Adapting technology to transportation needs  

The data to make frequent, accurate, and highly detailed weather “now-casts” and forecasts. It will be able to predict surface temperatures and precipitation types 12-18 hours into the future at 1 km intervals along state, federal and interstate highways.

Maintenance operations, public and commercial users, and the traveling motorist will all benefit. Foretell is expected to save considerable money by making winter maintenance operations more efficient and effective. Studies in Minnesota and by a project consultant indicate that benefits would exceed deployment costs by at least 5 to 1. Within a few years truck drivers will get instantaneous weather information and hazard alerts through their truck’s cell phone and global positioning system.

ITS systems and approaches may currently be too sophisticated or expensive for smaller municipalities, but they are coming. The payoff will be safer, more efficient highways and streets.

New course on workzones

How do you set up mobile workzones safely and properly?

Many participants in the T.I.C.’s recent flagger training sessions asked this question because existing guidelines do not answer it clearly.

In January the T.I.C. will present Wisconsin-specific answers to this and other workzone situations faced by contractors, utilities, and local government operations. A new basic, one-day course will be offered in seven locations around the state.

The workshop unveils a new pocket-sized booklet with specific guidance on how to set up four common mobile operations: shoulder, two-lane road, multi-lane road, and two-lane road with a flagger. Proper advance warning signs; sign spacing based on travel speeds; maximum distance from advance signs to the work area; and the proper use of arrow boards, vehicle lights, and truck mounted attenuators are described. The booklet and workshop also address other typical urban, rural, low volume, and higher speed highway situations.

Participants who take the four-hour flagger training course will learn to use the instructor’s kit to make their own training sessions interesting and effective. They will receive the Flagger Training Instructors Guide, a professional quality training video, and 20 copies of the Flaggers Handbook.

Enhanced safety for Wisconsin’s drivers and road workers through better, more consistent workzones is the goal of this new effort. To help achieve it, we are offering widely available workzone training opportunities and standardized materials to local governments, contractors and utilities.

The flagger training and basic workzone guide were developed by a multi-organization team with extensive practical experience in workzone safety and training. Team members come from urban and rural settings, and from maintenance, construction, and utility operations. The Wisconsin DOT has led the effort and provided resources to support the team and to make the flagger training and basic workzone guide and course a reality.

See the Calendar, page 6, for Workzone and Flagger Trainer course information.

Inside

- Weight limits protect local roads
- Village uses wing plows in town
- Resources
- Operate vehicles safely in winter
- Plow driver frustrations high
- Calendar
- Adapting technology to transportation needs
Weight limits protect local roads

Local governments have significant authority to protect their roads from damage by heavy loads. Using the Class B designation and seasonal load limits, they can nearly double the expected life of vulnerable roads. Of course, this benefit must be balanced against the truck access needs of local industry and the community.

The Class B designation, which is well understood by industry, offers considerable protection for roads with poor supporting soils or those not built to withstand heavy loads. This permanent year-round restriction limits vehicle loads to a maximum of 60% of the normal legal load weight—about 48,000 pounds gross vehicle weight for most loads. Local governments have this authority under Wisconsin Statutes (Sections 349.15, 349.16). In addition, during spring thaw additional, seasonal weight limits may applied to these roads to further restrict loads.

Reducing load weights by 40% on vulnerable roads can increase pavement life by 80% according to research by the Federal Highway Administration. Even modest reductions of 20% can extend pavement life by over 60%. When pavements last longer the municipality saves money through fewer repairs and deferred pavement rehabilitation.

Before making the restrictions, local authorities should be sure the road actually cannot carry the projected loads. It is important to be judicious and not give Class B status to worthless, deteriorating roads. Declaring every municipal road Class B also is a questionable practice.

Experience and local knowledge will usually suggest which roads are vulnerable. Examples include thin pavement, softer subgrades, and areas with high water tables and poor drainage. Isolate the pavement sections that need frequent patching and repair and consider the amount and type of truck traffic to be carried.

Local governments can establish seasonal weight limits under Chapters 348 and 349 of the Wisconsin Statutes. They should be prepared to post signs on protected roads, and should consider how to handle enforcement, exemptions, and communication about affected routes.

For help in protecting pavements ask for copies of the following T.I.C. publications:
- No. 2 How Vehicle Loads Affect Pavement Performance
- No. 8 Using weight limits to protect local roads

Rods with light duty pavements carrying heavy loads will benefit from weight restrictions.

