“An aggressive program of chip sealing on residential streets could almost double the useful life.”

WOULD YOU like to enhance your streets budget? Up it by 200%? The formula for augmentation is amazingly simple! Learn it right here, when CROSSROADS reveals all (with a little help)!

The City of Madison has traditionally maintained its 583 miles of serviceable asphalt pavements by crack sealing, resurfacing, and reconstruction. With this program a street’s useful life was 25-30 yrs. Then the price for resurfacing skyrocketed — up nearly 400% since 1998. Now the budget can only pay for 8 miles of resurfacing a year, or about 240 miles in 30 yrs.

“We needed a way to prolong the pavement life,” says Steve Sonntag, City of Madison Pavement Management Engineer.

“We ran a simple cost analysis. An aggressive program of chip sealing on residential streets could almost double the useful life, saving more than $130 million over 50 years.” In 2006, for the first time, the city chip sealed residential curb-and-gutter streets. They selected a total of 10 miles of pavements, 5 on the east and 5 on the west side of the city. All had a PASER pavement rating of 6 or 7 and most were crack-sealed in 2005. The program was judged a success and expanded for 2007. What made it work?

Public acceptance is essential, making it important to address problems of dust, possible bike or roller blade crashes, pedestrian tracking, and loose aggregate on the street and potentially getting into storm sewers.

Key elements Madison used to deal with these concerns include:
- specifying black boiler slag
- sweeping twice
- protecting inlets
- providing plenty of public information
- careful scheduling

“You don’t want this project going on when kids are walking to school, so we did it during the summer vacation, June 15– August 15,” Sonntag says. “Once it was done and swept, we had very, very few complaints.”

Black boiler slag, 100% passing the 3⁄8” sieve, is a finer aggregate and it doesn’t seem to hold as much dust. Being black, it looks better. The price is close to similar-sized aggregate. Recent bids put the slag at $1.05/sq yd, and standard 3⁄8” aggregate at $1/sq yd. The city used a modified version of the State.

Regular chip seal treatments can almost double the life of a residential street. Good information and some extra sweeping can secure acceptance.

Learn more about maintenance, repair and reconstruction options at the TIC workshops on Road Maintenance in March.
Take better advantage of the tools in PASER and WISLR through hands-on learning.
Attend a workshop near you. See Calendar on page 12 for details.
Idea Exchange

For more information, contact Kim Christensen or Dale Anderson at 712-546-6401.

Reprinted from the May-June 2006 issue of Technology News, Iowa LTAP

Crossroads stats

Issues to date: 94
Total pages: 748
Most frequent topic: Equipment (126)
Least frequent topics: Recycling (1), Computers (2), Buildings (2)
Featured article, first issue Winter 1984: “Getting the most for your maintenance dollars”

$100 bought...

4 tons of patch 1983
1.4 tons of patch 1967

from first issue of Crossroads: Winter 1984

Crossroads stats

by Don Walker, Director
Transportation Information Center

CROSSROADS newsletter has been an important part of the TIC's activities since it began in Fall 1983. TIC is challenged to manage its budget wisely while serving our state's numerous local agencies (1,920 of them) and large geographic size. The newsletter allows us to reach all agencies with information on our programs and resources. It also is intended to make local agencies aware of new technology and emerging issues relating to their local roads. The articles provide useful information, encourage adopting new ideas, and assist with implementation by announcing workshops and listing other resources to help.

The TIC has been fortunate to have Lynn Entine as editor from the beginning. She brings the rather unique ability to explain technical subjects in a clear and interesting fashion. Lynn is effective in gathering the background information and details necessary to make CROSSROADS articles helpful and credible to local officials. She is a true professional and is largely responsible for the wide readership and success of CROSSROADS for over 23 years.

This Spring 2007 CROSSROADS will be Lynn's final issue. We thank her for her contributions and wish her well in her “active” retirement.

Thanks from — the Ed.

by Lynn Entine, Editor

THANKS to the many, many knowledgeable local officials, along with staff from WisDOT, FHWA-Wisconsin, and the UW, who took the time to patiently explain, describe, answer questions, and send photos. (Once I even got a “zerk” plug in the mail when no amount of explaining over the phone let me figure out what it might look like.)

I learned a lot about pavement cracks, culvert installation, and the best techniques for plowing, sanding, and salting. I found it interesting. My children, however, still amuse their friends with tales of me describing alligator cracks or the rolling temperature of asphalt.

