

Crossroads

Summer 2002



TRANSPORTATION Information Center — LTAP

University of Wisconsin—Madison

WisDOT adopts new safety vests

When construction season began this year, WisDOT crews were sporting highly visible new safety vests and pants. The bright yellow-green garments with flashy reflective tape may not be the height of fashion, but they meet the new ANSI standard for high visibility clothing.

"For the most part crew members really like our vests and pants and they are being received quite well," says Julie White, WisDOT, Safety and Health Manager. The vests are lightweight and washable with a mesh side. There are inside pockets for field notebooks and pens, and the vests have a tear-away feature. The pants fit over a worker's own regular pants and have side opening so they can put their hands into their own pockets. Vests cost \$38-\$42 each depending on size; pants cost \$33-\$37.

The state Safety Steering Committee developed its bid specs for the vests after looking at a variety of samples in two different demonstrations held at dusk. The reflective tape is very visible against the bright yellow-green fabric, says White, and the state version adds silver reflective piping to be even more eye-catching.

Until recently there was no national standard for the high visibility clothing. The American National Standard Institute (ANSI) has just

published one. However, it has not yet been adopted by OSHA or the Department of Commerce, which regulates municipal and state roadway crews. It will take some time before the new standard is adopted.

"Despite what some local officials may be hearing from sales reps, there is no requirement to replace existing high visibility vests and pants, either from the state or the feds," says White. "We want local officials to know that WisDOT is

meeting the federal guidelines with what we have adopted. When they are ready to purchase new vests they may want to consider our specs." If they prefer, local municipalities can order "high-vis" clothing by piggybacking on the state contract. Information is available on the state's purchasing web site:

<http://vendornet.state.wi.us>

The new ANSI standard is very detailed, running 26 pages. Basically, there are three classes of safety vests:

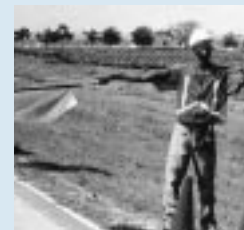
1. Crossing guards
2. People working in 50 mph and under traffic
3. People working in traffic over 50 mph

The new WisDOT vest meets class 2. Combining the vest with high visibility pants meets class 3 which must be conspicuous through the full range of body motions, says White.

continued on page 3



Flaggers should use proper tools, technique



For their own safety, and the safety of others working on roadways, everyone who directs traffic should use correct equipment and procedures. Although these workers are still called flaggers, they

should not actually use flags except in emergency situations. Studies show that Stop/Slow paddles are more visible to drivers. If you or your crew member must use a flag, be sure it is a 24x24 inch red flag. Also use proper hand signals and flag positions. It is important to be readily visible and use motions that drivers will understand.

T.I.C. offers half-day programs to train flaggers on your site. Programs to train trainers are also available. Please see Calendar, page 3, for details.

Inside

Idea Exchange	2
News about PASERWARE	2
Great job done on road ratings	3
Calendar	3
Rebates cut LED signal cost	4
Concrete cylinders are roadway "insurance"	4
How to cast a concrete cylinder	4
Resources	6
Paving the way for warranties	7
More ways to improve bids	8

Idea Exchange

Checking signs for retroreflectivity

Signs that look fine in the daytime can be invisible at night if their reflective sheeting is worn out. When drivers can't see a critical sign in time, the consequences can be deadly.

It's important to check all signs for retroreflectivity and especially those on higher speed and higher volume roads. You can get detailed reflectivity measurements with an expensive reflectometer or survey signs at night, but here's a low-cost, daylight method.

Your regular crews can identify signs with little or no reflectivity by shining a portable high-powered spotlight on them. The hand-held lights generate 500,000 to 1 million candlepower and plug into a truck's power outlet. Commonly available in hardware, automotive and sporting goods stores for about \$30-\$40, they are sold under such brand names as Brinkman and LSI.



You can check the sign without ever leaving the truck. With a flick of the wrist, flash the spotlight at the sign. If it doesn't flash back it is no longer reflective. You may find it helpful to "calibrate" your vision by shining the light on some new and older signs from about the same distance as you will use on the road.

