

The Bridge

Linking Transportation Research and Practice



Local roads “holding their own” in Delta County

Using asset management concepts to find their way through tough times

By Trevor Kuehl, Student Intern, Michigan’s LTAP

Have you heard the tale of the blind men and the elephant? In a group of blind men collaborate to describe an elephant, but each man “sees” the creature as something different. To the man who touches a leg, an elephant is like a tree; to the man who touches the tail, an elephant is like a snake; to the man who touches a tusk, the elephant is like a spear; and so on. The men can only get an accurate picture of the entire elephant by sharing their descriptions; they have no idea what it looks like until they combine and organize their individual perceptions (or data).

Your road network is the elephant

Now imagine that the elephant is a network of roads, and the men are various groups of stakeholders and decision-makers in the roadway management picture. Engineers and other technical people tend to see the technical aspects of the road network and what needs to be done to maintain it. Elected officials tend to see how many roads can be repaired with the available funding, and which roads are most important to the public. The general public just wants drivable roads that look good—they don’t care about technical details or politics. In order for all three groups of stakeholders to understand the road network and be content with decisions made to maintain it, there needs to be a way to collect and analyze data and make decisions that are technically sound, politically expedient, and that visibly improve the roads everyone drives on. The process has to take into account the entire elephant.

This is the idea behind roadway asset management. By recording and analyzing data on entire road networks, road agencies can



photo illustration by Michigan’s LTAP

develop a process for managing roads while staying on budget and appeasing the motoring public.

Not sure asset management would work

The Delta County Road Commission (DCRC) was first introduced to asset management in 2003 when Rob VanEffen, managing director of the DCRC, attended a Michigan Transportation Asset Management Council (TAMC) sponsored asset management workshop put on by Michigan’s LTAP. VanEffen was the assistant manager of DCRC at the time. “When we were first exposed to asset management principles I wasn’t sure that it would work for us,” he said, “but after attending a few asset management events and hearing from others who were doing it, the approach began to make sense. Basically, it’s just like with your home or car or any other asset that deteriorates, the key to making a road last long is to take good care of it.” The DCRC started a pilot asset management program in 2003 to evaluate the condition of Delta County roads.

The right tools make it easier

Using the Pavement Surface Evaluation and Rating (PASER) methodology (see *PASER and Asset Management* on page 5), and

See *Roads Improving* on Page 4

More inside

Stricter diesel emission rules	3
Research results available on the Web	5
Protecting workers from effects of heat	6
Distracted driving creates dangerous situations	7
Sign retro resources from CTT	8
Coming events	8

More is *definitely* better

In early May, I attended the 2010 Michigan Department of Transportation Research Summit with a group of research professionals from Michigan Technological University. In addition to several colleagues from the Michigan Tech Transportation Institute, researchers from Michigan Tech's forestry, mechanical engineering and social sciences departments also attended. At the event I met additional researchers from other universities whose fields of expertise were in psychology, humanities, computer science, and business administration.

Had I not been there, I would never have considered the possibility of such a diverse group of experts working together. As far as I know, only the field of transportation can attract such a crowd.

The summit got real interesting when groups of these experts from seemingly unrelated areas put their brains together to define and refine potential research projects. The exercises were called "working groups." An especially interesting one that I attended focused on evaluating the safety of cable median barriers.

The discussion began with several suggestions about geometry, offset distances, shoulder design, and barrier materials — you know, typical civil engineering stuff. Then an expert in human factors engineering spoke up. "Why are people hitting cable barriers?" he asked. The unspoken suggestion was that the roadway or vehicles could be designed to (essentially) eliminate the need for cable me-

dian barriers. The discussion suddenly grew to include cognitive properties, perceptual systems, and human-machine interaction.

A few minutes later the subjects of social behavior, adult learning, and communication came up when a social sciences expert asked, "What do people *think* about cable median barriers?"

To make a long story short (because this is only an editorial, not a full-blown article), I left the summit with a new appreciation for a multi-disciplinary approach to problem solving.