Sometimes it was a challenge to stitch pieces of information into a story that made sense. Don’s accurate understanding of our readers and their interests was always a help. There’s no question, however, that CROSSROADS articles remained lively, meaty, and varied because Wisconsin is blessed with passionate, thoughtful, and innovative people managing its roads.

May the “road rise to meet you,” as the Irish Blessing says, and may it always be smooth, well-drained, and safe.

Don Walker, TIC director, and Lynn Entine, CROSSROADS editor since its inception in 1984.

Truck mounted edge rut blade

For more than 10 years, the Iowa DOT maintenance staff in LeMars have been using a truck-mounted edge rut blade system that lets a single operator do the work of several people. It’s designed to use material already on the shoulder.

The equipment includes three blades. The first blade moves material from right to left to fill the edge rut. The second blade moves excess material back across the shoulder. The third blade floats along on the left side of the machine to keep material off the roadway. A roller can be pulled by the same truck to pack the shoulder.

Mounted on the front of the truck, the edge rut blade is easy to operate. It leaves no material on the roadway. Materials cost about $559 to manufacture this blade system.

For more information, contact Kim Christensen or Dale Anderson at 712-546-6401.

Changes at Crossroads
Standard Specification for chip sealing, Section 475, calling for a CRS 2P polymer modified asphalt emulsion.

To manage loose aggregate, Madison arranged for double sweeping. Finished segments were vacuum swept within 24 hours by the contractor, and then city crews returned a week later to sweep again. The slag is staying in place, Sonntag says, even after several plowable snowstorms. “The surface looks good and we have not seen substantial piles of slag at the curbs.”

Chip sealing on curb-and-gutter streets is more demanding than on a road with shoulders. “It can be hard to keep the material away from the curb. The contractor has to be more precise and there’s more handwork,” Sonntag says. All inlets, manholes, and water valves have to be protected—covering in advance and then uncovering after the sweeping.

This year all eligible pavements in two other aldermanic districts will be chip sealed, about 12-14 miles. Only streets with solid curb and gutter, good drainage, and little settlement are chosen. All affected residents will be notified by letter and invited to view a PowerPoint presentation that explains the program.

Worry about negative reactions from politicos and residents keeps many public works departments from proposing chip seals on improved local streets. But it may be time to reconsider. The economics are very convincing. “This will save us tens of millions of dollars and we can maintain our good streets that have a PASER rating of 7 or 8 at a higher standard,” says Sonntag. “Our goal is to use as much of our budget as we can on preventive maintenance, such as crack and chip sealing. You get so much more benefit at $1 per square yard, compared to $22 a square yard to resurface,” he says.

Using black boiler slag for the chip coat looks better and sticks better.

After a week, crews sweep newly treated streets a second time. Double sweeping keeps nearly all the loose aggregate out of gutters.

“Our goal is to use as much of our budget as we can on preventive maintenance, such as crack and chip sealing.

Contact Steve Sonntag at 608/267-1997 or ssonntag@cityofmadison.com for more information on the Madison program of chip sealing residential asphalt streets.


Pavements are ready for crack filling and chip sealing when the PASER rating is 5, 6, or 7.
PERVIOUS PAVEMENTS are a growing trend for parking lots, sidewalks and paths, and other low volume or light-duty surfaces. Available as concrete and asphalt, these coarse, open surfaces let water run right through.

The pavements offer safety benefits, stormwater management options, and other environmental benefits. They also need specialized installation, extra maintenance to retain their perviousness, and gentle treatment by snow plows and other equipment. They have been used in southern states for years, but concerns about freeze/thaw durability limited their use here. Recent Wisconsin installations using improved technology and design are proving themselves in our climate.

Permeability is created by using a small-diameter aggregate that is uniform size or “gap-graded,” with little or no fines. This produces pavements with 15%-25% void space, a portion of which is interconnected allowing water to move through. Strength is reduced, however, when there is less contact between the aggregate pieces. “You have to do a careful balancing act between the strength you need and the perviousness you want,” says Willie Gonwa, a senior project manager with Symbiont in West Allis.

In 2005 Gonwa supervised a pervious paving project at the Milwaukee School of Engineering (MSOE). It was one of several area demonstration sites for runoff reduction and stormwater management tools.

The 1.25 acre site at MSOE is about 65% pervious pavement. Of that a quarter is pervious concrete and three-quarters is porous asphalt. Parking stalls are pervious while the main access drives are standard asphalt, as is a 10 foot strip abutting a building. The School follows maintenance recommendations: vacuum sweeping the lot at least three times a year to prevent clogging, and using a rubber blade on the snow plow.