Not only is this a good idea, but retroreflectivity standards for signs will soon become part of the *MUTCD*, possibly by 2003. Congress has directed the Federal Highway Administration to develop minimum retroreflectivity standards for both signs and pavement markings. Final comments on the rules are being gathered and FHWA expects to publish them before the end of 2002. Marking standards will follow.

"The FHWA wants to encourage all public agencies to start managing their signs to ensure good retroreflectivity,

regardless of when rulemaking comes out," says Bill Bremer, Safety and Traffic Operations Engineer, Federal Highway Administration, Wisconsin Division Office. "Many agencies already do this, but many others do not." Once the rules are approved the FHWA also plans to offer training programs.

Fly ash stabilizes road base

Mixing fly ash into an unstable base saved the City of Mequon two months' work and over \$200,000, says City Engineer Bill Hoppe. During a sanitary sewer project on 1.25 miles of residential street, clay became mixed with the existing minimal base course aggregate making it impossible to compact and use as base material.

"Our options were to remove the base 16 inches deep and replace it with stone, or mix in fly ash," says Hoppe. It was late October and residents were already unhappy after four months of construction mess. Hoppe chose fly ash. In four days the material was applied and tilled in, and the base was graded and compacted, ready for paving.

Fly ash is particles removed from the exhaust of coal-fired power plants. It can be self-cementing when combined with water and lime, making it a valuable resource for road base stabilization, concrete products and flowable fill. "One advantage of fly ash is it works in a broader range of soils than lime and cement," Hoppe says.

"It can be a little tricky to use," says Hoppe. "You have to be aware of how deep you go down with the pulverizer so you keep the proper mix ratio of ash to in place material. As with concrete, moisture content is critical during mixing and compaction. You have to be careful that there is adequate drainage along the project." Hoppe has used fly ash on other Mequon roads. One done about five years ago on an arterial street is holding up fine, he says. Hoppe considers fly ash a valuable tool for municipal engineers.

For more information, contact Bill Hoppe at 262/242-3100, bhoppe@ci.mequon.wi.us.

News about PASERWARE

PASERWARE 3.0 is scheduled for release in December 2002 to current PASERWARE users, and to new users in early 2003. The computer program is being redesigned to provide better data transfer between local PASERWARE users and the state local roads data base.

Some new data transfer features include downloads to local users of road names and intersecting road names, ON/AT location descriptions, all DOT data organized by local PASERWARE ID numbers. Uploads to DOT include local pavement segment measurements, pavement condition ratings, and pavement maintenance history.

Other new features will allow measurements in feet or miles, simulations by pavement type, simplified reports, and new cost estimates.

There will be two series of training sessions scheduled in early 2003. The first series will cover the changes between PASERWARE 2.5 and 3.0 for current PASERWARE users. The second series will be for new PASERWARE users.

This training schedule is designed to help those who wish to use PASERWARE 3.0 to submit their pavement condition ratings to DOT, due next on December 15, 2003.

Crossroads

This newsletter provides information on roads and bridges to local officials and is published quarterly by the Wisconsin Transportation Information Center, part of the nationwide Local Technical Assistance Program (LTAP). **Crossroads** is produced with assistance from the Federal Highway Administration, the Wisconsin Department of Transportation, and the University of Wisconsin-Extension.

Non-profit organizations are welcome to reproduce articles appearing here. Please contact us first for any updates or corrections.

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Great job done on road ratings

Thanks to a lot of hard work and cooperation, more than 98% of Wisconsin's municipalities and counties reported pavement ratings to WisDOT's Wisconsin Information System for Local Roads (WISLR) as of February 2002. Just over 1,880 submitted condition ratings by the December 2001 deadline. WisDOT is working with the remaining towns and villages to obtain their roadway data.

The information will help communities set priorities for their annual road projects and develop multi-year budgets. It will also help the state identify needs for the local road network and develop biennial budget recommendations. The WISLR Web site should be working by August, letting local officials review their own pavement conditions and compare them to other Wisconsin communities.

"We really commend local officials and staff for their efforts," says Scott Bush, WisDOT Bureau of Transit and Local Roads. "Many had to learn both the rating process and the submission procedure for the first time to get this done." Much credit goes also to County Highway Department and Regional Planning Commission staff who taught locals how to develop PASER ratings in county-by-county workshops.