Seasonal limits

Spring thaw can cut road strength by 50% or more in some types of pavement, soils and drainage conditions. Setting seasonal load limits can protect the strength of weak and aging pavements as well as protecting your investment in new pavements. Limits usually take effect in mid-March and end by early May.

Roads likely to be vulnerable include: asphalt surfaces of two inches or less, total pavements thinner than 12 inches, subgrade soils of fine-grained silt and clay, and areas with high water tables and poor drainage. Look for pavement sections that need frequent patching and repair and consider the amount and type of truck traffic to be carried.

Seasonal weight limits usually require the following steps:
- Prepare for spring thaw
- Start taking load measurements
- Onset of frost
- Road inspection
- Seasonal weight limits
- Enforcement
- Change in weather
- Restoration of regular weights

In addition, use cameras or closed-circuit cameras for more effective and efficient enforcement.

Adapting technology to transportation needs

The computer and communications technologies that have radically changed our lives in the past 10 years are now being adapted to transportation systems. Collected under the heading Intelligent Transportation Systems, or ITS, they range widely in complexity and cost. Some are relatively simple and low cost. For example, Portland, Oregon, has adapted standard commercial pagers to activate school zone beacons. Using an automated dialing program on a PC computer, they adjust flashers in 57 school zones to the actual school schedule, turning them off on vacation days and at other times when children aren’t likely to be present. Communities in Illinois and Michigan have developed local Internet Web pages with travel, highway department, and tourism information.

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“We’re seeing other parts of the country migrate to fibre optic cables,” says John Kugel, Division Manager for Signal and Lighting Devices at TAPCO in Elm Grove, Wisconsin. “These not only link traffic signals but become the backbone of traffic communication for internal telephone systems, library data, public works information, etc. For cities that invest in the infrastructure now, it will pay off ‘big time’ in future operating costs.”

Wisconsin ITS projects

“Wisconsin is focusing its ITS resources in three general areas: traveler information, incident management, and commercial vehicle operations,” says Phil DeCabooter, chief ITS engineer for WisDOT.

Proposal for over 100 ITS projects was submitted in October by WisDOT T Districts and Central Office staff. They are expected to include automated and integrated permitting systems and expanded “weight in motion” scales for the trucking industry, and a broader and more sophisticated rural emergency dispatch system for the State Patrol.

One of the state’s major ITS investments is MONITOR, a traffic management system on freeways in the greater Milwaukee area. It integrates information from detectors in pavements, traffic signal controllers, and so-called circuit cameras with on-ramp signs and changeable message signs. The signals help smooth out traffic flow while signs alert drivers to hazards ahead and display automatically updated travel times to such frequent destinations as downtown and the airport. The system is being expanded to freeways in Racine and Kenosha and is under consideration for the portions of I-94 from Milwaukee to Madison.

WisDOT’s Internet Web page is also in place. It can be accessed at http://www.dot.state.wi.us. It features current highway condition and construction information, along with on-line motor vehicle registration and other driver/vehicle services, and information about the department and its programs. Travelers who are curious can see camera views from a dozen freeway locations and get real-time information on traffic congestion in the Milwaukee-Chicago freeway corridor. (Choose MONITOR under Programs and Services.)

A major regional ITS project is Foretell, a traveler information and weather forecasting system being developed jointly by DOTs in Wisconsin, Iowa, Minnesota, Illinois, and Ontario, Canada. Foretell will link existing and future satellite and radar images from the National Weather Service with regional automated pavement temperature and weather monitors. Sophisticated camera models will use...
Local Transportation Issues series (ETN)
The following three programs are part of a series offered over the Educational Telecommunications Network (ETN) which has locations in every Wisconsin County. If you haven’t received a brochure for the series call your local County Extension Office or 608/262-9961.

Bidding for Local Road Projects Learn what specifications, processes, documents, management, and quality control to use to get the best value for local road construction projects.
Jan 14 10:30-12:20 am

Local Road Database Learn how local governments can establish a local inventory of their roads to manage their pavements and about changes in the state local roads database.
Mar 4 10:00-11:50 am

T.I.C. Workshops
Specific details and locations for workshops are in the announces mailed to all Crossroads recipients. For additional copies, or more information, call the T.I.C. at 800/442-4615.