After the first year the porous asphalt pavement was graying as surface oils wore away, and it showed some scuff marks. Indentations made on hot summer days have healed over time. The pervious concrete pavement was considerably stronger than the asphalt at the beginning. However, durability became a concern because it was losing a lot of stone from the surface and raveling at the joints. Pressed to fix the surface before classes started, MSOE covered the concrete with a 2-inch overlay of porous asphalt. “The parking lot is still permeable pavement and is working just fine,” says Gonwa.

“Looking at the American Concrete Institute (ACI) recommendations that came out later, it turns out we violated a few rules,” Gonwa says. The newly placed mix should have been covered within 20 minutes and kept tightly covered for 10 days to retain water for curing. For better joints the concrete should have been placed in alternating strips, allowing the edges to cure for a day before the abutting strip was put in.

“Pervious concrete is very sensitive to installation and product mix,” says Gonwa. “There’s not much room for error. To be successful you need a contractor who has had training and certification and really knows how to install it.” Contractor certification programs to train installers, developed by the National Ready Mixed Concrete Association, are now available in Wisconsin. Anyone planning to request bids on a pervious concrete installation should require the contractor to be certified.

There has been considerable pervious concrete research, testing, and improvements in technical specifications recently. “[It] has come along way in Wisconsin...”

The industry terms are: pervious concrete, porous asphalt or HMA.
since 2005. With refined technology, we are moving forward," says Heath Schopf, Director of Construction Engineering at the Wisconsin Concrete Pavement Association (WCPA).

Asphalt installation is not as sensitive. However, the liquid asphalt binder is quite sticky, so paving in cooler months is better. Rolling should be limited and done at cooler temperatures so compaction doesn’t damage the porosity. It’s also important not to seal coat the surface in future years or the gaps will be filled. The National Asphalt Pavement Association has developed detailed specs and guidelines.

**Benefits and considerations**

Safety is a significant benefit of pervious pavement. Since rain and snow melt run through, pavements don’t get slick; there’s less opportunity for hydroplaning or for skidding on patches that freeze overnight. For safety reasons, a related asphalt product called stone matrix asphalt (SMA) is often the surface layer on interstate roadways. SMA is made with open graded aggregate, using larger stones for greater strength.

In parking lots, pervious pavements can help in handling stormwater and runoff because rainfall is detained in a deep base of open aggregate. The technology is approved by the U.S. Environmental Protection Agency as a best management practice. A hydrologist or engineer should calculate the effectiveness, however.

Soil type is very important. Over soils with higher permeability rates, water will percolate through the aggregate and subsoil, eventually recharging the groundwater. For such sites, the subsoil should be at least 3 to 4 feet thick above the water table and bedrock to reduce the chance of groundwater contamination. Over clays, the installation can become an underground detention pond. Water is held in the aggregate then released slowly through a drainage field into streams or storm sewers.

**In parks, near schools, and similar areas, pervious pavements can keep contaminants out of surface waters better than conventional pavements. Some contaminants filter into the pavement and base where biological activity seems to break them down. Since there’s no appreciable runoff, other contaminants stay on the surface where they can be collected by vacuum sweepers and disposed of in landfills. Pervious pavements are not recommended on sites like truck stops or heavy industrial areas with a high potential to contaminate groundwater.**

Air and water can get through the pavement to reach tree roots that extend underneath the pavement and keep the trees healthy. Typically, roots extend underground 1½ to 2 times the height of the tree.

“Urban retrofits are where it really shines,” says Gonwa.

Pervious concrete pavers

For information on pervious concrete contact Heath Schopf, Director of Construction Engineering, Wisconsin Concrete Pavement Association, 608/240-1020, hschopf@wisconcrete.org or visit: National Ready Mixed Concrete Association Web site: www.nrmca.org Pervious Pavement Web site: www.perviouspavement.org/ The American Concrete Institute Web site: http://www.aci-int.org

For information on pervious asphalt, contact Scot Schwandt, Director of Engineering at the Wisconsin Asphalt Pavement Association, 608/255-3114, scot@wis pave.org or visit: National Asphalt Pavement Association Web site: http://hotmix.org

Contact Willie Gonwa at 414/291-8840 willie.gonwa@symbiont online.com

“Urban retrofits are where it really shines.”
HOW MANY traffic signs are on your roads? How old is each one? Can it be seen at night? Many municipalities can’t give an accurate answer.

Recently an informal survey of counties about their sign management practices drew 32 responses. Seven said they have no inventory method, and three didn’t do systematic inspections either.