To help in the process the T.I.C. produced new PASER Manuals covering seal-coat roads, unimproved roads, and brick and block streets. These supplement the Asphalt, Gravel, and Concrete PASER manuals that have been in use for more than a decade.

Sixty percent of municipalities used PASERWARE, the T.I.C.'s pavement rating computer program to submit their condition ratings. Using PASERWARE was a big help to WisDOT and local staff. Having the data in a standard, electronic form made it easier to process and store. The software will also help local officials and staff compare annual projects, develop budgets, and rate their pavements again in two years.

"WisDOT staff also deserve a lot of credit," notes T.I.C. Director Don Walker. "They were very flexible. They helped people through the process and were willing to take data in a variety of formats."

Looking ahead to 2003, the recently collected roadway data can be helpful in another context as well: the new federal

requirement for asset accounting known as GASB 34. By next June communities with revenues less than \$10 million must begin reporting the value of their assets—dams, bridges, tunnels, sewerage systems, water systems, buildings, and roads. All the information needed to report the value of your road system should be available from your PASERWARE data.

New safety vests *from page 1*

"We provide class 2 vests to our workers and require them to use them around live traffic. The pants should be added for nighttime operations or traffic speeds over 55," says White.

More than one vendor meets state specs. The state contract is with Head Lites Corporation (<http://www.headlitescorp.com>; Contract #404-915; Tel 800/777-5630). The vest chosen is similar to the "Roadstar 200" shown on their website. Information is also at: <http://vendornet.state.wi.us>

Calendar

T.I.C. workshops

Details and locations are in announcements sent to all Crossroads recipients. For more information or additional copies, call the T.I.C. at 800/442-4615. Registration starts after announcements are distributed.

Winter Road Maintenance Prepare for winter operations. This workshop covers equipment preparation, the latest on ice control materials, and operations planning. It's a great opportunity to share experiences and tips for better winter operations.

Sep 23	Rhineland	Oct 1	Green Bay
Sep 24	Hayward	Oct 2	Brookfield
Sep 25	Eau Claire	Oct 3	Barneveld
Sep 26	Tomah		

T.I.C. On-Site Workshops Several workshops are available to be conducted at your shop or office. If there aren't enough people from your agency to fill the workshop, invite nearby agencies. The cost is \$500 per class and maximum class size depends on the topic. For more information contact T.I.C. for a brochure. The following workshops are currently available:

Basic Surveying for Highway Departments
One day, 20 participants

Basic Work Zone Traffic Control
One day, 30 participants

Flagger Training
Half day, 20 participants

Flagger Instructor Training
One day, ten participants

Local Transportation Issues (ETN) The Transportation Information Center and the UW Local Government Center present five 2-hour workshops that focus on transportation issues. This series is available via Educational Telephone Network (ETN) at over 100 locations throughout Wisconsin.

You can register for one workshop or the whole series. Look for a brochure in August announcing topics.

UW-Madison Seminars

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

Fleet Maintenance Management
Sep 25-26

Parking Lot and Site Access Design and Review, Sep 25-27

Soil Engineering for Non-soils Engineers and Technicians, Oct 15-16

Neighborhood Design and Traffic Calming, Oct 7-8

Managing Snow and Ice Control Operations, Oct 7-8

Implementing a Sidewalk Management System, Oct 25-26

Evaluation and Rehabilitation of Pavements, Nov 6-8

Environmental Impacts of Highway Projects, Nov 18-20

Effective Bridge Rehabilitation, Dec 4-6

Highway Bridge Design, Dec 9-11

Minimizing Pavement Damage Caused by Utility Cuts, Dec 11-12

Other Training Opportunities

The Snow Plow Roadeo of the Wisconsin Chapter American Public Works is your opportunity to test the best crew you've got against the best crews from other communities in friendly competition. It's also a great way to get everyone tuned up and ready for winter. It will be held Wednesday, September 18, 2002 at the Waukesha County fairgrounds. Call Mark Hochschild at 414/761-5372 for more details.

Rebates cut LED signal costs

Next time you want to “stop traffic,” consider installing LED traffic lights. LED traffic signals last five times as long and use 85%-90% less energy than an incandescent lamp. Because they’re on so frequently, that can translate into huge savings for a municipality. Now Wisconsin’s Focus on Energy program, an innovative public/private partnership that strives to increase energy efficiency while saving businesses money, is offering rebates to municipalities as incentives to install the new lamps.

