



Seal coats renew aging pavements

Summer is seal coat season. The warm, dry days help cure these thin coats of asphalt and aggregate. When properly done, a seal coat can give worn asphalt pavements 5-8 more years of service.

Also called a surface treatment, this economical maintenance procedure will provide dust free, skid resistant, smooth-riding roads at half or less the cost of a thin asphalt overlay. Seal coating is also quick, so traffic is usually back on the road by the end of the day.



"They're being used at almost all levels of government—town, county, state—with excellent performance. Almost every jurisdiction has done it and likes it," says Tom Nelson, Prof. of Civil and Environmental Engineering, UW Platteville. Nelson teaches the T.I.C.'s Roadway Maintenance workshops every March.

After several years, when the sealed surface shows wear again, you can apply another seal coat, as long as the underlying pavement is still structurally sound. You can also do a double seal coat which can further extend the life of the pavement surface.

"The key consideration is to go with a company that understands the products," says Nelson. "The success of the seal coat depends on careful workmanship and on using the right stone and binder. Any incompatibility of the two materials can cause failure."

Tips for successful seal coats

Choosing the road Select asphalt roads with pavements that are a 5 or 6 on the PASER rating scale. Any residential street, town road, or county road in good structural condition is a good candidate. Rutting, alligator cracking or distress in the wheel path indicates the need to strengthen or rebuild. Roads or sections with these conditions are not good candidates for seal coating.

Preparation Repair potholes and fill depressions. Fill cracks wider than 1/4". "Consider using a stiffer crack filling material under a seal coat because it is less flexible and won't reflect up through the chip seal," says Nelson. The surface must be dry, clean, and dust free—power-swept on the day the seal coat will be applied.

Materials Aggregate for seal coats must be clean, dust free, and of uniform size. Both pea gravel and crushed stone work, although crushed, angular aggregate that has a relatively cubical shape is best. A common size is 3/8", but various sizes may be used depending on traffic loads.

Both asphalt emulsions and cutbacks perform well. Use of cutback asphalt during the seal coating season is limited in Wisconsin to cutbacks with less than 5% (by weight) petroleum solvents.

Application Air and pavement temperatures should be at least 50° F and rising. Pavement should be dry with no rain in the forecast. For good results you need warm weather for a few weeks after the seal coat is applied, so avoid late season applications. June, July and August are the best months to seal coat. May and September may have periods of warm dry weather acceptable for seal coating.

Asphalt must be applied uniformly, but the rate will vary depending on the pavement condition and aggregate size. Spread aggregate uniformly, just one stone thick, covering the asphalt within 30-60 seconds. A good sealcoat will imbed about two-thirds of the thickness of the stone into the asphalt.

"A common mistake is over-graveling," says Nelson. "Any stone more than one stone thick is going to whip off."

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New funding cycle for Local Roads to start

Over \$48 million in state funds supported about 1,200 Local Road Improvement (LRIP) projects in the 2002-03 biennium, according to a new WisDOT report: *Summary of the 2002-3 Local Roads Improvement Program*.

The report describes the program's performance for the biennium, and lists in detail each local government that received funding, how much they got, and for what specific improvement, says Mary Forlenza, WisDOT's Chief of Local Transportation Programs and Finance, whose section manages the LRIP program. Project types approved under the program varied; mostly reconstructions with a few resurfacing, bridge and design projects.

"The flexibility and minimal red tape in LRIP help locals get their improvements completed successfully with little hassle," says Forlenza. "The program helps local economies statewide, from providing welcome funds to large counties and cities to add flexibility to highway budgets, to providing dollars for smaller towns and villages that may not be eligible for federal improvement funding."

The next LRIP program cycle, for 2004-5, will begin in late summer. Statewide meetings will be held with county commissioners this fall. "Although the state budget was not final as of this newsletter



Some towns jointly choose larger LRIP projects.

deadline, the Governor's budget includes 2.5% annual increases for LRIP," Forlenza says. "County highway commissioners are critical in helping administer the program," she notes.

