

# The Bridge

Linking Transportation Research and Practice



## New Flashing Yellow Arrow Left-Turn Signal

Adapted by John Velat from the MDOT, Office of Communications' brochure *INTRODUCING...the New Flashing Yellow Arrow Left-Turn Signal*. See <[http://www.MichiganLTAP.org/Bridge/21\\_2/](http://www.MichiganLTAP.org/Bridge/21_2/)> for more information on this new signal.

You may notice this new style of left-turn signal on Michigan's roads. Placed OVER the left-turn lane at a signalized intersection, this new signal display includes a flashing yellow arrow.

In coming years, this type of signal will replace all flashing red left-turn signals in Michigan and throughout the USA.

### How Will the New Signals Operate?

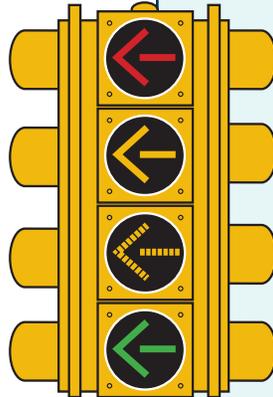
In most locations, the flashing yellow arrow display will be part of a four-arrow display. In areas where a total signal replacement is not possible, a three-section signal would be used where the bottom display will display either the flashing yellow arrow or steady green arrow.

### Why Is It a Better Left-Turn Signal?

**It's Safer:** A national study demonstrated that drivers made fewer mistakes with the new signals than with traditional left-turn-arrow signals.

**It's More Efficient:** The new signals provide traffic engineers with more options to handle variable traffic volumes.

**It's More Consistent:** You'll see the same signals in every state because the new signals will be mandated throughout the USA.



### New Left-Turn Signal Phases

Red arrow: STOP.

Steady yellow arrow: The left-turn signal is about to change to red; prepare to stop, or prepare to complete your left turn if you are within the intersection.

Yellow flashing arrow: left turns permitted. Yield to oncoming traffic and pedestrians. [Oncoming traffic has a green light.]

Green arrow: Safe to turn left. [Oncoming traffic must stop.]

### And, a National Study Confirms It's a Better Left-Turn Signal

The new signals are known as "flashing yellow arrow left-turn signals," and offer a safer, more efficient way to handle traffic turning left at busy intersections.

The signals are being introduced nationwide and ultimately will be required at all intersections where there is a separate left-turn arrow signal. This change is the result of a national study conducted for the Federal Highway Administration, which demonstrated that the new signals help to prevent crashes, move more traffic through an intersection, and provide additional traffic management flexibility for road agencies.

### Where Will These Signals Be Installed?

MDOT and other roadway agencies will be converting signals that have a flashing red ball for left-turns to the flashing yellow arrow. You will begin to see flashing yellow arrow left-turn signals at intersections across the United States. The Federal Highway Administration has begun the process of making these signals the standard for signalized left-turns. It will, however, likely take several years for the standard to be adopted and implemented by all road agencies and municipalities nationwide.

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This issue of *The Bridge* brings you lots of information about safety: Safer left turn traffic signals on page 1, publications about safety on page 2, information on workzone safety on page 6, and even how to keep the waterways safe from contaminants on pages 4 and 5 and a tool to keep your toes and back safe from heavy cutting edges on page 7.

All this safety information shouldn't be a surprise, considering we are now working under SAFETEA - Safe, Accountable, Flexible and Efficient Transportation Equity Act, to fund our program and many of your programs. What is surprising is that even with all of this emphasis on safety, we still kill 43,000 people on our roads every year.

Many of those killed on our roads are workers like you, whose daily jobs place them just a few feet from vehicles moving at 45 mph and more through work zones. On page 6 you can read about how Michigan's work zones have gotten safer, and many are attributing that to the new laws increasing penalties for speeding in work zones, but also to the new "Where Workers Present 45" speed limits. This new law confused some people, myself included, after all, why would we want people to go FASTER in work zones? It turns out that NINETY per-

cent of work zone traffic-related deaths and injuries are motorists, not workers! The additional maneuvering and changes in speeds at work zones are likely what leads to most crashes in and near work zones. This is why the Michigan Department of Transportation and unions representing highway workers adopted the "Where Workers Present 45" law. Even though the law was met with some skepticism, it does appear to be reducing the number of injuries in work zones. The law also helps with public opinion by allowing motorists to keep moving at faster, but safe speeds when no workers are present.