Basic Work Zone Safety This workshop is for road supervisors, maintenance personnel, contractors, and utility employees who plan and supervise work zones. It covers temporary traffic control devices, the parts of a work zone, how to set up a work zone, mobile operations, and pedestrian, worker, and flagger safety.
Jan 20 Green Bay Jan 27 Cable
Jan 21 Brookfield Jan 28 Eau Claire
Jan 22 Barneveld Jan 29 Tomah
Jan 26 Rhinelander

Flagger Instructor Training This 1½-day training course is for road supervisors and safety trainers who supervise or train flaggers for construction and maintenance operations. Participants will get the training and tools they need to properly train their employees to be effective work zone flaggers. You will receive an instructor’s training kit that includes the Flagger Instructor Trainers Guide, a professional quality Flagger training video, and 20 copies of the Flaggers Handbook.
Feb 11-12 Tomah Apr 13-14 Wausau
Feb 15-16 Green Bay Apr 15-16 Brookfield
Feb 17-18 Brookfield Apr 19-20 Eau Claire
Feb 22-23 Barneveld Apr 21-22 Cable

Roadway Maintenance This workshop is your opportunity to improve your street and road maintenance operations. It will include preventive maintenance techniques and inspecting and repairing pavement failures.
Mar 10 Green Bay Mar 16 Cable
Mar 11 Brookfield Mar 17 Eau Claire
Mar 12 Barneveld Mar 18 Tomah
Mar 15 Rhinelander

UW-Madison Seminars
Local government officials are eligible for a limited number of scholarships for the following engineering courses in Madison. For details, use the form on page 7, call 800/442-4615, or e-mail: ranum@engr.wisc.edu.
Highway Bridge Design and Rating
Dec 7-9
GIS for Public Works Applications
Feb 8-10
Effective Bridge Rehabilitation
Feb 15-17
Maintaining Asphalt Pavements
Feb 22-23
Improving Public Works Construction Inspection Skills
Feb 24-25
Special Events Planning and Engineering
Mar 8-10
Fleet Maintenance Management
Apr 19-21
Managing Street and Highway Design Projects
Apr 19-20
Development Review and Traffic Access Management
Apr 21-23
Environmental Impacts of Highway Projects
Apr 26-28

Other Training Opportunities
Public Works Supervisory Academy This Certificate Program in Supervisory Skills is offered by the UW-Madison Division of Continuing Studies, co-sponsored by the Wisconsin Chapter of the American Public Works Association and the Wisconsin City/County Managers Association. A series of ten one-day courses offered over three years at various Wisconsin locations, it includes a wide variety of topics designed for front-line and second-line public works supervisors. When you complete the series you receive a Certificate of Competency from UW-Madison Division of Continuing Education. For more information call Dan Elsas at 608/262-5133 or Greg Miller, 608/263-8256.

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Village uses wing plows in town
Last winter, for the first time, the Village of Waunakee used wing plows for removing snow on residential streets. Wing plows, which have long been used on rural highways, are now slowly being adopted for plowing in residential and commercial areas—with excellent results.

“...As the benefits of wing plows are becoming more widely known, Waunakee has added a fifth truck, with wing, for winter 1998-99 clearing operations. The new truck will take a regular plowing route freeing the end loader to clear cul de sacs. After routes were adjusted Radermacher expects to cut clearing even further—down to four-and-a-half hours.

For more information on Waunakee’s use of wing plows contact John Radermacher at 608/849-5892.

Intended for supervisors. The latest in a series from Iowa DOT. Others in the series:
- Introduction to Winter Operations #18172, 11 min.
- Pre-Season Preparation #18173, 30 min.
- Equipment Operation #18174, 10 min.
- Plowing Techniques #18175, 30 min.

Road Crew Safety #18180, 24 min.
A good introduction and reminder of road construction safety hazards and precautions. Grading and paving examples with many practical safety tips. Stresses individual responsibility and equipment safety topics.

The Importance of Road Drainage #18181, FHWA, 19 min.
A national perspective on the use of roadway drainage. Includes maintenance techniques for ditches, culverts, storm sewer, and drains. Inspection tips and liability issues are discussed.

Protecting Our Pavements: Preventive Maintenance #18181, FHWA, 14 min.
A national perspective on the use of preventive maintenance. Presents several state approaches and benefits to preserving pavements. Encourages consideration of these techniques at the state and local level.