The big story in this issue highlights the value of such an approach. The Delta County Road Commission uses principles of asset management to manage their roadways. They're getting great results. In a state where roads are deteriorating rapidly and funding to fix them is hard to come by, the condition of local roads in Delta county actually improved slightly between 2003 and 2009. A multi-disciplinary approach, which involves elected officials, engineers and the general public, helps a great deal.

The Bridge

The Bridge is published quarterly by Michigan's Local Technical Assistance Program at Michigan Technological University. Subscriptions are free and available by contacting the Center.

Michigan's Local Technical Assistance Program

Center for Technology & Training
Michigan Technological University
309 Dillman Hall
1400 Townsend Dr.
Houghton, MI 49931-1295

© Copyright 2010 Michigan Technological University. To obtain permission to reprint any articles or graphics from *The Bridge*, please contact Michigan's LTAP.

Director..... Terry McNinch
Assistant Director..... Tim Colling, P.E., PhD.
Research Engineer II/Civil Engineer John Kiefer, P.E.
Editor/Technical Writer..... John Rynanen
Senior Software Engineer..... Nick Koszykowski
Office Manager Christine Codere
Office Assistant..... Devin Seppala
Office Assistant..... Tammy Kus

Telephone 906-487-2102
Fax 906-487-3409
E-mail LTAP@mtu.edu
Michigan LTAP <http://www.MichiganLTAP.org>

4500 copies mailed this edition

Michigan Technological University is an equal opportunity educational institution/equal opportunity employer.

LTAP Steering Committee

The Local Technical Assistance Program (LTAP) is a nationwide effort financed by the Federal Highway Administration and individual state departments of transportation. It intends to bridge the gap between research and practice by translating the latest state-of-the-art technology in roads, bridges, and public transportation into terms understood by local and county highway or transportation personnel.

The LTAP Steering Committee makes recommendations on, and evaluations of, the activities of the Local Technical Assistance Program based on discussions at the Technology Transfer Interchange and Advisory Committee meeting. This meeting is held annually and is open to all rural and urban agencies, and individuals concerned with the transfer of transportation technology in Michigan.

Ronald Krauss 517-702-1822 FHWA

Area Engineer, FHWA

Bruce Kadzban 517-335-2229 MDOT

Local Agency Programs, MDOT

Ronald A. Young 989-731-8168 Michigan Counties

Engineer/Manager, Alcona County Road Commission

Sponsored by



U.S. Department of Transportation
Federal Highway Administration



Published in cooperation with



Stricter diesel emission rules affect truck replacements

Adapted with permission from the Fall 2009 issue of Crossroads, a quarterly newsletter published by the Wisconsin Transportation Information Center.

Local highway and public works departments preparing to replace diesel trucks in their fleets must take the next generation of clean diesel engines into consideration. The 2010 model year trucks must improve on the engines introduced in 2007 to comply with stricter clean diesel standards set by the Environmental Protection Agency (EPA) eight years ago.

Trucks sold since 2007 feature catalytic exhaust emission control devices that substantially reduce the emission of nitrogen oxide (NOx), particulate matter and other toxic gases. The EPA requires additional reductions in diesel emissions in 2010 models and onboard diagnostics to monitor the effectiveness of the controls. EPA projects a reduction of NOx emissions of 2.6 million tons by 2030 when existing fleets are completely replaced.

Exhaust system options

All manufacturers are introducing systems that meet the 2010 requirements. Some are improving on current technology with an advanced exhaust gas recirculation (EGR) system. Others are adopting selective catalytic reduction (SCR) in their diesel trucks, a newer technology currently used in vehicle fleets in Europe.