Remember that you can access the on-line version of this issue of *The Bridge* at <[http://www.MichiganLTAP.org/Bridge/21\\_2/](http://www.MichiganLTAP.org/Bridge/21_2/)>. There you'll find a few more links to safety information, and links to all the on-line references and publications presented in this issue.

— John

## 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.

### Local Technical Assistance Program

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## 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.

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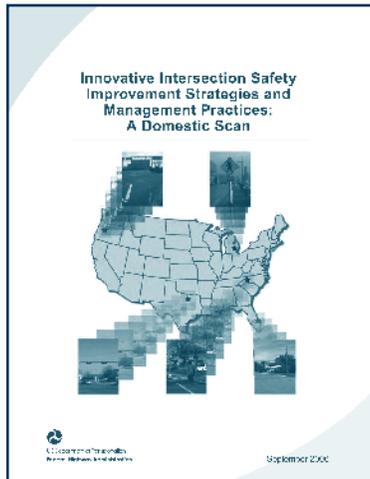


U.S. Department of Transportation  
Federal Highway Administration



Published in cooperation with

## Publications Available from the LTAP Library



### Innovative Intersection Safety Improvement Strategies and Management Practices: A Domestic Scan

“As a means to share best practices used in various locations, the FHWA and selected representatives of the transportation community conducted a domestic scan of issues related to intersection safety: safety management and comprehensive safety processes, traffic control devices for motorists, pedestrians and bicyclists, traffic operational practices, geometric design treatments, and enforcement practices and educational programs...”

One of the primary objectives was to identify and document selected innovative intersection treatments that have been implemented at intersections in the United States and have been demonstrated to, or have the potential to, improve safety at intersections. Another objective was to identify and document selected comprehensive safety processes and procedures that have been implemented by transportation agencies specifically to improve intersection safety.”

Download this guide at <[http://www.MichiganLTAP.org/Bridge/21\\_2/](http://www.MichiganLTAP.org/Bridge/21_2/)> or contact Michigan LTAP for a free printed copy.

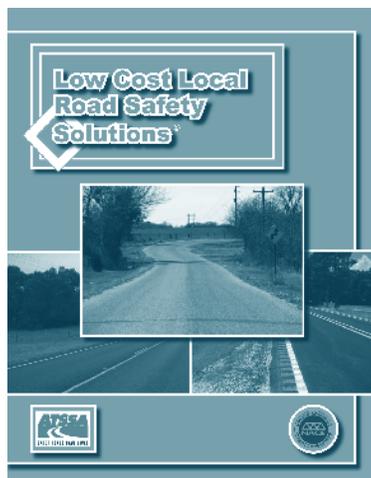
### Road Departure Safety Highway Safety and Trees: The Delicate Balance

“While valued as a community asset due to their beauty and environmental benefits, trees are the single most commonly struck objects in serious roadside crashes... To further explore the issue of the safe placement of trees along our country’s roadsides, the Federal Highway Administration announces the availability of a 12-minute video entitled Highway Safety and Trees: The Delicate Balance. This video encourages highway agencies and the public to work together to improve safety while minimizing damage to the environment.

Use *Highway Safety and Trees: The Delicate Balance* effectively at:

- State and local highway agency meetings where policies related to tree planting, removal, or mitigation are established.
- Public hearings on proposed construction projects that may include the removal of trees to improve safety.
- Town meetings to describe the issues associated with trees and roadside safety, and to encourage cooperation when addressing these issues.”

Order online at <[http://www.MichiganLTAP.org/Bridge/21\\_2/](http://www.MichiganLTAP.org/Bridge/21_2/)> or contact Michigan LTAP for a free copy.