"Take the opportunity to review safety hazards when planning LRIP projects," recommends Don Walker, T.I.C. Director. Improved road surfaces may lead to higher traffic speeds and the potential for more crashes, he notes. "For a little additional cost and effort you can remove or improve hazardous guardrail, culvert drop offs, and other roadside hazards," Walker says. The T.I.C.'s *SAFER Manual* has ideas for identifying and treating local road safety issues.

Coordinate with nearby local road agencies. "We see, and encourage, a trend among communities to get together and choose significant projects within their counties rather than dividing the available money evenly among all the towns within the county," says Forlenza. The towns in each county elect five town chairs to review potential applications and select several larger LRIP projects.

"LRIP is an established, successful program that has seen strong support from the Legislature. If a county has eight or ten townships and they approve two to three projects a biennium, over five to six years, each of those townships could see a significant improvement project," Forlenza says.

The 2002-03 LRIP Summary Report will be available by June 30th, only on the Web. The SAFER Manual is available from the T.I.C. (See Resources page 6.) For specific program questions, contact your county highway commissioner or an LRIP manager:

Maria Cole, WisDOT Districts 3,4,7,8, 608/264-7336, maria.cole@dot.state.wi.us; or Janice Watzke, WisDOT Districts 1,2,5,6, 608-266-9497, janice.watzke@dot.state.wi.us



Signs

What is your "sign IQ?" Test yourself by trying

to answer some questions from the February T.I.C. Signing Workshops. Instructor Tom Heydel, Traffic Operations Engineer, WisDOT District 2, supplied the answers. For more information on signing basics, see T.I.C. Bulletin #7, *Signing for Local Roads*, newly revised to include changes to the MUTCD and the Wisconsin Supplement.

Do I have to install a RR advance sign where a roadway parallels a RR track and it is less than 100' between the parallel road and the track? Yes. This is a new requirement. The proper sign would be W10-2, 3, or 4 depending on the location of the track. It is placed on the road that parallels the track and is required on all recognized streets or side roads at a location based on the stopping sight distance.

Is it still required on a low volume road? Yes. Part 5 Section 5F.03 of the *Manual*

discusses this. It's not always clear how to sign or mark a specific situation.

Can I place a stop sign at a RR crossing if there are active warning devices (flashing light signals)? No. People sometimes think using a Stop sign will help slow traffic down as it approaches a track, but this use is not permitted. The MUTCD, Section 8B.07, does not allow stop or yield signs at RR crossings with active warning devices.

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Crossroads

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For safety's sake, train flaggers

People sometimes think the flagger's job is a "no-brainer." As a result, it may be assigned to the least experienced person on the crew, or as an afterthought without much preparation. They forget that the flagger is in charge of safety—for the crew, for him/herself, and for road users passing through the work zone.

The death of a county worker last February, struck by a vehicle while flagging, is a sad reminder of the job's hazards. "It's essential that flaggers be properly trained and equipped because they have a tremendous responsibility to protect the rest of the crew out there," says Bob Fasick, WisDOT Highway Operations Engineer. Fasick assists the T.I.C. in developing Flagger Training workshops and the *Flagger's Handbook*.

Thinking ahead is critical. Supervisors and lead workers need to recognize that any job may require a flagger. They should identify trained flaggers on each crew, know how to call one in from another job if needed, or hire a flagging contractor. Their trucks should be stocked with the proper advance warning signs, STOP/SLOW paddles, cones or barricades, and high visibility clothing. They also need some type of written guidance or plan.

Many different forms of guidance are appropriate such as the *Manual on Uniform Traffic Control Devices (MUTCD) Part 6*, the *Work Zone Safety pocket guide*, and the *Flagger's Handbook*. The latter two are available from the T.I.C., and were developed from the *MUTCD*. Some agencies may develop their own guidance which should also be based on the *MUTCD*. "Whatever the source, it's important to have a written plan," says Fasick.