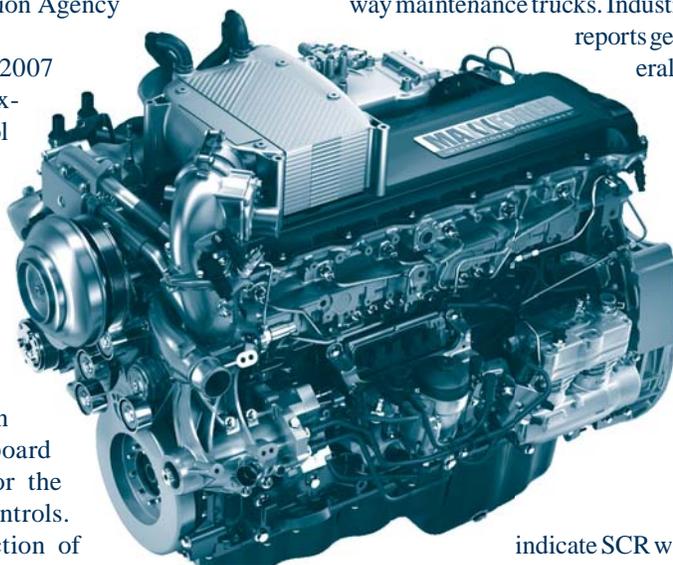
Advanced EGR circulates a higher percentage of exhaust gases back to the engine air intake stream where they displace some of the normal air intake. This slows and cools the combustion process and limits the production of polluting emissions.

SCR incorporates an after treatment system that reduces NOx levels by injecting diesel exhaust fluid (DEF) into the exhaust. DEF is a blend of urea and deionized water that combines with the engine exhaust to form nitrogen gas and water. DEF is nontoxic but it is corrosive to unpainted aluminum.

Additional maintenance on SCR equipped trucks involves managing a DEF supply and training drivers to keep the fluid at adequate levels so the engine does not power down unexpectedly. Advanced EGR should take less training to operate and does not require DEF.

Performance is not known

It is still too soon to tell how the upgraded systems will perform in public works and highway maintenance trucks. Industry reports generally



indicate SCR will have the advantage over EGR in fuel economy but the additional cost for DEF may reduce or cancel out the operational savings.

Recent price information from truck and engine manufacturers indicates the 2010 requirements may add from \$6000 to \$8000 more per truck.

Frame is getting crowded

A critical issue for fleets is upfitting new trucks for public works or highway department use. Upfitters need to coordinate the location of the new emissions equipment and exhaust on the chassis cab and frame rails to mount dump bodies, underbody scrapers, front discharge spreaders with cross conveyors, anti-icing tanks or other maintenance equipment.

Dan Bouwman is president of Truck & Trailer Specialties, Inc. in Dutton, MI. Bouwman's company handles upfitting for many state and local road agencies in Michigan. Bouwman says that Michigan is a unique challenge for manufacturers because the underbody scraper is used universally throughout the state. "Due to

the amount of snow we get and the frequent freeze/thaw activity, the underbody scraper is the perfect configuration for winter maintenance in Michigan," Bouwman explained. "Road agencies here wouldn't consider not using them."

To ensure that his company is prepared to work with the new chassis configurations and to make sure the truck manufacturers provide adequate ground clearance on new trucks, Bouwman has spent considerable time with their engineers. He has found that with advanced EGR systems the additional components are mostly confined to the engine compartment. With SGR systems the additional components are typically mounted to the underside of the frame or behind the cab. "In general, it takes a lot less innovation to mount an underbody scraper on a truck with an advanced EGR system because we don't have to deal with additional components underneath," Bouwman said. "But every manufacturer is doing something to accommodate the new parts and pieces, some are just further along in the process than others."

Early adopters a resource

Equipment managers need to consider their options when it comes to current vehicle replacement strategies. They can work with suppliers to locate trucks with 2007 engines, delay purchase to learn from the experience of early adopters or evaluate the cost of rebuilding existing equipment. In each case, their goal is to have trucks that do the job and are easy to maintain at a reasonable cost.

The Bridge will continue to follow this topic and report on new developments and best practices. We invite local road officials in Michigan who have the newest clean diesel technology in use to contact us and share their experiences.



Additional Resources on the Web

National Clean Diesel Campaign
www.epa.gov/otaq/diesel/index.htm

Truck & Trailer Specialties, Inc.
<http://www.tspec.com/>

For direct links to these resources and more, go to:
www.MichiganLTAP.org/pubs/Bridge

Roads Improving, from Page 1

RoadSoft® roadway asset management software, the DCRC was able to rate their entire federal aid road network of 300 miles in three days, and their local road network of 580 miles in four days. PASER is a visual distress survey; anyone can be trained to evaluate roads using the system, and it is easy to explain to non-technical people such as elected officials and the general public.