You might think sign management systems are not a high priority, but next year the new MUTCD will include retroreflectivity standards. Local agencies have always been responsible for ensuring night visibility of warning signs. Now that visibility will be measurable.

The FHWA recommends you use the “assessment” method — regularly evaluating every sign in the jurisdiction; or a “management” method — tracking or predicting retroreflectivity and replacing signs at a certain age. Both require inventory and record keeping.

Two commercial inventory programs — SimpleSigns and SIGNview — are being used or considered by several counties in the state. SimpleSigns is designed to be simple, affordable, and easy to learn. While SIGNview costs more and requires training, it has more capabilities.

JOE FLINN, Waupaca County Sign Supervisor, began using SimpleSigns in December. “We have over 4,000 signs on county highways alone. I didn’t know that before,” he says. To get started, Flinn created an Excel spreadsheet of signs, types and locations on each county trunk.

To get the information, two sign techs drove all the county trunk roads, beginning at the south or east edge of the county. Using a distance meter, they created “Routes,” measuring mileage from a major intersection to each sign and recording that sign’s identification number. SimpleSigns loaded the information into the program’s Access database and Flinn is now entering sign conditions and histories from paper records.

Flinn looks forward to using the program to make work assignments. “I can use filters to list all the signs with a condition rating of “poor” along a particular Route and easily get two days’ work for the sign crew in just a few minutes,” he says. “Right now I have to go through hundreds of pages of paper.”

After the program is running smoothly, the crew will do a night sign inspection, and retroreflectivity ratings will go into SimpleSigns. “Currently we don’t have records on the ages of our signs,” says Flinn. “As we get that information into the program, I can use it to keep all our signs within the 10 to 12 years that the sheeting is good.”

Keeping track of signs in storage, developing budget projections, and finding rainy-day work for summer construction crews are other benefits Flinn anticipates. “I’ve already figured out that we have $83,000 worth of signs in inventory. That’s a lot of money tied up,” he says.

“The program is designed so any sign tech can use it, especially the guys who hate computers,” says SimpleSigns creator Mike Rowekamp, a Minnesota-based GIS consultant. It has been available in Minnesota for about 18 months and in Wisconsin since December.

The main entry screen looks like a paper report form. Drop-down lists let the tech highlight location, sign and post properties, and repair activities. This cuts down on the amount of typing that’s required. With filters, the user can get custom reports, such as a list of all the STOP signs. The basic program costs $1,500, which includes free tech support. Data conversion is $500, and an add-on GIS mapping tool is $500. Sign data is stored in Access, a commercial database program, making it easy to access and manipulate for other purposes.
SIGNview — comprehensive

SIGNview, by Iowa-based Cartêgraph has data entry screens and report forms that the user can modify. Sign information can be linked to a GIS environment where it can be manipulated and displayed graphically. SIGNview integrates with other Cartêgraph programs for service requests and work management. Large counties like Dane and Waukesha use SIGNview, as does WisDOT.

“SIGNview has great reporting capabilities,” says State Signing Engineer Matt Rauch who oversees maintenance of Wisconsin’s 310,000 active signs. “We use it to produce reports for counties to replace signs. It will show what signs are on a segment, in order. The crew can start at one end and they don’t have to backtrack. It’s a lot more efficient.”

Rauch also uses it for budget projections and in planning improvement projects. To meet the minimum retroreflectivity standards, the state tracks the type of sheeting on each sign, the manufacturer’s name, and date it was fabricated. “Right now we’re concentrating on regulatory, warning and school signs,” he says. “Anything 1995 or older, we’re tagging to be replaced.”

Users need training and practice. “Unless you use it regularly, it will be tough to use,” says Rauch. “It took our folks quite some time to catch on to it. However, now they don’t know what they would do without it.”

Washington County Traffic Signer Jeff Spaeth has been using SIGNview about a year and a half. “I’m still learning,” he says. “There are so many different things you can do with it. Once we get our data in order, I think it will be well worth it.”

The county had paper records on all their signs, going back 10 years or more. These had ID numbers and locations of all the county’s signs. Sign techs regularly updated them as signs were added or removed. An engineering consulting firm entered that information into SIGNview and added GPS coordinates. Now Spaeth is adding and refining information on the county’s 3,411 signs.

“By using SIGNview we now have a history of a specific sign and the ability to add or remove data at our fingertips,” says Spaeth. The program is on a laptop that Spaeth takes in his truck, entering inspection data as he goes. They plan to use the “expected sign life method” of maintaining adequate retroreflectivity.