Materials listed here are available from the American Public Works Association and the Wisconsin City/County Managers Association. A series of ten one-day courses offered over three years at various Wisconsin locations, it includes a wide variety of topics designed for front-line and second-line public works supervisors. When you complete the series you receive a Certificate of Competency from UW-Madison Division of Continuing Education. For more information call Dan Elsas at 608/262-5133 or Greg Miller, 608/263-8256.
Operate vehicles safely in winter

Safe driving with Anti-Locking Brakes was a major topic of the fall T.I.C. Winter Maintenance Workshop. Instructor Gary Krueger, Fox Valley Technical College, also covered CDLs and backup drivers, and maximum operating hours.

**Anti-locking braking systems (ABS)** are safer because drivers can maintain control during an emergency stop. Proper braking technique for a vehicle with ABS on all the wheels requires the driver to push hard and steadily on the brake pedal and not pump it. Pumping anti-lock air brakes too fast can actually cause them to lock up because of the half-second brake lag time.

The driver should use “controlled or squeeze braking” on vehicles without ABS or where ABS is on the rear wheels but not the steering wheels, as in some pickup trucks. This means stepping softly on the brake pedal at first and then pushing harder and harder while trying to avoid locking up the brakes. Locked wheels tend to steer. When the driver turns the steering wheel when the brakes are locked, the vehicle won’t respond in the direction he’s steering. Instead, the vehicle will travel straight forward. When just the rear wheels are locked, the rear of the vehicle will try to lead, causing the vehicle to spin out.

Drivers need to learn these new braking techniques as ABS are now mandatory on all commercial vehicles with air brakes, and become mandatory on all other commercial vehicles on March 1, 1999.

“Drivers say that on a vehicle with ABS you have to push harder on the brake pedal to make it stop,” says Krueger. “If that’s so, then they have to remember to push harder.”

**CDLs and backup drivers**

All snow plow drivers must have a CDL if they are driving a commercial vehicle with a gross vehicle weight of 26,001 pounds or more. All agencies responsible for snow removal should have an adequate roster of scheduled plow drivers; and both the municipality and the drivers must be in an alcohol and drug testing program. Even drivers who are called in just for plowing must also participate in drug and alcohol testing.

If there is an emergency, Wisconsin law allows municipal employees with different job classifications who plan and organize the programs,” says County Highway Commissioner Ben Coopman. “It’s not just a management thing. Collaborating with the workers sparks more interest.”

To promote participation, the map of the plowing competition course layout is distributed ahead of the event so drivers can study it and practice. Participants get a raffle ticket for each event they participate in. The more events they enter the more chances they have to win a prize. Tickets are drawn and prizes awarded at the end of the day.

Separate prizes are given for the competitive events such as the driving maneuver and skills course. Entrants compete in categories, such as truck drivers, machine operators, or mechanics, to make the competition fairer.

There are also fun events such as trying to load a truck to a certain weight without going over the legal limit, and the “aerial burial” contest (scored on distance and accuracy).

“We usually offer something that many people don’t get a chance to do such as using a rubber tired excavator to pick something up, swivel, and deposit it in a bucket in a limited amount of time,” says Coopman. “You had to take an 18 wheeler equipment trailer through an obstacle course forward and backward. Another year it was riding an aerial basket up to the ceiling of the seven story salt dome to pull flags off the ceiling. Lunch is always a hot meal, a pleasant change from the usual lunch bucket. Often the meal is served by elected officials or county supervisors. County highway committee members are also invited and participate.
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Some driver beliefs incorrect

“A lot of drivers feel they brake much better at braking and can control the vehicle better than the ABS computer. On the skid pad we don’t see that at all,” says Krueger. “We set up situations where they have about half a second to steer or brake. Almost 100% of the drivers will slam on their brakes and lock them up. They have so much more control with the ABS. It really make believers out of them.”

Accelerating out of a skid is another mistaken belief. “If you’re in a skid, that’s grabbing pavement. Why go faster?” Krueger says. “That’s like going to a fire with a can of gas!” In a skid you always want to get rid of the power, he explains. Take your foot off the accelerator, and on a manual transmission vehicle depress the clutch as well.

People also get confused with the standard advice to ‘steer in the direction of the skid.’ Krueger says: “Just look ahead and pick out a reference point like the center line of the road and steer towards it. You won’t even have to think about which way to steer the vehicle.” If brakes lock up, the driver should brake less. Krueger says: “You have no control of a sliding wheel. Getting off the brakes allows the wheels to rotate so they can grab the pavement.”