“Typically the first cost of LED traffic signals has been fairly high, with the energy savings resulting in paybacks of 3½ to 4 years. The incentives offered by Focus on Energy help buy that down to about half the price you see on the state bid contract,” says Fred Dreher, manager of government buildings and operations for Focus on Energy. Installing the lamps is fairly straightforward, he adds.

The LED traffic signal incentive is one component of an overall incentive program aimed at local governments. The current program offers grants to help reduce the cost of installing energy efficiency measures and is in place until June 30, 2002. While the incentive program will continue after then, grant levels

and program levels may change. The current program encourages energy efficiency improvements in a systematic way, rather than offering rebates for discrete measures. Lighting,

heating and cooling systems should be considered for retrofit.

Focus on Energy also offers local governments such services as free technical assistance, identification surveys for ways to save energy, detailed analyses of specific energy saving measures, and financial grants. Typical ways to save energy around streets and highway operations include lighting, cooling equipment retrofits, air handler modifications, and heating retrofits.

For more information contact Fred Dreher, Wisconsin Focus on Energy (government), 800/762-7077, or freddreher@aspensys.com



Concrete cylinders are roadway “insurance”

“Fortunately, concrete cylinder tests don’t fail all that often,” says Charles Gresser, P.E., of Giles Engineering Associates in Waukesha. “But if they’re not as specified, you have to investigate.” Gresser, a construction materials testing expert, taught in the recent T.I.C. workshops on *Basics of Good Concrete*.

Concrete cylinders are cast from the concrete as it’s being placed, then cured and tested. Some are laboratory-cured under controlled temperature and moisture conditions, then tested in compression after 28 days to determine their strength. Others may be field-cured alongside the paving job. They help contractors decide when to remove forms and when to open the road to traffic.

Several things can result in cylinder failure. Sometimes, it is a wrong mix or bad batch from the concrete supplier. Another common reason for failure is adding too much water at the job site. Also, if the cylinder is not cast, stored or handled properly, the sample will be weaker than specified. Occasionally, a cylinder just fails because concrete doesn’t always break as it should. Up to one set per hundred may fail under American Concrete Institute standards.

“Most specs say to make five sets of at least two cylinders for each class or type of concrete on the job,” says Gresser. The lab then averages the two 28-day results from each set. The running average of any three sets must equal or exceed the design strength, with no individual set being more than 500psi below the design strength.

To be sure you’re getting accurate results from your sample cylinders, use certified testing personnel and follow the ASTM (or AASHTO for DOT projects) standards (summarized here). Supervisors should be aware of the types of casting mistakes and field condition changes that produce bad cylinders.

The biggest casting problem is insufficient consolidation. The cylinder can lose up to 61% of its strength

if not properly consolidated. A rough end before capping can steal up to a quarter of the cylinder’s strength. Using a cardboard mold can reduce strength by 21% and a cylinder not cast on a level surface can cost up to 12% of the specified strength.

Freezing during the first 24 hours after casting can reduce strength by as much as 56%. Other environmental conditions that damage cylinders are: Seven days in the field at warm temperatures, up to 26%; or seven days in the field at 73 degrees with no added moisture, up to 18%.

Handle cylinders with care. Letting them rattle around in a box in the back of a car or pickup truck can damage them considerably.

When a cylinder fails, then lab engineers will have to do some

How to cast a concrete cylinder

Cylinders can be cast both for **laboratory curing** to test strength and quality, and for **field or job curing** to determine when to remove forms or when to put the structure into service. Make at least two cylinders for each purpose. Begin by gathering tools and cylinders. Samples should be taken at least every day for each class of concrete, or for every 150 cubic yards delivered. You must also test slump, air content, density, and temperature at the same time. The tests should be done carefully and precisely by a certified testing technician.



Cylinder types: metal, plastic and paper.

sleuthing. They will start by looking at whether the cylinder was made, cured and tested properly. The slump test, air content, unit weight, and temperature measurements taken at the same time provide crucial data for the detectives. If all those conditions were okay, then they will obtain a sample of the concrete in the field, usually taking core samples back to the lab for testing. On occasion, the engineer will accept the results of non-destructive field tests such as the rebound hammer or Windsor probe.