Other Washington County departments use specialized inventory programs from Cartêgraph. By linking the data together, a user can generate maps showing all the services in a segment. “You can do reports and filter whatever you want,” says Spaeth. “You can do layers, and it will show on the map the exact location of the sign.”

SIGN tracking systems can be on paper or in simple spreadsheet programs. If you have more than a couple hundred signs, a computerized system with an up-to-date sign inventory will make sign maintenance more efficient, accurate, and consistent.

For more information on SimpleSigns go to: www.rowekamp.com/SimpleSigns.htm

For more information on SIGNview go to: www.cartegraph.com

Contact Jeff Spaeth at jeff.spaeth@co.washington.wi.us or 262-335-5027

Contact Joe Flinn at JFLinn@co.waupaca.wi.us or 715-570-7880

“By using SIGNview we now have a history of a specific sign and the ability to add or remove data at our fingertips.”
Q&A from Signing Workshop
by Tom Heydel, WISDOT
SE Regional Traffic Engineer

Q Is a vandalism sticker required on a sign? Where can I find town codes for labeling signs?
Yes, Wisconsin Statute 86.192 requires vandalism stickers on all signs. Generally, they are placed on the front of the sign. An identifier code should be placed on the back of the sign. Each town, city or village has a special five-digit code based on the county where it is located. For example: 01-20 would be Adams County, Town of New Chester. You can see a list of all municipal codes by clicking on “CVT Index” at www.dot.wisconsin.gov/localgov/highways/gta.htm

Q How can I clean signs that have been hit by paint balls?
While nothing will ultimately clean it 100%, a Mr. Clean eraser pad has been shown to work.

Q Can I mount signs at a 6-foot mounting height?
Yes, in a rural area. However, 5 feet, the minimum mounting height in a rural area, is better. It provides optimum breakaway characteristics and the best reflection of driver headlights and thus the best viewing angle.

Q On wood sign posts, what are CCA and ACQ? Is it important?
These abbreviations refer to the copper content of preservatives in the wood post. CCA is Chromated Copper Arsenate; ACQ is for Ammoniacal Copper Quat. ACQ posts have a high copper content (66%). This will quickly corrode a metal sign at the fastener contact, causing the sign to fall off the post in about 6-12 months. In CCA wood posts the copper content is 16% and does not corrode the signs. (See the article, “Wood preservative corrodes signs,” in the Winter 2005 CROSSROADS for more information.)

If you have already installed ACQ posts, you can eliminate the contact by installing a plastic washer between the post and the sign at the bolt connection.

To determine which type you have in stock look for the ACQ or CCA label on the post end.

Q I thought we weren't allowed to put street name signs on top of STOP signs?
You are permitted to do this except at STOP signs on approaches to county highways if you obtain prior approval from the county (Section 2D.38 WMUTCD).

Q If I store a sign, does that time count against how long it will last?
No. Sign life is based on installation date as long as the sign was stored properly, away from sunlight or other weather effects. The date sticker should use the installation date. This question relates to FHWA’s new minimum retroreflectivity standards which use sign life as a basis for determining when a sign needs to be replaced.

Q Is a Stop Ahead sign required for a local road?
Sometimes. On a rural county road approaching a state highway or a rural state highway approaching another state highway, a Stop Ahead sign is always required, regardless of sight distance.

For other situations, the answer depends on travel speed and driver sight lines. A Stop Ahead warning signs are required if the STOP sign is not readily visible due to curves, hills, or other obstructions. The Wisconsin Supplement visibility chart (Section 2C.29, WMUTCD) provides minimum distances. For example: if the speed limit is 55 MPH the visibility needed is 495’. For 45 MPH it is 360’ (see table).

You also can install a Stop Ahead warning sign to improve safety even if there is good sight distance. For example: where the approach is facing east/west and the sun is a problem; or where trees in the background of a T intersection make the STOP sign hard to discern.

Minimum visibility distance to determine need for sign (not for placement)

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<tr>
<th>Posted or 85th percentile speed</th>
<th>Minimum visibility distance</th>
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<tr>
<td>25 mph</td>
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Source: Signing for Local Roads, No. 7, TIC.
This table is just to determine if a sign is needed. These are not sign placement distances. Sign placement distances are shown in the TIC bulletin No. 7, Signing for Local Roads, and Table 2C-4 of the WMUTCD.
How many children crossing a roadway at a particular location determines whether a school crossing sign is needed?