### Low Cost Local Road Safety Solutions

“For the past decade or more, the majority of motor vehicle fatalities in the United States have occurred on two-lane rural roads. In December 2005, the National Highway Traffic Safety Administration released a new report, *Contrasting Rural and Urban Fatal Crashes 1994 – 2003*. That report noted that from 1994 – 2003 there were 372,738 fatal crashes on U.S. roadways. Of those, some 218,539, or 58.6%, occurred on rural roads. During the same period, the rural fatality rate was 2.4 per 100 million vehicle miles traveled. The corresponding urban fatality rate is 1.0...”

The development of this publication was made possible through funding provided by American Traffic Safety Services Association. The Texas Transportation Institute (TTI) was engaged to synthesize existing research and develop case studies about the various solutions presented here. National Association of Civil Engineers provided technical input and kept us on course to keep our focus on real solutions for local roads.”

Copyright © 2006 The American Traffic Safety Services Association. Revised March 2006. Fredericksburg, VA 22406

Download this guide at <[http://www.MichiganLTAP.org/Bridge/21\\_2/](http://www.MichiganLTAP.org/Bridge/21_2/)> or contact Michigan LTAP to receive a free printed copy.

# Pollution Prevention Tips For Maintenance Garages

## Improving Maintenance Activities to Prevent Storm Water Pollution: Part 2

Contributed by the MDOT Storm Water Management Team and its consultant, Tetra Tech.

Is your maintenance garage doing its part to prevent storm water pollution and improve the quality of our surface waters? Read on to find your answer.

This is the second article in a two part series from the Michigan Department of Transportation (MDOT) Maintenance Division and Storm Water Management Team.

Part 1 focused on pollution prevention activities related to contaminated runoff prevention and spill cleanup, and cleaning work areas and paved surfaces, dumpsters, loading docks, and storage areas. Part 2 will discuss maintenance activity tips for vehicle and equipment fueling, washing, and maintenance.

### Know Where Your Drains Go

Knowing where the drains in your maintenance garage, driveways, and parking areas lead is a key component in reducing or preventing storm water pollution. Identifying storm drains on the property and adjacent streets allows for better management of potential pollution sources and the development of spill prevention plans.

Stenciling storm drains is a cost effective way of controlling accidental dumping

of contaminants in surface waters. Stencils or markers stating “NO DUMPING - DRAINS TO RIVER” are highly visible reminders that drains are off limits to waste disposal. (Contact Susan Franklin, Tetra Tech, at 734-213-4028 for stencil and marker resources.) Some inlet grate manufacturers offer the option of casting the message directly onto the grate without additional cost.

### Vehicle and Equipment Washing/Steam Cleaning

Washing and steam cleaning activities have high runoff pollution potential. Wash water contains sediment, heavy metals, oil and grease, and other organics and toxins that are removed from the vehicle. These contaminants will degrade the quality of surface waters if the wash water is allowed to access nearby storm drains that discharge to lakes and rivers. As wash water travels across the surfaces in and around your shop en route to a storm drain, it may pick up even more pollutants. Follow these tips to minimize surface water contamination from cleaning runoff:

- Have policies and infrastructure in place to ensure wash water does not reach storm drains.

- Train employees on proper wash techniques.
- Use phosphate-free biodegradable detergents.
- Designate and clearly mark an impervious washing/steam cleaning area. No maintenance or oil changes should be conducted in this area.
- Contain and recycle wash waters.
- Consider using an off-site commercial cleaning service.

