG 6 Using WISLR Pavement Analysis Tools

Enter cost data with confidence, prepare needs-analysis charts and graphs, use mapping tools, create multi-year budget plans, generate reports and maps to explain proposed improvement plans.

WORKSHOPS

Using PASER and WISLR to Manage Your Roads

One-day classroom sessions cover topics and materials discussed in webinars. FEE: \$80

AUG 19	OCONOMOWOC
AUG 20	KIMBERLY
AUG 21	MARSHFIELD
AUG 22	RICE LAKE
AUG 23	RICHLAND CENTER

Gravel Road Maintenance

Review of maintenance methods unique to gravel roads. FEE: \$80

SEPT 20	BARNEVELD
SEPT 23	RHINELANDER
SEPT 25	HAYWARD
SEPT 27	MARSHFIELD

Watch TIC website for dates and details on *Winter Road Maintenance* workshops in October.

On-Site Workshops

TIC brings instruction to shop or office that fits an agency’s specific needs. Train more people for the same cost or less. Contact TIC to book date and choose topic area:

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

UW-Madison Seminars

Wisconsin local government officials are eligible for a limited number of scholarships for these EPD courses held in Madison. Find out more at <http://epd.engr.wisc.edu> or 800-462-0876.

JULY

- 16-17** Introductory Principles of Engineering Project Management N831

SEPTEMBER

- 4-5** Highway-Rail Grade Crossing Safety N739
- 10-11** Advanced Principles of Engineering Project Management N972

OCTOBER

- 14-15** Using WinSLAMM v. 10.0.1: Meeting Urban Stormwater Management Goals P010
- 21-22** Managing Snow and Ice Control Operations P349
- 21-23** Essentials of Hydraulics for Civil and Environmental Professionals P372

NOVEMBER

- 12-13** Soil Engineering for Non-Soils Engineers and Technicians P565
- 12-13** Fleet Management - Effective Practices for Public and Private Fleets P251

Independent Study

Project Management 100: The Basics, Plus Important Insights P218

ENROLL ANYTIME