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If there is an emergency, Wisconsin law allows municipalities with less than 3000 population to use backup drivers who have no CDL. Such drivers should be used rarely—no more than once or twice a year at most. “You can’t use them for every snowstorm,” says Krueger.

Backup drivers must be selected by the municipality while plowing. The person may not leave the municipality even to pick up salt stored outside its boundaries. These drivers also may not cross boundaries to travel to a municipal island that needs plowing.

Maximum operating hours

The CDL law restricts the maximum number of operating hours for over-the-road and intra-state drivers, but the restrictions do not apply to a CDL driver working for a Wisconsin municipality. This is true in summer—hauling blacktop or gravel, for example—as well as for winter operations. However, drivers operating trucks which they own are covered by the regulations which indicate that after 16 hours on duty, they cannot drive again until they have eight consecutive hours off.

For information on Fox Valley Technical College’s one-day driver training workshops, contact Gary Krueger at 920-735-5798 or kruegergf@foxvalley.ttc.wi.us

Plow driver frustrations high

Many of the experienced plow operators at the fall Winter Maintenance Workshops expressed considerable frustration with their jobs. They resent being included in the CDL and its mandatory drug testing program but excluded from the 16-hour maximum operating hours limit which applies to over-the-road drivers.

Others are frustrated by restrictions on how they do their job, such as winging and salt application guidelines, while being held accountable if the road is slippery. They also seem to receive no positive feedback, only complaints, even though most of the time they do a very good job.

To top it all, the driving public is very rude and downright unsafe in driving around snow plows. If anything happens, however, the plow driver is usually blamed.

These complaints are legitimate and understandable. In part they are a result of the pressure on government to continue to do more with less. For the most part they pretty much go with the job and are not likely to change. Operators need to accept what cannot be changed, such as laws and public opinion, and look for ways to take pride in doing an important job under very difficult conditions.

Supervisors and management have a responsibility to recognize the drivers’ high frustration levels. More recognition for a job well done is very important. Mangement can show this also by buying high quality equipment with the best safety and comfort features—seats, lights, heaters, air conditioning, power windows, radios etc. They can also provide lots of training and set up plow “roadeos” as a way of recognizing drivers and other workers.

Training, participation boost morale

One operation that regularly runs training roadeos is Walworth County Highway Department. “The emphasis is on participation, not competition. We have a group of volunteer employees with different job classifications who plan and organize the programs,” says County Highway Commissioner Ben Coopman, “it’s not just management thing. Collaborating with the workers sparks more interest.”

To promote participation, the map of the plowing competition course layout is distributed ahead of the event so drivers can study it and practice. Participants get a raffle ticket for each event they participate in. The more events they enter the more chances they have to win a prize. Tickets are drawn and prizes awarded at the end of the day.

Separate prizes are given for the most creative events such as the driving maneuver and skills course. Entrants there compete in categories, such as truck drivers, machine operators, or mechanics, to make the competition fairer. There are also fun events such as trying to load a truck to a certain weight without going over the legal limit, and the “aerial burial” contest (scored on distance and accuracy).

“We usually offer something that many people don’t get a chance to do such as using a rubber tired excavator to pick something up, swivel, and deposit it in a bucket in a limited amount of time,” says Coopman. One year they had to take an 18 wheeler equipment trailer through an obstacle course forward and backward. Another year it was riding an aerial basket up to the ceiling of the seven story salt dome to pull flags off the ceiling.

Lunch is always a hot meal, a pleasant change from the usual lunch bucket. Often the meal is served by elected officials or county supervisors. County highway committee members are also invited and participate.

Salting and plowing in traffic under storm conditions is very difficult and requires a high level of skill and experience.

To carry out their duties, a plow driver must be capable of operating a large truck with a manual transmission, and skilled in the use of anti-lock brakes. They must be able to make split second decisions in a short period of time.

A plow driver is often asked to do the impossible. They are required to work in extremely cold conditions in the winter, driving on ice and snow to clear roads, while the weather turns to mud in the spring. The driver needs a high level of skill and experience.
The following three programs are part of a series offered over the Educational Telecommunications Network (ETN) which has locations in every Wisconsin County. If you haven’t received a brochure for the series call your local County Extension Office on 608/262-9961.