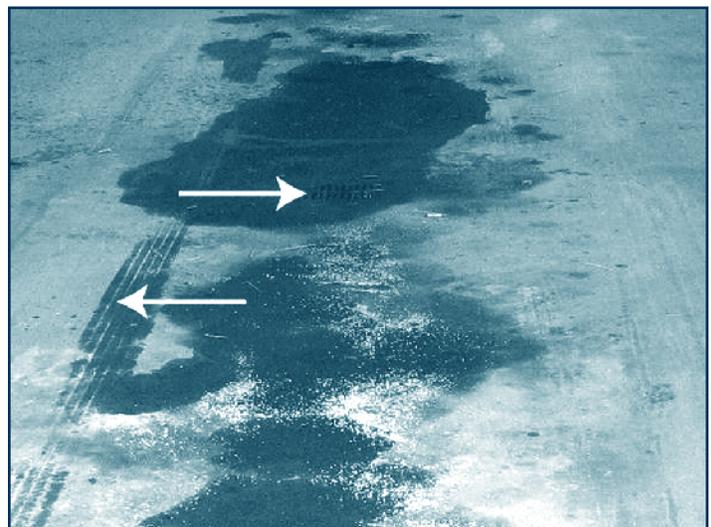
### Preventive Maintenance Schedule

Vehicles and equipment that develop fluid leaks are a potential source of storm water pollution. Developing a maintenance schedule and performing weekly inspections on fleet vehicles and equipment can prevent potentially hazardous leaks or spills. Follow these tips to minimize the sources of surface water contamination:

- Keep vehicles on sealed concrete pads whenever possible to prevent soil infiltration from leaking vehicles.
- Place a drip pan under leaking vehicles awaiting repair.
- Empty and clean drip pans on a regular basis to prevent overflowing.



*Truck with oil leak parked near storm drain. This needs immediate attention to avoid storm water pollution.*



*Oil and grease in direct contact with floor drain and contamination spread by moving vehicles.*

- Store waste materials in labeled and sealed containers. Dispose of waste storage and empty oil and fuel containers properly.
- Use proper absorbent materials to clean up leaks and spills immediately.
- Dispose of used absorbent materials and cleaning rags properly.
- Store leaking or cracked batteries in secondary containers.
- Train employees on proper clean up, waste control, and disposal procedures.

### Storage Tanks And Fueling Areas

A fuel spill that reaches surface waters can have devastating consequences to aquatic life and habitats. Proper spill response is critical to avoiding a negative environmental incident. Make sure you have identified specific trained/certified personnel to perform spill response activities. Preventive measures to reduce surface water contamination by fuel should include:

- Secondary containment around fuel storage and waste tanks.
- Regular inspection and maintenance of tanks and transfer equipment.
- Covering fueling areas and preventing exposure to storm water.
- Developing a spill incident response plan and designating responsible employees.
- Training employees on proper fueling techniques and spill response.
- Clearly posting emergency response phone numbers and procedures.

When a spill occurs:

- Immediately stop the source of the spill when safe to do so.
- Determine the level of trained spill response needed. Safety first!
- Deploy proper containment measures to prevent spill from reaching drains or surface waters.
- Use absorbent materials to clean up spills. Never hose them down the drain or leave the absorbent materials on the ground.
- Properly dispose of clean-up materials in designated disposal areas.
- Document circumstances of spill to prevent future incidents.

### Eyes And Ears

Preventing storm water pollution is everyone's responsibility. Providing training to all or your employees on storm water pollution raises awareness and can reduce or prevent on-site contaminants from reaching surface waters. Let employees know that they are part of the solution to pollution!

Let's all work together to protect our precious water resources. For more information on pollution prevention and training resources, visit the Michigan storm water management resources online at <http://www.michigan.gov/stormwatermgmt> or contact Michigan LTAP at 906-487-2102.



*Stencil used to remind people that drains are not a place for dumping waste liquids. Contact Susan Franklin, Tetra Tech, at 734-213-4028 for stencil and marker resources.*

## SAVE THE DATE...

### ...for the Wake Up Michigan! Symposium

*A discussion regarding drowsy driving and its effect on you, your company, and your employees*

The consequences of insufficient sleep can be costly. Find out what happens when your employees, fellow drivers, and law enforcement officers don't get enough zzzz's. Sessions will focus on the importance of sleep, drowsy driving dangers, at-risk groups, countermeasures and emerging technologies, the legal and legislative impact of drowsy driving, fatigue from an officer's point of view, and employer risks and return on investment.

The symposium is targeted toward the following audience: employers (risk, HR, safety managers), law enforcement, engineers, commercial motor vehicle fleets, and the motoring public.