Every worker who might possibly be assigned to do flagging should receive proper training. They will learn about

placing signs and cones, where to position themselves, and how to give clear messages to road users.

"We find that flaggers are using signals and positions differently and/or incorrectly, and that's a problem," says Jim Schneider, former head of traffic operations for the City of Milwaukee who teaches Flagger Training and Work Zone Safety for the T.I.C. "Everybody knows what the STOP/SLOW paddle means, but if the flaggers don't use positions and signals consistently, how can drivers learn what we expect of them?"



Could this flagger escape?



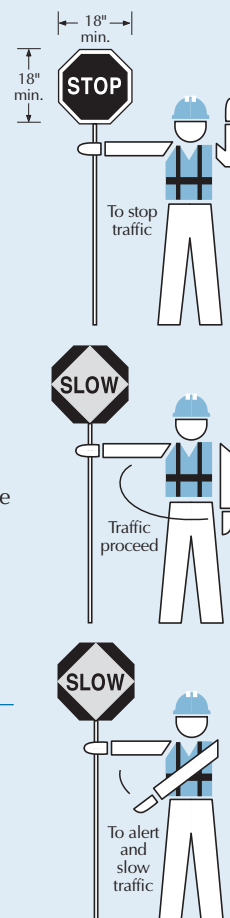
With no safety equipment, flagger is at risk.

Flaggers can learn proper procedures from videos, from other employees who have been trained, and in workshops. In addition to Flagger Training workshops, the T.I.C. offers to "train the trainer," preparing supervisors, safety officers, and lead workers to teach flagging to their crews.

On the job, flaggers need frequent breaks to help them stay alert and attentive to the traffic. Supervisors should rotate flaggers among different positions and out for breaks, and also spot check for safety compliance.

Safety tips for flaggers

"A flagger must start by standing on the shoulder and not in the travel lane," says Fasick. When they need to move to the center of the road, they should only do so after the first vehicle is stopped and the following vehicles are also stopped or slowing down. "Flaggers have been struck and killed because the second vehicle swerved to avoid the first vehicle that had properly stopped. In one incident, the second vehicle pushed the first into the flagger and killed her," he adds.



Flaggers must be visible. They cannot have any work equipment or vehicles near them. If a flagger stands next to his/her vehicle on the side of the road there is no easy escape route.

Advance warning signs are required, even for a five-minute truck crossing situation. At least two signs are required in low speed (25-30 mph) urban areas, and at least three for all other locations. Cones or barricades are also required in most flagging situations in a taper ahead of the work area.

When the flagging stops, even briefly, certain signs must not be used any more. For example, the "Flagger" and "ONE LANE ROAD AHEAD" signs are to be removed, covered, or laid flat, but the "ROAD WORK AHEAD" sign may still be needed. Leaving the wrong signs up without a flagger teaches motorists to ignore the signs.

Make safety a top priority for work zones, and start with trained, equipped, and effective flaggers.



Is this flagger alert to traffic?

For training videos and copies of the *Work Zone Safety* pocket guide or the *Flagger's Handbook*, see Resources page 6. To inquire about Flagger Safety workshops, contact the T.I.C. at 800/442-4615

Regulating utility cuts in roads and right-of-ways

Study after study validates what many people have observed: utility cuts damage roads. A cut pavement loses about 30% of its service life through increased cracking, degraded ride, and reduced structural strength. Boring under roads and trenching or plowing next to the pavement edge can also weaken the road base.

With so many different utilities and their contractors wanting to use the right-of-way, it can be hard to know who is responsible out there unless you track them with permits. Smaller communities also may have difficulty getting satisfactory repairs done.

"Last summer, they installed cable along the road and hit some boulders which pushed the asphalt up," says Paul Swart, town chairman, Town of Koshkonong. "I called the utility to look at it, but kept getting the brush off until I terminated all construction in the town until it was resolved." Fortunately, Town of Koshkonong has a utility permit ordinance that gave Swart the power to act.