VanEffen and his team collected PASER in the field using a GPS and the *RoadSoft* Laptop Data Collector (LDC) utility. “The LDC was easy for our crews to use. It allowed them to

Keeping good roads good

The DCRC’s basic approach to maintaining roads is to apply crack seal or chip seal to sections of roads that have received PASER ratings of five to seven, and to rebuild roads that are rated below a four. As part of the decision-making process, the DCRC works with township and city officials to prioritize preventive maintenance activities and to schedule replacement work. “RoadSoft is really the foundation on which the rest of our asset management program is built,” VanEffen said. “It provides a convenient means for collecting and compiling road ratings so we get a clear view of the big picture, and it enables

“The improvement isn’t much but it’s significant because it indicates that our local road system is no longer deteriorating. We’re holding our own, and that’s encouraging.”

Rob VanEffen – Delta County Road Commission

collect data quickly and accurately,” he said. “Once the data was in, we were able to analyze it and generate reports to figure out the most cost-effective mix of preventive maintenance fixes.”

In 2007, VanEffen presented his *RoadSoft* reports to the DCRC Board along with a new, asset management-based philosophy for maintaining Delta County’s roads. The Road Commissioners were already familiar with asset management because they had attended a workshop on asset management for public officials sponsored by the Michigan Transportation Asset Management Council (TAMC). “Once our decision-makers understood principles of asset management, it was easy for them to see the value of preventive maintenance,” VanEffen said.