Thursday, September 20, 2007 8 a.m. - 5 p.m. Cost: \$50

Steelcase University Learning Center, Town Hall, Grand Rapids

Confirmed speakers include:

- Dr. Christopher I. Drake, Henry Ford Hospital Sleep Center
  - Danrel Drobich, National Sleep Foundation
  - Dr. Mark R. Rosekind, Alterness Solutions/National Sleep Foundation
- Bryan Vilz, author of *Tired Cops: The Importance of Managing Fatigue*



Registration information will be available at the following websites: <http://www.michigan.gov/ohsp> and <http://www.michigan.gov/michnets>

For more information, contact Dan Vartanian, Michigan Office of Highway Safety Planning  
Phone: 517-333-5322 E-mail: [vartanid@michigan.gov](mailto:vartanid@michigan.gov)

Sponsored by the Michigan Office of Highway Safety Planning in partnership with the Network of Employers for Traffic Safety and the National Sleep Foundation.



## Michigan highway work zones safer: More must be done to reduce crashes

Lansing, MDOT Office of Communications, May 3, 2007-- Michigan's Give 'em a Brake Safety Coalition (GEAB) kicked off its annual highway work zone safety campaign at a news conference held at the State Capitol today, unveiling encouraging numbers along with a warning: Motorists should continue paying close attention in work zones and drive the appropriate speed. In 2006, there were more than 5,000 crashes in work zones on Michigan roadways - a 20 percent decline over the previous year.

"We know our efforts, in collaboration with the statewide GEAB Safety Coalition, have saved many lives," said Kirk T. Steudle, director, Michigan Department of Transportation. "However, we must continue to promote work zone safety in order to reduce crashes, injuries, and deaths even further. Our goal is to make 2007 the safest yet."

Michigan's Give 'em a Brake Safety Coalition, representing union road workers, law enforcement, road builders, utility workers, and transportation interests, hopes that continued use of the "Where Workers Present 45" signing will continue to provide a more consistent application of speed limits in all work zones in order to protect workers and motorists.

"We believe the new speed rules are working," said Dennis Gillow, infrastructure director, International Union of Operating Engineers Local 324. "Our group (and other labor organizations)

collaborated with Michigan's GEAB Safety Coalition on the work zone signing scheme. While 2006 was safer than 2005, we still have more work to do. The bottom line is this: Appropriate speeds save lives of workers and motorists."



In 2006, there were 5,216 crashes, 1,450 injuries and 18 fatalities in Michigan work zones, a 20 percent improvement over 2005 data. In 2005, there were 6,545 crashes, 1,811 injuries, and 20 fatalities.

"We don't want to rest on our laurels now," said Rob Coppersmith, vice president of membership services, Michigan Infrastructure & Transportation Association." The "Where Workers Present 45" signs seem to be working but we must focus on reducing crashes even more. Safety is serious business and motorists need to take their job behind the wheel as such."

Michigan's Give 'em a Brake Safety Coalition members include: Michigan

Department of Transportation; Michigan Infrastructure & Transportation Association; Michigan Laborers' District Council; Michigan State Building & Construction Trades Council; and the International Union of Operating Engineers Local 324.

Other advisory members of the coalition include: the Michigan State Police; Michigan Office of Highway Safety Planning; Michigan Center for Truck Safety; the Michigan Secretary of State's Office; NES Traffic Safety and Sara Nelson, a roadway safety advocate.

Fines for motorists that are caught speeding in construction zones are doubled. A motorist that injures or kills a road worker faces up to 15 years in jail and \$7,500 in fines.

NEW: Pending work-zone legislation, once passed, would extend the penalties for injuring or killing ANYONE in a work zone.

NOTE: Andy's Law is currently in effect. It involves penalties for injuring or killing a worker.

Protect Michigan families: Where Workers Present Drive 45!

A message from MDOT and Michigan's Give 'em a Brake Safety Coalition.

Contact Bob Felt, MDOT Office of Communications, 989-619-7963, for more information.