Utility cuts are inevitable, but towns, villages, and cities can protect their investment in roads by using permits, bonds, insurance, specifications, and inspections. Furthermore, you can collect from the utility for the reasonable costs of doing it.

Control the cut

Legally, governmental units are responsible for public roads and streets, including regulating utility cuts. The ordinances and regulations they use vary widely, but most use some or all of the following items. The community should require its own departments to follow the same process as outside contractors including getting permits, following specs, and doing inspections.

Permit Any organization or individual planning construction on a public road or street should have to obtain a permit in advance. The permit helps local officials track who is working in their right of ways and alerts the contractor to his responsibilities under local ordinances.

Bond Requiring the contractor to post a performance bond, for up to three years, protects you if you have to send your crews to finish or fix the work. City of

Milwaukee requires a three-year warranty which accomplishes the same thing.

Insurance Every contractor should carry comprehensive liability and property damage insurance. Some may include performance insurance instead of a bond. City of Madison requires contractors to be pre-qualified and have a certificate of insurance on file before they can work in the right of way.

Specifications To ensure a repair that performs well, you should develop drawings and specs designed to minimize damage from the cut, require appropriate backfill material and proper compaction in layers of 12" or less, and restore the pavement strength and surface. It's also important to require the permittee to observe all traffic control rules, safety codes, and stormwater runoff and erosion control requirements. Standard specifications and model ordinances are a help. (See resources on page 6.) Some communities vary their restoration specs depending on the age of the pavement, requiring higher standards on newer ones to help preserve their service life.



doing the work." Seneca adopted a utility permit and specification ordinance in 1999.

Emergency Codes should include an emergency exception process for broken water mains, gas line leaks, damaged power cables, and the like. This allows the contractor or utility employee to notify a designated



Jagged backhoe openings damage pavements.

community official like the city clerk, police officer, or fire chief. They must get a permit on the next regular business day.

Standardizing your permits and specifications with those of neighboring communities or your county

highway department is a good idea. Codes and ordinances are easier to develop and easier for utilities and contractors to follow. Model ordinances are available through various organizations. For example, about 60% of Wisconsin counties have adopted the uniform utility accommodation policy developed and supported by the Wisconsin County Highway Association (WCHA).

"The policies were developed in cooperation with the utility industry and are proactive in addressing both county highway right of way issues and utility utilization needs," says Dan Fedderly, administrative coordinator of WCHA.

Setting fees

Wisconsin municipalities can charge fees to recover costs for regulating use of local right of ways. These include costs associated with registering utilities, processing permit applications, job site inspections, maintenance of right-of-way (ROW) databases, and other activities.

"As long as the ROW fee or charge is cost based and attributable to the ROW user's use of the ROW, the fee or charge can be imposed on the user... [if] it is a quantifiable and verifiable ROW-related cost," says Attorney Anita Gallucci in a March 2003 article in *The Municipality*, newsletter of the League of Wisconsin Municipalities. Municipalities may not impose a ROW fee to generate revenue, she notes. Gallucci is a partner at the Madison law firm of Boardman, Suhr, Curry & Field, LLP.

Inspection Require inspections as work progresses; then make sure you actually do the inspections. The contractor should alert the proper authorities before beginning excavation so inspections can be scheduled. Inspectors also must have the power to suspend work if it is substandard. Fees should cover the cost of inspection by staff, an elected official, or a hired consultant.

"We require them to notify the town when they start and when they're done," says Jim Schuerman, Chairman, Town of Seneca in Wood County. "We inspect when they're done, except in certain areas that are more susceptible to settling. Then we can go out while they're

Fees and fee structures vary widely among communities. Town of Koshkonong, for example, charges \$25 or \$75 for a permit, depending on project size, and \$10/hour for inspection. City of Madison charges an annual \$65 fee for registering utilities, and an excavation permit is \$30 plus \$10 per 100 square feet for excavation and \$.30 per lineal foot for boring.