The MUTCD does not provide a threshold; rather it discusses having a school route plan to develop uniformity in the use of school area traffic controls. Factors to consider include:

- Availability of adequate sidewalks at the crossing
- Age levels of students

A school route plan will identify where children are crossing and will designate preferred locations where signs would encourage children to cross. The Wisconsin Safe Routes to School (SRTS) program has resources, training, and funds for community SRTS projects. (See "Wisconsin opens Safe Routes to School program" in the Winter 2007 CROSSROADS.)

Can delineators be yellow on a two lane road?

No. If delineators are used, the reflector color is white when located on the outside shoulder. This follows the pavement marking principles. On a two lane roadway edgelines, if used, are white; therefore, delineators must be white. Yellow separates opposing traffic—which is at the centerline of a two-lane road.

Is a YIELD sign required on the post of RR crossbucks?

By July 1, 2007, railroad companies are required by statute 192.29 (5)(b) to install a YIELD sign on all passive crossings (those without automatic signals or automatic gate arms) if the passive crossing does not have a STOP sign. Keep in mind that an engineering study is required before installing a STOP sign at a passive RR crossing. STOP signs are not permitted at active RR crossings.

Is the T intersection warning sign allowed on an approach to a T intersection with a Stop sign?

Yes, the W2-4, T intersection warning sign is allowed in this situation. However, this does not negate the requirement for a Stop Ahead sign if there is not sufficient sight distance per the visibility chart in Section 2C.29 WM UCTD.

Easier Web access to WisDOT reference docs

WisDOT has created a Roadway Standards home page on the Web to improve searching and access to its major references. Users no longer need a state-assigned login ID and password to view:

- Facilities Development Manual (FDM)
- Construction & Materials Manual (CMM)
- Standard Specifications for Highway and Structure Construction (Spec)
- Contract Management System Guidance (CMS)

“We want users to be working with the most accurate and up-to-date information, so we’re trying to promote using the online versions of these documents,” says David Castleberg, a Supervisor with WisDOT’s Bureau of Project Development.

Paper copies of the manuals, which are hundreds of pages, along with updates, supplements, and the like, will no longer be distributed automatically. Instead, e-mails will announce updates and changes. Individuals who prefer hard copy can download and print what they need.

A new feature allows users to search for a topic in one or more documents at the same time. Live links in the text make it easier to jump between related sections within the same document or across documents. These cross references let the user more easily find and review the complete subject topic—design through construction.

Search capabilities will keep improving. “It’s a dynamic process,” says Castleberg. “As we do updates we’ll put more electronic tags into the documents.”

“We are excited to offer a one-stop-shop for critical documents,” says Castleberg. “It helps when local officials and contractors and consultants all have the same access and the most current versions. Everybody is playing by the same set of rules every time. That makes it a lot easier for a contractor to know how to bid.”

To access these electronic documents go to http://roadwaystandards.dot.wi.gov/standards. (Note that some hypertext links within the documents go to sources that may still require a login ID and password.)

To get e-mail update notifications sign up on the Roadway Standards page. Click on “Subscribe to e-mail update service” and follow the instructions.

“It helps when local officials and contractors and consultants all have the same access and the most current versions. Everybody is playing by the same set of rules every time. That makes it a lot easier for a contractor to know how to bid.”

If you have questions, send an email to roadwaystandards@dot.state.wi.us.
**Administration/Management**

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<td>Court upholds bid rejection</td>
<td>Su06</td>
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<td>Finding grants to stretch budgets</td>
<td>F06</td>
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<tr>
<td>Managing local roads — 10 ideas from the Town of Bradley</td>
<td>F06</td>
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<td>Midwest Regional University Transportation Center (MRUTC)</td>
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<td>Peer exchange groups: low cost, low key, lots of learning</td>
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<td>Town of Holland — A case study of managing local roads</td>
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**Bridges, culverts**

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**CDL**

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**Equipment**

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<tr>
<td>Green Bay leaf collector unit saves money, labor</td>
<td>Sp06</td>
</tr>
<tr>
<td>New “super tanker” truck works hard all year</td>
<td>Sp05</td>
</tr>
<tr>
<td>New diesel fuel is in the pipeline</td>
<td>F06</td>
</tr>
<tr>
<td>Retreads an option for truck tires</td>
<td>Sp06</td>
</tr>
<tr>
<td>Sharing stretches budgets</td>
<td>Su05</td>
</tr>
<tr>
<td>10 tire tips — For tire life and worker safety</td>
<td>Sp05</td>
</tr>
</tbody>
</table>