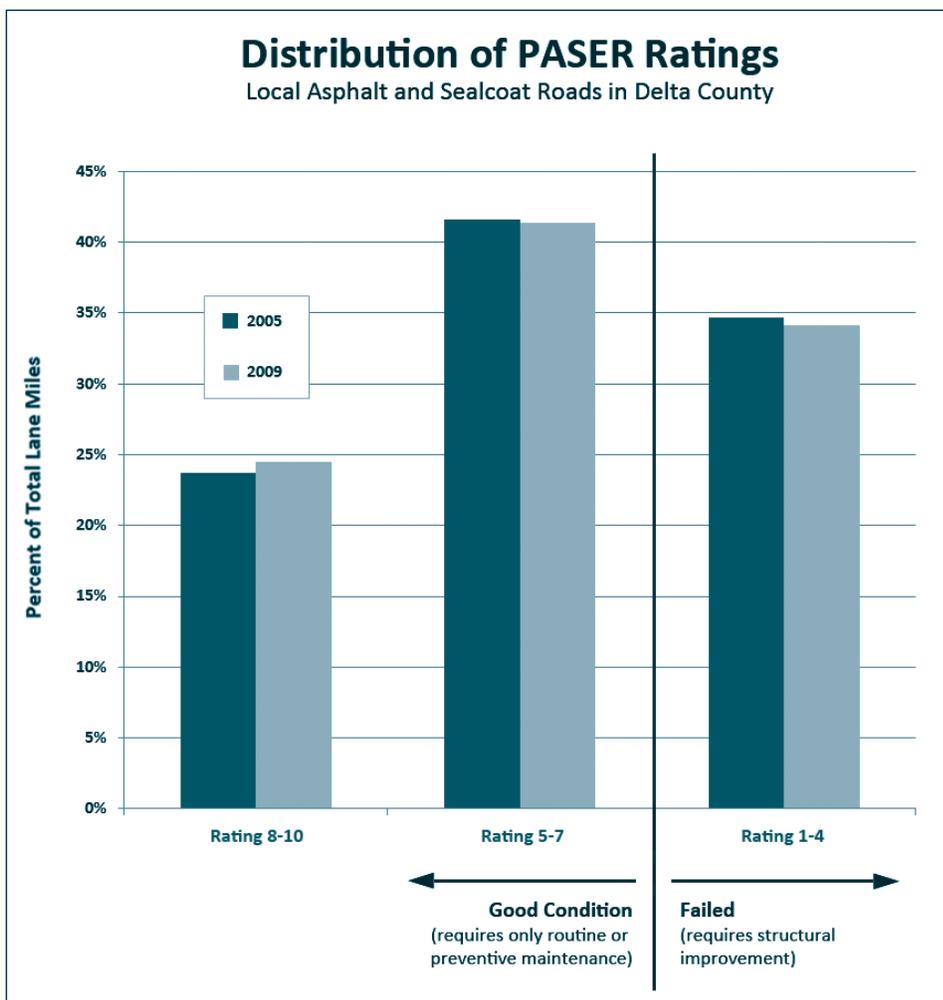
Partnering to get more done

To stretch limited road funding as far as possible, the DCRC leadership team established agreements with townships that enable them to share costs on road projects. Under the agreements, the road commission pays for routine maintenance activities such as crack sealing and chip sealing. When a road needs to be reconstructed, the DCRC pays for pulverizing the existing surface and rebuilding the base, and then the township pays for the paving.

Thanks to the asset management approach to maintaining roads and the cost sharing agreements to pay for reconstruction, the overall quality of the local road system in Delta County actually improved slightly between 2005 and 2009 (see Figure 1). “The improvement isn’t much but it’s significant because it indicates that our local road system is no longer deteriorating,” VanEffen said. “We’re holding our own, and that’s encouraging.”

us to analyze the data, define strategies and generate reports that we can use to communicate easily with decision makers.”

Buy-in from public officials was the key to making asset management work for the DCRC, VanEffen explained. “We learned about asset management together, and we were able to get out of



PASER ratings for non federal aid eligible hard surface (asphalt and sealcoat) roads in Delta County improved slightly between 2005 and 2009. “We’re holding our own, and that’s encouraging,” said Rob VanEffen, manager of Delta County Road Commission.

PASER and Asset Management

Pavement Surface Evaluation and Rating (PASER) is a visual method of surveying roads developed by the University of Wisconsin Transportation Information Center. The system is easy to use and understand and it allows road agencies to efficiently collect information on the condition of road networks. PASER is the evaluation method adopted by the Michigan Transportation Asset Management Council (TAMC).

Ratings in PASER are expressed on a scale of one to ten. Three levels of maintenance that are recommended based on the PASER rating a road receives.

Routine Maintenance (rating = 8–10)

A PASER rating of eight to ten indicates that a road surface was recently reconstructed or rehabilitated. These roads show very little or no sign of distress and require only routine maintenance such as sweeping and light crack sealing.



Michigan's LTAP

Capital Preventative Maintenance (rating = 5–7)

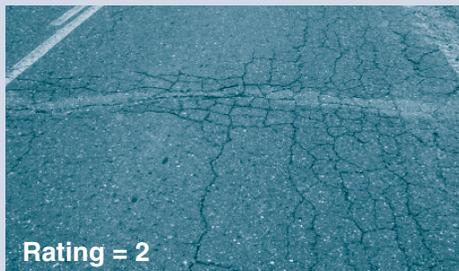
A PASER rating of five to seven indicates that a road is still structurally sound but the surface is beginning to deteriorate. Common pavement distresses in this category include: cracks up to ½ inch wide, raveling, flushing and block cracking. These roads require capital preventative maintenance (CPM) to protect the structural integrity of the pavement and slow the rate of deterioration. Examples of CPM include: crack sealing, chip sealing or non-structural overlay.



Michigan's LTAP

Structural Improvement (rating = 1–4)

A PASER rating of one to four indicates that a road has failed structurally and needs to be rehabilitated or reconstructed. Pavement in this category will show signs of severe distress including: longitudinal cracking in the wheel path, severe block cracking, alligator cracking, and transverse and longitudinal cracks with severe erosion.



Michigan's LTAP

The goal of asset management is to properly utilize CPM techniques to prevent roads from deteriorating to a point where they need structural improvement.

the fix-the-worst-roads-first mode. The asset management approach helped us understand the problem from each others' perspective and it gave us an alternative that makes sense for everyone involved."