"If they got a bad load then everything delivered that day may have a problem," says Gresser. In that case, your concrete cylinder is your insurance, helping identify who will be responsible for remedying the problem. You'll be very glad if it is an unimpeachable witness: well made, properly cured and handled, and accurately identified.



To ensure accurate test samples, fill, rod, and surface cylinders properly.

You may find it helpful to review the video, **Quality Control of Concrete on Site**, available from the T.I.C. lending library. You can certify your staff through technician training programs. See Resources on page 6 for details.

- 1) After all on-site adjustments (water, admixtures) have been made, collect two or more samples at regularly spaced intervals from the middle portion of the batch. Combine and mix in a wheelbarrow. Complete this process in 15 minutes or less.
- 2) If the concrete includes coarse aggregate larger than 2 inches in diameter, use a wet sieve to remove the bigger stones or use a larger cylinder.
- 3) Molds should be 6 inches in diameter by 12 inches high. Use approved, non-absorbent, watertight molds which will not react with concrete and are firmly fixed to base plates. Coat reusable molds lightly with mineral oil or other non-reactive form-release material.
- 4) Place the molds on a level, rigid surface in the location where they will be stored



Cover and tag cylinder.

- 5) Fill molds in 3 equal layers and rod each layer uniformly, 25 times. When rodding middle and top layers, penetrate about 1 inch into the layer below. (For vibrator consolidation, follow ASTM specifications.)
- 6) Slightly heap the top layer above the mold, attempting

to exactly fill the mold after compaction. If it subsides below the edge, add more from the sample batch. Do not add non-representative concrete.

- 7) Strike off the surface of the concrete and float or trowel it to produce a flat, even surface that is level with the edge of the mold.
- 8) Carefully mark the specimens to identify them and the concrete they represent. Do not damage the top surface of the concrete or mark on removable caps.
- 9) Immediately move specimens to the storage area. Cover with plastic or non-reactive plate. Immediately refinish any top surface that is marred during movement.
- 10) During the first 24 hours, cylinders must be protected from moisture loss, movement, and temperature extremes. Maintain the

temperature between 60°F and 80°F.

- 11) After 24 hours transport **acceptance test** cylinders *in their molds* to laboratory for controlled storage. Handle carefully and protect from rattling or bumping in the back of a vehicle.
- 12) After 24 hours, unmold **field-cure** cylinders and cure next to the concrete they represent and under the same conditions. (If these cylinders are being used to determine when to put the structure into service, unmold at the same time that form work is removed.)



Curing box for protecting cylinders in the field.

Resources

Materials are available free from the T.I.C. unless otherwise noted.

NEW!

Wisconsin Supplement to the MUTCD

The Wisconsin Supplement has been approved by the Federal Highway Administration. This action makes both the 2000 MUTCD and the 2002 Wisconsin Supplement officially in effect for Wisconsin. Copies of the Supplement are available through the WisDOT website: www.dot.state.wi.us. For those without Internet access, call 608/266-8370 for a hard copy.

Sample specifications and bidding documents

for small projects are now available in both print and electronic formats. The packet includes sample specifications for crack sealing, sealcoating, paving, and shouldering. It provides sample forms for bidding and contracting small projects. You may request paper, electronic CD version, or both.

Asphaltic Pavement Warranties: Five-Year Progress Report

WisDOT, June 2001, 17 pp plus appendixes. Reports that 24 warranted asphalt pavements built in Wisconsin since 1995 are performing better than typical pavements. Concludes that warranty projects cost less, perform better, and require less supervision and testing by the state.

Recent Geometric Design Research for Improved Safety and Operations, NCHRP SYNTHESIS 299, TRB, 2001.

This technical report reviews research published in the 1990s. It describes safety aspects of road design. Topics include sight distance; cross sections; intersections; interchanges; and driveways, pedestrian and bike facilities. Intended for designers and design policymakers. Limited supply available.