Milwaukee charges a fee for street occupancy. Rates vary based on the relative inconvenience to the public—higher for occupying a driving lane and lower for a sidewalk, for example. “The occupancy fees are fairly high,” says Jeff Mantes, chief planning and development engineer, City of Milwaukee. “The reason is that we don’t want them to take any more time than they have to.”

Madison also charges a degradation fee. “It is to compensate us for when a street is opened that still has service life,” says City Engineer Larry Nelson. The fee was developed with help from a consultant and a Wisconsin Alliance of Cities (Alliance) committee. Milwaukee does not charge a degradation fee, but it has different restoration specs depending on the age of the street. For streets that are less than three years old it requires City Council action to permit an opening.

After the Alliance developed a model ROW ordinance, some utilities became concerned about suggested fees and other items. In 1998 they asked the Public Service Commission (PSC) to establish uniform standards for utility access to right of ways. As of January 2003, the PSC adopted a ROW rule. Its authority is limited as it is advisory and applies only when a utility brings a complaint to the PSC.

The rule “will likely not have a great impact on municipal ROW regulation in Wisconsin,” says Gallucci in her article. The rule is “not applicable to county highway right of ways,” says Dan Fedderley of the WCHA. “We don’t believe the new PSC rules have an impact on the City of Madison,” says Larry Nelson.

However, municipalities that have waited for the PSC rule before adopting new ROW regulations “should involve the local public utilities in the process” to avoid a challenge at the PSC, Gallucci advises. Local officials involved in drafting the rules should become familiar with the PSC’s rule and understand its scope and limitations so the municipality can exercise its regulatory authority over local ROWs, she says.

Calendar

T.I.C. workshops

Specific details, locations and registration forms are sent to all Crossroads recipients nearer the date of each workshop. Registration begins after announcements are sent.

Ditches and Culverts This workshop presents good practice for ditch cleaning, ditch maintenance, and culvert installation and replacement. You will learn techniques to improve roadway drainage while minimizing erosion and maintaining habitat.

Oct 27	Rhineland	Oct 31	Barneveld
Oct 28	Cable	Nov 13	DePere
Oct 29	Eau Claire	Nov 14	Brookfield
Oct 30	Tomah		

On-site workshops

On-site training is economical, efficient, and minimizes disruption to your work. T.I.C. will bring the program to you.

Flagger Training This three-hour workshop provides solid flagger training for all your field personnel. It covers procedures approved for WisDOT construction, maintenance and utility flagging operations. All participants receive a flagger pocket guide and actually practice flagging.

Flagger Instructor Training For key staff who will be training new employees and temporary help, add this extra half-day workshop to the flagger training. Participants practice teaching the flagger training, and receive an instructor’s manual, video, and a supply of flagger handbooks. *Class limited to 20.*

Basic Surveying for Local Highway Depts

For field staff who need to set culvert and ditch grades or determine crown and slopes, but lack surveying experience. Teaches use of tape and hand level to make fast, reliable measurements. One-day workshop with both classroom instruction and outdoor field exercises. *20 participants*

For fee information and to schedule an on-site training session call 800/4424516, e-mail: tic@epd.engr.wisc.edu, or use the form on page. 7.

UW-Madison Seminars

A limited number of scholarships are available for local government officials for the following Engineering Professional Development courses (in Madison unless otherwise noted).

Intersection Design and Operation, Sep 8-10
Managing Snow and Ice Control Operations, Oct 6-7

Parking Lot and Site Access Design, Oct 16-17

Soil Engineering for Non-Soils Engineers and Technicians, Oct 23-24

Trenchless Technology/Sewer and Water Construction, Oct 27-29

Improving Two-Lane Rural Roadways, Nov 3-5

Pavement Design, Nov 3-4

Evaluation and Rehabilitation of Pavements, Nov. 5-6

Traffic Signal Design and Operation (Brookfield), Nov 12-14

Fleet Maintenance Management, Nov 17-18

Effective Bridge Rehabilitation, Dec 3-5

Other Training Opportunities

The Snow Plow Rodeo 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. Held Wednesday, September 24, 2003 at the Waukesha County fairgrounds. Call Mark Hochschild at 414/761-5372 for more details.