It all starts at the local level

Asset management has been a prominent issue among transportation agencies in Michigan since 2002 when the Michigan legislature passed legislation forming the TAMC. The purpose of the TAMC is to expand the practice of asset management statewide to enhance the productivity of investing in Michigan's roads and bridges. The Council defines asset management as: *An ongoing process of maintaining, upgrading, and operating physical assets cost-effectively, based on a continuous physical inventory and condition assessment.*

To aid local road agencies in implementing asset management programs the TAMC prepared a guide that provides a series of nine steps agencies can follow to establish an asset management program (see link to Asset Management Guide below). With the help of the guide and several levels of workshops and conferences, the TAMC and LTAP have helped many local road agencies across Michigan re-think the way they approach road maintenance.



Additional Resources on the Web

Michigan Transportation Asset Management Council
www.michigan.gov/tamc

Asset Management Guide
www.roadsoft.org/tamc-links/amguide

RoadSoft® Roadway Asset Management Software
www.RoadSoft.org

For direct links to these resources and more, go to:
www.MichiganLTAP.org/pubs/Bridge

Research results available on the Web



Practice-Ready Papers

A Selection of Papers Compiled by the Transportation Research Board

Each year, standing committees in the technical activities division of the Transportation Research Board identify peer-reviewed papers that could be of interest to practitioners as practice-ready. Practice-ready papers are defined as those in which the research results presented and discussed could make an immediate contribution to the solution of current or future problems or issues for practitioners. Information presented in these papers is deemed ready for implementation or requires minimal additional research or implementation effort.

Begin your search at: <http://prp.trb.org>

Protecting workers from effects of heat

Adapted with permission from issue 23.2 of *Technology Exchange*, a quarterly newsletter published by the Louisiana Transportation Resource Center.

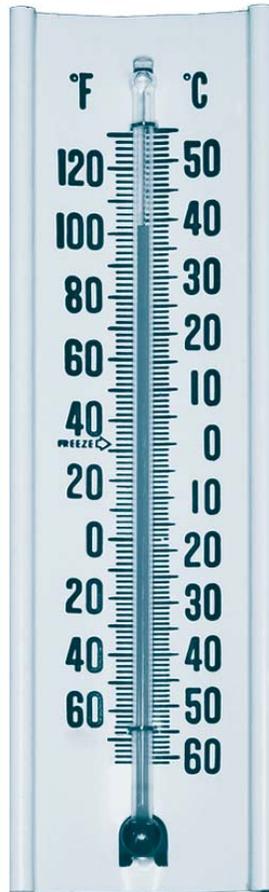
Workers performing a variety of jobs are required to work in hot environments, sometimes for extended periods. Because the extreme effects of heat can be so devastating, it is important that workers are keenly aware of the dangers, how to ward off potential problems, and how to act quickly to save someone's life who has suffered from, perhaps, a heat stroke.

When the body is unable to cool itself by sweating, several heat-induced illnesses can occur, and can result in death. The following information will help workers understand what heat stress is, how it may affect their health and safety, and how it can be prevented.

Factors Leading to Heat Stress

Factors that can lead to heat stress include high temperature and humidity; direct sun or heat; limited air movement; physical exertion; poor physical condition; some medicines; low tolerance for hot workplaces; and insufficient water intake.

The table below includes a listing of common types of heat stress, causes, symptoms and how each should be treated.



Preventing heat stress

The following tips can help prevent heat stress:

Acclimatize workers by exposing them to work in a hot environment for progressively longer periods.

Replace fluids by providing cool water or any cool liquid (except alcoholic and caffeinated beverages) to workers and encourage them to drink small amounts frequently, e.g., one cup every 20 minutes. Place ample supplies of water close to the work area.

Reduce the physical demands by reducing physical exertion such as excessive lifting, climbing, or digging. Use relief workers or assign extra workers, and minimize overexertion.

Provide recovery areas such as air-conditioned enclosures and rooms and provide intermittent rest periods with water breaks.

Wear reflective clothing as loosely as possible.

Reschedule hot jobs for the cooler part of the day; schedule routine maintenance and repair work in hot areas for the cooler seasons of the year.

Monitor workers who are at risk of heat stress, such as those wearing semi-permeable or impermeable clothing when the temperature exceeds 70°F, while working at high energy levels. Personal monitoring can be done by checking the heart rate, recovery heart rate, and oral temperature. 