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Mar 10 Green Bay Mar 16 Cable
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Highway Bridge Design and Rating Dec 7-9
GIS for Public Works Applications Feb 8-10
Effective Bridge Rehabilitation Feb 15-17
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Improving Public Works Construction Inspection Skills Feb 24-25

Special Events Planning and Engineering Mar 8-10
Fleet Maintenance Management Apr 19-21
Managing Street and Highway Design Projects Apr 19-20
Development Review and Traffic Access Management Apr 21-23
Environmental Impacts of Highway Projects Apr 26-28

Using weight limits to protect local roads (No. 6), T.I.C. Factsheet, 8 pp. New in 1998 this pamphlet introduces the who, why, when, and how long of seasonal and year round weight restrictions to protect vulnerable pavements.

How to Develop a Cost-Effective Pavement Performance (No. 21), T.I.C. Factsheet, 4 pp. Explains pavement fatigue and how to evaluate the damage potential of different truck configurations.


Managing Utility Cuts (packet). A collection of manual on monitoring utility cuts in public rights-of-way. 11 T.I.C. Factsheets No. 17, Managing Utility Cuts, discusses the problems of utility cuts and presents guidelines to help governments establish controls and procedures. It includes sample permits and specifications. 2) Township Utility Policy, developed by Marathon County. Includes permit and location requirements, and workzone traffic control, backfill, and overhead clearance requirements. 3) Model Right-of-Way Ordinance developed by the Alliance of Cities and its member communities. Developed in response to the Telecommunications Act of 1996, it implements a city’s authority to manage its rights-of-way and to recover its costs incurred in managing excavations within the right-of-way.

W-Beam Guardrail Repair and Maintenance FHWA-RT-90-001, 1990, 34 pp. This guide will help highway maintenance personnel inspect, secure, maintain, and repair guardrail in a safe and cost effective manner. Includes list of tools and equipment needed to do the job, tells how to estimate the work, and covers work zone traffic control layout and checklists.

New videotapes in the T.I.C. library

Roadway Maintenance Tapes are loaned free through Wisconsin County Extension Offices. If you need a video catalog call 608/442-4615 or writing on page 2 gives strategies for dealing with today’s heavy loads. Seventy years ago, this was a heavy load. Story on page 2 gives strategies for dealing with today’s heavy loads.

Village uses wing plows in town

Last winter, for the first time, the Village of Waunakee used wing plows for removing snow on residential streets. Wing plows, which have long been used on rural highways, are now slowly being adopted for plowing in residential and commercial areas—with excellent results.

“Wing plows have been used for several years on our rural highways, but this was a new application for us,“ said Foreman John Radermacher. The 40 miles of streets now are done in about five-and-a-half hours, he says.

Lack of money for an additional plow truck was the impetus for considering wing plows, according to Radermacher. After checking with other municipalities about how they use wings in their decisions, he opted to follow two of the Village’s four wings with wings.

Waunakee has added a fifth truck, with wing, for winter 1998-99 clearing operations. The new truck will take a regular plowing route freeing the end loader to clear cul de sacs. After routes are cleared, Radermacher expects to cut clearing even further—down to four-and-a-half hours.

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Adding wings substantially cuts residential plowing times.
Weight limits protect local roads

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Experience and local knowledge will usually suggest which roads are vulnerable. Examples include thin pavements of less than 8-12 inches thick. Roads that are built on poor soil with high water tables and carry more than a few heavy trucks are also candidates. The road’s load capacity can be further evaluated using soil tests, drainage evaluation, a core sample of pavement surface and base, and interviews with maintenance staff.

Contrary to common belief, local limits override all other statutory special weight permits and local authorities are not required to make exceptions. In addition, once weight restrictions are set, public agency vehicles are not exempt from them.

Issuing permits

Once the road is protected, the local government may issue permits for exemptions, especially where a new heavy-hauling industry is anticipated. You can use permit requirements to limit the number of trips, specify maximum vehicle weights, and control the times of day and routes used. You can also require specific industrial road users to pay for road damage repairs through bonds or special assessments. Permitting creates an incentive and establishes a forum where industry and local authorities can negotiate fair use of the community’s roads. Good documentation on road conditions, damage potential and economic consequences is important. T.I.C. publications on how loads damage pavements and on setting weight limits can help.

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Adapting technology to transportation needs

The computer and communications technologies that have radically changed our lives in the past 10 years are now starting to be adapted to transportation systems. Collected under the heading Intelligent Transportation Systems, or ITS, they range widely in complexity and cost.