Concrete technician training and certification programs

Highway Technician Certification Program (WisDOT), 608/342-1545. <http://www.uwplatt.edu/~htcp/index.html>

Wisconsin Ready-Mixed Concrete Association, 414/529-5077. www.wrmca.com

Concrete in Practice (CIP), National Ready Mixed Concrete Association (NRMCA), 2000. A limited number of the NRMCA two-page fact sheets listed below are available. They explain the "what, why, and how" of key topics in concrete construction:

Surface Scaling, the causes of scaling and how to prevent it – CIP 2

Surface Cracking, the causes of cracking and how to minimize it – CIP 4

Joints in Slabs on Grade, where and how to construct joints – CIP 6

Low Concrete Cylinder Strength, what can cause low strength test results – CIP 9

Curing In-Place, why cure concrete and what methods work – CIP 11

Hot Weather Concreteing, how to protect new concrete in hot weather – CIP 12

Finishing Flatwork, how to place and finish pavements, walks, and floors – CIP 14

Admixtures, what are concrete admixtures and how to use them – CIP 15

Flowable Fill, How to order and use flowable fill material – CIP 17

Synthetic Fibers, what do synthetic fibers do in concrete – CIP 24

Adding Water at the Jobsite, the why and how of adding water – CIP 26

Cold Weather Concreteing, how to protect concrete in cold weather – CIP 27

Supplementary Cementitious Materials, about fly ash, slag, and micro-silica – CIP 30

Ordering Ready Mixed Concrete, how to specify and order the right concrete for your job – CIP 31

Websites

Wisconsin Focus on Energy offers energy conservation programs for municipalities, businesses and others. It is a public/private consortium of Wisconsin energy companies. www.wifocusonenergy.com.

VendorNet helps municipalities acquire many products and services through contracts listed on the VendorNet System run by the state Bureau of Procurement. Savings of 20%-60% off retail prices are possible. VendorNet can also reduce staff time spent researching specifications, minimize bidding, and reduce the time required to identify new vendors.

A registered municipality can search for current contracts available for cooperative purchasing and download contracts that they may want to use. Municipalities can also post their own bids and proposals on VendorNet, expanding the distribution of these documents to a broader vendor base and maximizing competition on their procurements. <http://vendornet.state.wi.us>.

The Transportation Information Center provides information about the T.I.C., schedules of upcoming workshops, publications, the video catalog, and links to other transportation-related websites. <http://tic.engr.wisc.edu>

Videotapes

Available free from the T.I.C. Video Lending Library through your county extension office.

Quality Control of Concrete on Site, SHRP, 4-part video, #17726. Videos 1 and 2 demonstrate the proper methods to conduct the most common quality control field tests in concrete road construction. Videos 3 and 4 demonstrate new quality control tests developed by SHRP that are now starting to be used by many contractors and highway agencies.

- #1– **Sampling, Temperature, and Slump** 14 minutes
- #2– **Air Content, Unit Weight, and Cylinders**, 17 minutes
- #3– **New Tests for Water Content and Maturity Monitoring**, 18 minutes
- #4– **New Tests for As-Placed Concrete** 18 minutes

Partial Depth Repair of Concrete Pavement, SHRP, 15 minutes, #17733. Presents criteria for selecting repair locations, materials to be used, preparation of the repair area, and concrete placement, finishing, and curing.

Full Depth Repair of Jointed Concrete Pavement, SHRP, 18 min, #17731. Describes the distresses usually addressed by the repair, the criteria for selecting repair locations, the materials to be used, preparation of the repair area, and concrete placement, finishing, and curing.

Paving the way for warranties

No one would buy a \$100,000 patrol truck without a warranty. Why buy asphalt paving projects costing many times more without a warranty? WisDOT, the Wisconsin Asphalt Paving Association, and FHWA set out to answer that question. In 1995 they built the first warranted project on a state highway; five years later 24 were in service.

The result? Warranted pavements are performing better than typical pavements, as measured by ride values and all distress factors. "The warranty has expired on the oldest ones, done in 1995 and 1996, and they needed no remedial work," says Steven Krebs, WisDOT chief pavement engineer.

Some cities, like Mequon, also use warranties. "We've been requiring a three-year warranty on our roads since 1995 and it's worked out very well," says Bill Hoppe, Mequon city engineer. "For the past six years, we've done a total of approximately 25 miles of road. During that time we're talking about the contractor coming back and fixing maybe 150-200 yards of road."