Heat Stress	Causes	Signs and Symptoms	Treatment
Heat Stroke	Prolonged exposure to high temperatures. Body's temperature regulation fails and body temperature rises to critical levels. <i>NOTE: THIS IS A MEDICAL EMERGENCY</i>	Confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature.	Obtain professional medical treatment immediately. Until professional medical treatment is available, place worker in a shady, cool area and remove outer clothing. Douse worker with cool water and circulate air to improve evaporative cooling. Provide worker with fluids (preferably water) as soon as possible.
Heat Exhaustion	Extended period of physical exertion, excessive heat and dehydration	Headache, nausea, dizziness, weakness, thirst, giddiness, fainting or heat collapse.	Remove worker from the hot environment and give fluid replacement, encourage to get adequate rest, and when possible, apply ice packs.
Heat Cramps	Extended period of physical exertion in excessive heat. Normally attributed to an electrolyte imbalance caused by dehydration.	Muscular pains or spasms – usually in abdomen, arms or legs.	Stop all activity and sit quietly in a cool place. Drink clear juice or a sports beverage.
Heat Rash	Hot work environment where the skin is persistently wetted by unevaporated sweat.	Cluster of pimples or small blisters; usually on the neck and upper chest, in the groin, under the breasts, and in elbow creases	Move worker to a cooler, less humid environment, and keep the affected areas dry. Use dusting powder on affected areas to ease discomfort. Avoid using ointments or creams—they keep the skin warm and moist and may make the condition worse.

Distracted driving creates dangerous situations

By Chief Murray Pendleton, Chairman, Connecticut Police Chief's Association – Highway Safety Committee

Driving large Municipal trucks and special purpose vehicles, including cars, can be challenging enough even when full attention is given to the road and potential hazards.

It only takes a second for a crash to happen. Distractions occur when drivers concentrate on something other than operating their vehicles – such as engaging in cell phone conversations. NHTSA (National Highway Traffic Safety Administration) estimates that 25% of all crashes involve some form of driver distractions.

National surveys show that most drivers at least occasionally engage in behaviors that draw some of their attention away from their driving task. The most common of these behaviors include such general activities as talking or texting on a cell phone; talking with passengers; changing radio stations or CDs; and eating or drinking.

Operating municipal trucks is unique. The fact that most of the trucks have special equipment requires more attention to detail, leaving no room for distractions.

Driving is a full-time job, and operating snowplows, trash pick-up trucks, fire engines, etc. while using a cell phone, reading a road map, or talking to fellow employees is potentially dangerous.

For more than 10 years studies have been conducted which focus on the risks associated with various types of distractions. There

clearly is ample information to believe a distracted driver is at an increased risk of a crash.

Your complete attention to driving is in the best interest of you and your passengers and can clearly save lives and reduce serious injuries.

Texting and talking are *major* distractions

The National Safety Council estimates that 80% of Americans admit to using cell phones, and 20% admit to texting, while driving. That amounts to about 100 million drivers.

Driving while using a cell phone is equivalent to driving while drunk (0.08 blood-alcohol level).

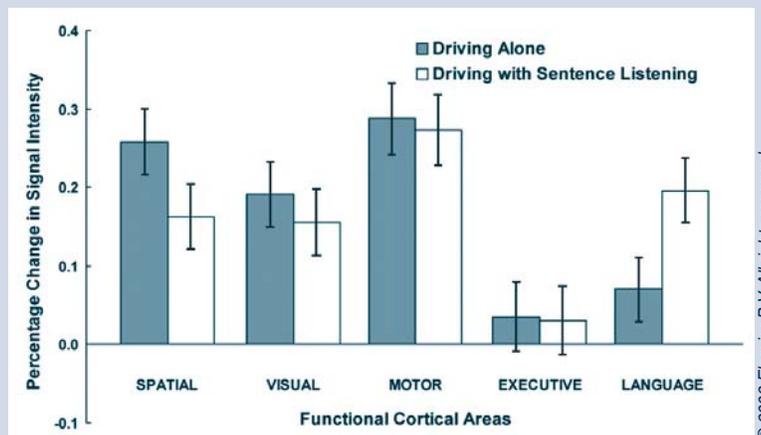
Talking on a cell phone while driving slows down the reaction time of even the most experienced driver. Driving while using a cell phone incurs a four times greater risk of crashing, which is equivalent to driving while drunk (0.08 blood-alcohol level). For texters, the risk is eight times greater.