Some are relatively simple and low cost. For example, Portland, Oregon, has adapted standard commercial pagers to activate school zone beacons. Using an automated dialing program on a PC computer, they adjust flashers in 57 school zone to the actual school schedule, turning them off on vacation days and at other times when children aren’t likely to be present. Communities in Illinois and Michigan have developed local Internet Web pages with travel, highway department, and tourism information.

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Wisconsin ITS projects

“Wisconsin is focusing its ITS resources in three general areas: traveler information, incident management, and commercial vehicle operations,” says Phil DeCabeaouter, chief ITS engineer for WisDOT.

Proposals for over 100 ITS projects were submitted in October by WisDOT Districts and Central Office staff. These are expected to include automated and integrated permitting systems and expanded “weigh in motion” scales for the trucking industry, and a broader and more sophisticated rural emergency dispatch system for the State Patrol.

One of the state’s major ITS investments is MO-NITOR, a traffic management system on freeways in the greater Milwaukee area. It integrates information from detectors in pavements, inductive loop circuits and on-ramp signs and changeable message signs. The signals help smooth out traffic flow while signs alert drivers to hazards ahead and display automatically updated travel times to such frequent destinations as downtown and the airport. The system is being expanded to freeways in Racine and Kenosha and is under consideration for the portions of I-94 from Milwaukee to Madison.

WisDOT’s Internet Web page is also in place. It can be accessed at http://www.dot.state.wi.us. It features current highway condition and construction information, along with on-line motor vehicle registration and other driver/vehicle services, and information about the department and its programs. Travelers who are curious can see camera views from a dozen freeway locations and get real-time information on traffic congestion in the Milwaukee-Chicago freeway corridor. (Choose MONITOR under Programs and Services.)

A major regional ITS project is Foretell, a traffic information and weather forecasting system being developed jointly by DOTs in Wisconsin, Iowa, Minnesota, Illinois, and Ontario, Canada. Foretell will link existing and future satellite and radar images from the National Weather Service with regional automated pavement temperature and weather monitors. Sophisticated computer models will use

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The data to make frequent, accurate, and highly detailed weather “now-casts” and forecasts. It will be able to predict surface temperatures and precipitation types 12-18 hours into the future at 1 km intervals along state, federal and interstate highways. Maintenance operations, public and commercial users, and the traveling motorist will all benefit. Foretell is expected to save considerable money by making winter maintenance operations more efficient and effective. Studies in Minnesota and by a project consultant indicate that benefits would exceed deployment costs by at least 5 to 1. Within a few years truck drivers will get instantaneous weather information and hazard alerts through their truck’s cell phone and global positioning system. ITS systems and approaches may currently be too sophisticated or expensive for smaller municipalities, but they are coming. The payoff will be safer, more efficient highways and streets.

New course on workzones

How do you set up mobile workzones safely and properly?

Many participants in the T.I.C.’s recent flagger training sessions asked this question because existing guidelines do not answer it clearly.

In January the T.I.C. will present Wisconsin-specific answers to this and other workzone situations faced by contractors, utilities, and local government operations. A new basic, one-day course will be offered in seven locations around the state.

The workshop unveils a new pocket-sized booklet with specific guidance on how to set up four common mobile operations: shoulder, two-lane road, multi-lane road, and two-lane road with a flagger. Proper advance warning signs, sign spacing based on travel speeds; maximum distance from advance signs to the work area; and the proper use of arrow boards, vehicle lights, and truck mounted attenuators are described. The booklet and workshop also address other typical urban, rural, low volume, and higher speed highway situations.

The correct position for flaggers is on the shoulder at the beginning of the workzone. Training for flagger trainers is offered in February and April.

The Wisconsin DOT has led the effort and provided enhanced safety for Wisconsin’s drivers and road workers through better, more consistent workzones. To help achieve this, we are offering widely available workzone training opportunities and standardized materials to local governments, contractors and utilities. The flagger training and basic workzone guide were developed by a multi-organization team with extensive practical experience in workzone safety and training. Team members come from urban and rural settings, and from maintenance, construction, and utility operations.

The Wisconsin DOT has led the effort and provided resources to support the team to make the flagger training and the basic workzone guide and course a reality.

See the Calendar, page 6, for Workzone and Flagger Trainer course information.

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