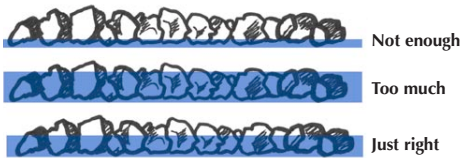
For more information see T.I.C. Bulletin No. 17 Managing Utility Cuts, and “What Municipalities Should Know About the PSC Right-of-Way Rule” in The Municipality, March 2003 issue. The T.I.C. also has copies of city, county and town ordinances and permits. Details in Resources, page 6.

Seal coats

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Roll with rubber tired rollers to seat the aggregate into the asphalt. As soon as possible after the asphalt hardens, follow with a vacuum or sweeper to remove any loose stone. "You may also ask contractors to come back in 3-5 days to check for additional loose gravel," says Nelson. "It's easy for the contractor to do and to their mutual advantage." Drivers and neighbors are not annoyed by the loose stone and the contractor can use the aggregate on another part of the job.

"If jurisdictions are concerned about the non-black look, they can apply a fog seal on top," says Nelson. "It holds the stone in better and gives a look of hot-mix asphalt pavement." Pre-coating the aggregate with 1% asphalt also works.



Properly applied asphalt covers two-thirds of aggregate.

Traffic control Keep traffic off freshly seal coated surfaces until the initial asphalt set has occurred. When the new surface is opened, try to keep traffic speeds at 25 mph or lower. Also, don't let hauling equipment drive or make turning maneuvers on the freshly placed surface.

Costs The price for a seal coat is very dependant on the contractor: where else they are working, how many other jobs they have in the area, and the source and hauling cost of aggregate. The national average cost ranges from \$.80–\$.90/sq. yd.

"Two key things to remember are: 1) seal coats do not add structural strength, and 2) rely on a contractor who has done it in your area since they will know the materials they are using," Nelson advises. Seal coating is a simple, economical way to extend the life of your asphalt pavements, if it is done right.

See *T.I.C. Bulletin No. 10, Seal Coating and Other Asphalt Surface Treatments*, and videos available from the T.I.C. lending library. Details are in Resources.

Resources

The following publications are available free from the T.I.C. while supplies last.

Evaluation of Near-Transportation Sector Asset Management Practices (Proj. 01-02), Midwest Regional University Transportation Center (MRUTC), UW-Madison. A research study of techniques for managing facilities used by private industry. Includes lessons learned that may apply to governmental agencies interested in improving their asset management program. Request a summary of the report, 12 pp. from T.I.C. Order the full report from MRUTC at www.mrutc.org (see research, completed projects).

Evaluation of Transportation Organization Outsourcing (Project 01-03), MRUTC. A research study that looks at the benefits and challenges to using private companies to provide services for a public agency. Provides good information on key steps and challenges to successful contracting for public services. Request a summary, 8 pp., from T.I.C. or full report, 86 pp., from MRUTC at www.mrutc.org (see research, completed projects).

Managing Utility Cuts, No. 17, T.I.C. 8 pp. Provides guidelines to help governmental units manage utility cuts. Includes sample permits and specifications.

SAFER Manual, T.I.C., 40 pp. A guide to field review of roadway safety.

Seal Coating and Other Asphalt Surface Treatments, No. 10, T.I.C., 4 pp. Overview of seal coating materials and construction procedures.

Signing for Local Roads, No. 7, T.I.C. 12 pp. Basics of signing for local agencies.

Utility ordinance and permit samples. Copies of ordinances and permit forms from Madison, Milwaukee, WCHA, and two towns.

Work Zone Safety: Guidelines for Construction, Maintenance, and Utility Operations, T.I.C. 2003. Pocket-sized guide, 58 pp. Handy reference for setting up work zone signing. Includes flagging procedures summary.