All drivers of municipal vehicles must be committed to reducing serious injuries and deaths on our roadways. This all starts with your commitment to NOT become a distracted driver. 

Just listening can distract from driving

Did you know that listening to a person talk can degrade driving performance? A 2008 study by Carnegie Mellon University's Department of Psychology used functional magnetic resonance imaging (fMRI) to show and measure changes in activity in the areas of the brain associated with driving. According to the study, activity in the spatial, visual, motor and executive areas of the brain dropped when a driver began listening to another person talk, while activity in the language area increased sharply. The study authors say the results reflect a capacity limit on the amount of attention or resources that can be distributed across tasks in the brain. Basically, our brains are capable of processing a finite amount of input, and driving consumes a great deal of processing power. Just listening to a person talk can negatively impact our attentiveness while driving.

A summary of results is shown at right (error bars show the standard error of the mean).



Just, M.A., Keller, T.A., Cynakar, J., *A decrease in brain activation associated with driving when listening to someone speak*, Brain Research **1205** (2008), pp. 70–80. Accessed online on 7/7/2010 at <http://www.distraction.gov/files/research/carnegie-mellon.pdf>.



Heat Stress Resources on the Web

Heat-related Illness on MedicineNet.com
<http://www.medicinenet.com/hyperthermia/article.htm>

OSHA Safety and Health Topics – Heat Stress
<http://osha.gov/SLTC/heatstress/index.html>

For direct links to these resources and more, go to:
www.MichiganLTAP.org/pubs/Bridge

Excellence can be obtained if you:

care more than others think is wise,

risk more than others think is safe,

dream more than others think is practical, and

expect more than others think is possible.

- Source Unknown



**Local Technical Assistance Program
Michigan Technological University
309 Dillman Hall
1400 Townsend Drive
Houghton, MI 49931-1295
906-487-2102**

Non-Profit Organization
U.S. POSTAGE PAID
Permit No. 11
Houghton, Michigan
49931

Sign management resources from CTT

The Center for Technology & Training (CTT) at the Michigan Tech Transportation Institute has been busy assembling resources to help local road agencies prepare to meet the new sign retroreflectivity requirements that will take effect on January 1, 2012. In addition to a series of nine workshops conducted between April and June this year, the CTT is also preparing a “train the trainer” package and a Web-based retroreflectivity decision tool for local road agencies. The “train the trainer” package, which is a summary of the in-person workshops, will include a 20-minute narrated slide show, a PowerPoint presentation with speaker notes, and various printed handout materials. The decision tool will provide a means for determining the optimum sign management method to based on a variety of agency-specific user inputs. Together, the training package and decision tool will provide a complete resource for local road agency officials to use when discussing retroreflectivity with decision-makers. Both will be available from the CTT in [early August 2010?].

All attendees of the workshops will be informed when the resources are available. If you did not attend a workshop but would like to know when the resources are ready for distribution, call or email the CTT main office at 906-487-2102 or ctt@mtu.edu.



An attendee of the CTT Sign Retroreflectivity workshop held at the Kalamazoo County Road Commission in May compares the retroreflective capabilities of various sign sheeting materials.

Coming Events



Webinars

Introduction to MERL

Instructor Nick Koszykowski will provide detailed instruction on basic features contained within MERL. Prior experience with MERL is not required. Register for one of the following sessions:

Tuesday, July 27 – 9:00 to 11:00 A.M.

Thursday, July 29 – 2:00 to 4:00 P.M.

Tuesday, August 17 – 9:00 to 11:00 A.M.

Thursday, August 19 – 2:00 to 4:00 P.M.

RoadSoft Users' Group Meeting

Learn more about using RoadSoft, influence development direction, and share your questions, comments and ideas with the developers and other users.

Monday, August 2 – 9:00 to 11:00 A.M.

**For more information or to register,
call 906-487-2102 or visit
www.MichiganLTAP.org**