**Gravel roads**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravel to asphalt. When should you convert?</td>
<td>W07</td>
</tr>
<tr>
<td>Maintaining gravel roads</td>
<td>Su06</td>
</tr>
</tbody>
</table>

**Highway safety**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control driveway access for safe, efficient roads</td>
<td>Su06</td>
</tr>
<tr>
<td>Crash data and more from TOPS Lab</td>
<td>F06</td>
</tr>
<tr>
<td>Curb ramp warning fields: check design and installation</td>
<td>Su06</td>
</tr>
<tr>
<td>Curb ramps and detectable warnings, Round 3</td>
<td>Sp05</td>
</tr>
<tr>
<td>Roundabouts make safer intersections</td>
<td>W07</td>
</tr>
<tr>
<td>Safety edge eliminates pavement dropoff</td>
<td>Sp06</td>
</tr>
<tr>
<td>Setting safe speeds for curves and turns</td>
<td>F05</td>
</tr>
</tbody>
</table>

**Pavement management**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geosynthetic on town road—less aggregate, stronger base</td>
<td>Su05</td>
</tr>
<tr>
<td>New WISLR tools improve pavement planning</td>
<td>W06</td>
</tr>
<tr>
<td>New solution for sinking surfaces over softest soils</td>
<td>W06</td>
</tr>
<tr>
<td>Pavement rating reminder</td>
<td>F05</td>
</tr>
<tr>
<td>Pavement ratings 2005 — when, how, and what's changed</td>
<td>Su05</td>
</tr>
<tr>
<td>Web ratings entry easier, quicker</td>
<td>Su06</td>
</tr>
<tr>
<td>WISLR data study validates department's work</td>
<td>Su06</td>
</tr>
</tbody>
</table>

**Pedestrian, bicycle**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisconsin opens Safe Routes to School program</td>
<td>W07</td>
</tr>
</tbody>
</table>

**Roadsides**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare roadside plants need your help</td>
<td>Sp06</td>
</tr>
<tr>
<td>Weeds and culverts timeline</td>
<td>Sp05</td>
</tr>
</tbody>
</table>

**Safety, worker**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust mirrors to eliminate blind zones</td>
<td>Sp05</td>
</tr>
<tr>
<td>Low cost ways to keep service techs safe from asbestos</td>
<td>W07</td>
</tr>
</tbody>
</table>

**Security**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway Watch ® seeks observers</td>
<td>Sp05</td>
</tr>
<tr>
<td>Highway Watch ® training picks up speed</td>
<td>Su05</td>
</tr>
<tr>
<td>Wisconsin Highway Watch ® numbers 8,000</td>
<td>Sp06</td>
</tr>
</tbody>
</table>

**Signs, markings**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking signs for retroreflectivity</td>
<td>F05</td>
</tr>
<tr>
<td>Getting more out of signing upgrades</td>
<td>Sp06</td>
</tr>
<tr>
<td>Key changes to the Wisconsin Supplement of the 2003 MUTCD</td>
<td>Su05</td>
</tr>
<tr>
<td>Sign projects 2005: what the counties did</td>
<td>Sp06</td>
</tr>
<tr>
<td>Signing Q&amp;A</td>
<td>F06</td>
</tr>
<tr>
<td>Signs promote safety, economically</td>
<td>Su06</td>
</tr>
<tr>
<td>Stop signs upgraded in Portage County</td>
<td>Sp05</td>
</tr>
<tr>
<td>Yellow curb paint for No Parking?</td>
<td>W06</td>
</tr>
</tbody>
</table>

**Winter maintenance**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between the storms — Tasks for no-snow days</td>
<td>F06</td>
</tr>
<tr>
<td>Snow removal (and other work that closes a traffic lane) - Editorial</td>
<td>Sp05</td>
</tr>
<tr>
<td>Tasks for no-snow days</td>
<td>W07</td>
</tr>
<tr>
<td>The truth about sand and salt for winter maintenance</td>
<td>F05</td>
</tr>
<tr>
<td>Winter is on the way — Get ready now</td>
<td>F06</td>
</tr>
<tr>
<td>Winter maintenance ideas from 2006 workshops</td>
<td>W07</td>
</tr>
</tbody>
</table>

**Work zones**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan traffic mobility along with safety</td>
<td>W07</td>
</tr>
<tr>
<td>TIC to emphasize on-site work zone safety training</td>
<td>W06</td>
</tr>
<tr>
<td>Work zone traffic control and the real world</td>
<td>Sp05</td>
</tr>
</tbody>
</table>
TIC Workshops

Test yourself.

What is the PASER rating for this road segment? What treatment does it need? How can your roads budget cover the cost?