The City of Milwaukee has always required a three-year guarantee in the form of a bond from the contractor. Construction supervisors visually inspect

the jobs after the third year and require the contractor to make necessary repairs. "We don't have a published list of criteria," says Michael Chaplock, Milwaukee construction supervisor. "Generally the pavements hold-up rather well. We do expect some reflective cracking in asphalt. If it's excessive, then we'll have them do some crack sealing."

The state found that total costs are significantly lower. According to the report, *Asphaltic Pavement Warranties*, standard projects done in 1995 to 1999 averaged \$28.04/ton including estimated delivery costs, versus \$24.34/ton for warranted projects.

"The cost benefits are due to reduced delivery and maintenance costs," Krebs cautions. "Up front what the District pays out of pocket is still more." Delivery costs are staff time for testing, supervising, and related project involvement.

To make the warranty process work, WisDOT and paving contractors developed written quality criteria and thresholds for when repairs would be required. Also, since the warranty would be on just the pavement, the state initially chose warranty project sites not needing significant base course repairs.



Fears of scaring away smaller bidders and concerns about "putting the fox in charge of the henhouse" seem baseless, Krebs notes. "The contractor really has the control. It makes more sense for them to take responsibility for the outcome and just tell them: What we want is a smooth, drivable, durable piece of pavement," he says.

For more information see the WisDOT report Asphaltic Pavement Warranties (see Resources on page 6). Contact Bill Hoppe at 262/242-3100, bhoppe@ci.mequon.wi.us, Michael Chaplock at mchapl@mpw.net, and Steve Krebs at 608/246-5399, steven.krebs@dot.state.wi.us

Reader Response

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

Crossroads

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

Or call, fax, or email us:

phone 800/442-4615
fax 608/263-3160
email tic@epd.engr.wisc.edu

- Please put me on your **Crossroads** mailing list.
- Please send me information on _____

- My idea, comment or question is _____

(We'll contact you to get more details or answer your question.)

Name _____ Title/Agency _____
Address _____ City _____ State _____ Zip _____
Phone () _____ fax () _____ email _____



More ways to improve bids

Here are some suggestions on how to ensure reasonable project costs in a competitive bid situation. They come from Rick Schmidt, Vice President, Payne & Dolan. This story supplements the information in "Good bid documents help road projects" in the Winter 2002 issue of *Crossroads*.

- 1) Bid early (January or February) when contractors are typically less busy and more likely to give any bid their fullest attention. This also allows the successful bidder to put the project on the schedule before he gets filled up with work for the season.
- 2) Bid a significant amount of work to reduce mobilization costs per unit of work. Combine smaller jobs by coordinating with others in the area.
- 3) Prepare clear and definite plans and specs. Bad specs add to misunderstandings, higher risks, and higher bids. Consider an industry review of specs for constructability. Don't combine unit pricing with lump sum payments. For example, bid

manhole adjustments separate from tons of asphalt. If you use unit pricing, have good, accurate estimates of the amount of work.

- 4) Provide good access to the work. Close the road if possible. Provide a site for material and equipment storage. Having to rent a site may cause the contractor to increase bid costs.
- 5) Set a reasonable timetable for completion. Make any liquidated damages or penalties reasonable. If the contractor has to assume a higher level of risk, it normally means a higher bid price. Also, provisions like "no extensions in contract time will be granted for bad weather conditions," require the contractor to assume the risk and will likely add a price increase.
- 6) Allow the contractor options to choose locally available materials to reduce costs. For example, a specification can require crushed limestone for the base course. Specifying the

item instead as crushed aggregate base would allow the contractor to use crushed gravel, crushed recycled concrete, or crushed limestone which could reduce the cost to the taxpayers.

- 7) Allow recycled materials for base and mix.
- 8) Consider a warranty job or requiring the contractor to supply a quality management program. This may raise the contract cost \$.40-\$.60 per ton, but not as much as hiring an inspector yourself.
- 9) Specs that define the end result work best. They allow the contractor to use his experience and skills to your advantage.
- 10) Determine ahead of time whether the contractor or the owner will contact local residents and business owners.


The T.I.C. has sample specifications and bidding documents for small projects. See Resources on page 6.

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