Websites

Summary Report, 2002-03 Local Roads Improvement Program Available only on the WisDOT Website. Defines the program and reviews the 1,198 projects programmed during the 2002-2003 LRIP cycle. Includes program statistics overview, management issues, and compliance review results. <http://www.dot.wisconsin.gov/localgov/highways/lrip.htm>

WisDOT Product Acceptability List (PAL)

Lists erosion and sediment control products approved for use on State of Wisconsin structures and highways. Gives guidance in installation and proper use. <http://www.dot.wisconsin.gov/business/engrserv/pal.htm>

Minnesota Seal Coat Handbook Useful information on seal coat materials, equipment, design, and construction. Download at: http://www.mrr.dot.state.mn.us/research/MnRoad_Project/restools/sealcoat.asp

Roundabout Summit Proceedings The FHWA and ITE jointly organized a summit to discuss Americans with Disabilities Act-related issues at roundabouts, especially how to improve mobility for visually impaired pedestrians. <http://safety.fhwa.dot.gov/roundaboutsummit/index.htm>

Videos

Videos are loaned free through county extension offices. The T.I.C. Video Lending Library catalog is available online at <http://tic.engr.wisc.edu/>

Seal Coat Introduction, T.I.C. 75 min. #17162. An excellent presentation for proper selection and application of materials for seal coating.

Sealcoating: A Matter of Science and Skill MinnDOT, 16 min. #17608. Provides maintenance workers with information on how to perform a high quality chip seal.

Asphalt Chip Seals, FHWA, 22 min. #16656. Discusses equipment operation and application of materials in detail. Stresses completing each task properly to gain long term benefits. Also discusses various types of materials and aggregates and their proper use for various circumstances.

Chip Seal Application, LTAP, 40 min. #17820 (3 parts). 1) Preliminary concerns, materials, equipment, surface preparation, weather requirements, application rates. 2) Chip seal procedures, binder application, chip spreading and roller application, joint construction, brooming, opening to traffic. 3) Problems and Pitfalls. Recommended for maintenance superintendents, pavement engineers, public works directors, inspection foremen, and elected officials.

Flagging Operations and Procedures, North Carolina State Institute for Transportation Research and Education, 24 min. #18610. Demonstrates proper equipment and procedures in the *Wisconsin Flaggers Handbook* for single flagger, two flagger, pilot car, night flagging, one-direction flagging, and emergency flagging operations. It is recommended for flaggers and their supervisors.

Utility work and erosion control

Erosion caused by utilities working in your right-of-ways can clog ditches, culverts, and storm drains, and pollute water bodies. The utility project may take a few days, but the results will affect local communities for far longer. You can help protect your water resources and your investment in drainage systems by developing and enforcing a local utility permit process.



to clean and repair erosion control devices after major rainstorms, and to use temporary measures to keep soil in place when permanent restoration will be delayed.

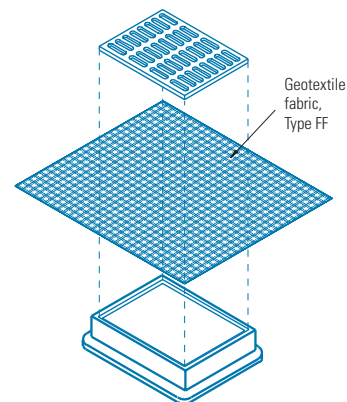
“If a big storm comes through during the project, crews need to clean out the silt fence, clean out soil by the straw bales or around inlets, and replace silt

fence if it’s damaged,” says Fasick. Projects done in late fall and early winter could produce a lot of sediment if not properly managed. One option is to seed and mulch the areas using a fast growing grass. Temperatures will usually stay warm enough well into November that temporary grasses can sprout and hold the soil. Fiber or jute mats work well, as does sod, though it is more expensive.

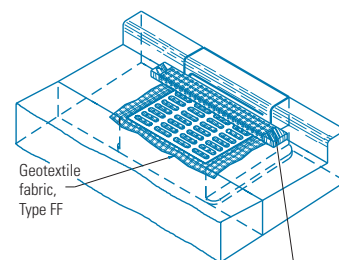
Utility project managers and local officials should always look beyond the right-of-way. If waterways and wetlands are nearby, DNR may require special permits and stronger measures to keep soil in place. “Be aware of the landscape around the area and consult with the local DNR staff person,” Fasick advises.