(See answers below)

tions (Spec), Construction and Materials Manual (CMM), and Contract Management System (CMS). (See story on page 9).

http://roadwaystandards.dot.wi.gov/standards/

WISLR – For more information and for links to their Web site, go to http://tic.engr.wisc.edu click on “Links” and then select “WISLR” (Access to WISLR requires a password)

FHWA – “Pavement Preservation Checklist #02 Chip Seal Application” is available for download at http://www.fhwa.dot.gov/pavement/pub_details.cfm?id=39. A dozen other checklists are also available via links on this Web page.

The National Ready Mixed Concrete Association pervious pavement Web site at http://www.perviouspavement.org/ provides information on the design, construction, inspection and maintenance of pervious concrete pavement.

The Wisconsin Asphalt Pavement Association has a slide show on Porous Asphalt Pavement design, construction and maintenance available for download at http://www.wispave.org/downloads/PorousAsphalt.pdf (Large File – 7.1 MB)

Videotapes/ Multimedia

Endangered Roadside Plants

This PowerPoint presentation, available to review or download from the TIC Web site, LINKS page, introduces 12 rare or endangered plants that may grow along Wisconsin roads. Photos and maps show what to look for in your area. Simple protective actions like posting “no-mow” signs, are recommended.


This timely video covers the best management practices to assist road maintenance crews in controlling the rapid spread of invasive plants. It highlights plant identification, inventory systems, mapping, mechanical removal, herbicide treatments, weed-free products, maintenance techniques, and cleaning of equipment.

Pale purple coneflower. Endangered plant that may grow in roadsides.

Print copies of publications are available free from the TIC while supplies last. Electronic copies may be downloaded from the TIC Web site.

Videos and DVDs are loaned free through county UW–Extension offices.

The Web addresses listed here and elsewhere in this newsletter are live in the electronic version of CROSSROADS on the TIC Web page. Clicking them should take you directly to the indicated page. If you are not able to retrieve a document, contact us and we will get a print version to you.

TIC Web site

http://tic.engr.wisc.edu/
TIC Workshops

Details, locations and registration forms are sent to all CROSSROADS recipients prior to each workshop. Registration begins after announcements are sent.

Using PASER & WISLR to Manage Your Roads
Local governments must submit pavement condition ratings to WisDOT again in December. TIC is holding workshops around the state to help with the process. Learn to rate the condition of your roads using PASER and how to enter ratings into WISLR. Take the next step with budgeting and using the WISLR planning and communication tools. Print reports and maps of your road data. Analyze pavements and develop 5-year maintenance/improvement plans. Determine costs and consequences of different strategies using your own data, so you can get the most out of available funds.

Plan to sign up if you inspect and rate pavements; evaluate which roads to maintain and rebuild; or decide and explain maintenance policies and programs. CROSSROADS recipients will receive separate announcements by mail.

CROSSROADS
Wisconsin Transportation Information Center
University of Wisconsin–Madison
432 N. Lake Street Room 805
Madison, WI 53706

CALENDAR

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On site Workshops
Save time and travel costs by bringing instruction to your shop or office. Schedule it at a convenient time and place and have content tailored to your specific needs. You can train more people for the same or less cost including staff from other municipal departments, nearby communities, and those you contract with. Contact us early to ensure you get the program you need on the date you want:
- Basic Surveying for Local Highway Departments
- Basic Work Zone Traffic Control
- Flagger Training

UW–Madison Seminars
Scholarships available for local government officials. Details at http://epd.engr.wisc.edu or 800-462-0876. Courses in Madison unless otherwise noted.

M A R C H 2 0 0 7
21-22 Highway-Rail Grade Crossing Safety Course
26-28 Designing Efficient Culverts and Open Channels
29-30 Effective Drainage for Site Development Projects

A P R I L 2 0 0 7
10-11 Municipal Engineering Fundamentals for Non-Engineers
10-12 Foundation Engineering

M A Y 2 0 0 7
21-22 Introductory Principles of Engineering Project Management
21-23 Using HEC-RAS to Compute Water Surface Profiles for Floodplains, Bridge and Culvert Hydraulics
22-25 Highway Bridge Design
23-24 Management Skills for Engineering Capital Projects
23-24 Project Management Skills for New Product Development
25 Computer Tools for Engineering Project Management

J U N E 2 0 0 7
11-13 Principles and Practices of Estimating for Construction and Design Professionals
25-26 Improving Intersection Safety and Efficiency
27-29 Traffic Signal Design and Operation

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