Inlets need to be protected if utilities are working near curbs and gutters. Inspect the project to make sure contractors are using the correct fabric type. Only filter fabric works in storm inlets, Fasick advises. Silt fence material does not (see sidebar).

Inlet protection, Type B (without curb box)



Inlet protection, Type C (with curb box)



Wood 2"x4" extends 8" beyond grate width on both sides, length varies. Secure to grate with wire or plastic ties.

Only filter fabrics are approved for protecting inlets as part of erosion control. You can find approved types and suppliers on the WisDOT Product Acceptability List (PAL). See Resources, page 6 for web address.

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

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Name _____ Title/Agency _____
Address _____ City _____ State _____ Zip _____
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Can I mount a KEEP RIGHT sign at 4' or less? No. The minimum mounting height is 5', or 7' where there is pedestrian movement or parking allowed (Sec. 2A-18, MUTCD). The standard KEEP RIGHT or KEEP LEFT sign in Wisconsin, according to the Wisconsin Supplement to the MUTCD, is the R4-7 or R4-8 symbol sign.

Can I use a 2" round steel pipe (similar to those used for parking signs) for a sign post? No. It can be tempting to use available stock, but the 2" round steel pipe does not meet FHWA standards. The FHWA has a list of acceptable posts that meet breakaway standards, such as the 2" perforated square steel tube. Using posts that do not meet the breakaway standards can be a liability issue.

Is a Stop Ahead sign always required in advance of a Stop sign? No, not always. It is required when the Stop sign is not sufficiently visible to approaching traffic at distances in the following table from the Wisconsin Supplement. It is also required on county highways approaching a state highway, and town roads approaching state or county highways, regardless of sight distance and visibility.

Minimum Visibility Distance Guidelines
2002 Wisc. Supplement to the MUTCD

Speed	Minimum visibility
25 MPH	155 feet
30 MPH	200 feet
35 MPH	250 feet
40 MPH	305 feet
45 MPH	360 feet
50 MPH	425 feet
55 MPH	495 feet
60 MPH	570 feet
65 MPH	645 feet

Can I install a school crossing sign (S1-1) with arrow plaque (W16-7P) on a street, road or highway that is not near the school? Yes. You might consider this on a street where numerous children cross to reach a school several blocks away. According to Section 7B.09 of the MUTCD you can place this sign and arrow at marked crosswalks that are on established school pedestrian routes.

Don't forget the advance sign, S1-1, is required in advance of a school crossing sign. It is also required on a road, street or highway that borders a school (Wisconsin Supplement). Place the advance sign 150'-700' ahead of the school grounds, depending on the speed limit.

Can the S1-1 school crossing sign and W16-7P school crossings arrow plaque be located before the actual crossing due to space problems? Yes. Sec. 7B.09 of the MUTCD says to place it as close as possible, preferably within about 50'.

Can I use the Stop Ahead symbol sign? Yes, the W3-1 (STOP AHEAD) or W3-1a (symbol sign) is acceptable. By policy, the state uses the W3-1 on state highways.

Do requirements for bridge clearance signs apply to local roads? Yes. All roads, highways and streets are required to have a low clearance sign where the clearance over the usually traveled portion of the highway is less than 14' 6". If the clearance is less than 13' 6", you must place a sign in advance at the nearest intersection to allow a vehicle to detour. The XXX miles ahead plaque (W57-52) on the advance sign is also required.

Can I put 16"x 16" flags on a sign? Yes, as a temporary measure for a new condition such as a new stop control at an intersection. Flags draw attention to the new sign for drivers who frequent the roadway and are not used to stopping. Part VI of the MUTCD has more detail on flags. Once flags start to fade, it is probably time to take them down, although the Manual has no requirement to do so.


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