A link to this press release's source and more links to safety materials are at [http://www.MichiganLTAP.org/Bridge/21\\_2/](http://www.MichiganLTAP.org/Bridge/21_2/)

## Construction Career Days Update

At a meeting in Lansing on May 22, the advisory board for Michigan's Construction Career Days (CCD) event decided to postpone it until 2009. In making the decision, the board agreed on three things:

- 1) Attracting young people to careers in construction is very important.
- 2) CCD is the best way to attract young people to construction careers.
- 3) Organizing 3,000 students is a complex logistical and financial task, so to ensure a successful CCD event, the planning and organizing period should be extended to meet a target event date in 2009.

The board includes representatives from CRAM, DLEG FHWA, International Union of Operating Engineers – Local 324, LTAP, MDOT, MITA, MML, NAWIC. Each representative will continue to promote CCD through their respective organizations, and the board will continue to meet regularly to plan the event for 2009. If you would like to get involved in the CCD effort or have questions, please e-mail Michigan LTAP's John Ryyanen at [jeryynan@mtu.edu](mailto:jeryynan@mtu.edu) or call him at 906-487-2102.



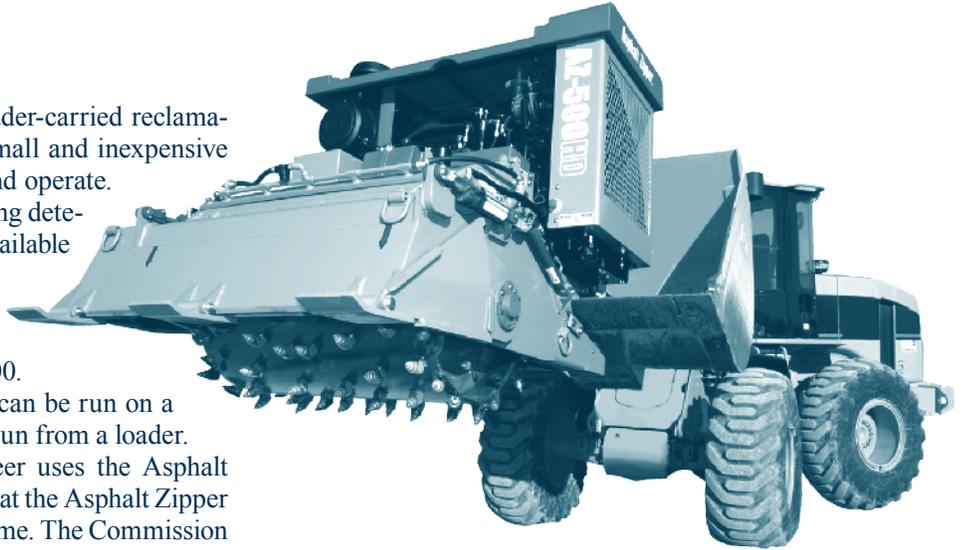
# The Bridge Product Showcase

If you have a product to recommend for showcase in *The Bridge*, contact Michigan LTAP at 906-487-2102.

## Asphalt Zipper

The Asphalt Zipper is a backhoe or loader-carried reclamation/recycling machine. The machine is small and inexpensive enough for local agencies to own, store, and operate. This gives local agencies a tool for rebuilding deteriorated roadways that was previously only available through contractors using specialized machinery. The manufacturer offers five models from 99 to 185 hp and 18–48 inch widths at a price range from \$70,000 to \$98,000. The smallest model weighs 4,500 lbs and can be run on a backhoe, while the largest, at 7,900 lbs, is run from a loader.

Craig Kelso, Mackinac County Engineer uses the Asphalt Zipper and says, "I was just so impressed that the Asphalt Zipper saves so many steps, wasted material and time. The Commission has wanted to salvage, reclaim and recycle asphalt for quite some time, but they had few options. Without this type of machinery, all we could do is use an excavator to remove the asphalt surface, and maybe take it back to the plant for crushing. It is a cumbersome process, and we have lost our resources out of the road. The Asphalt Zipper gives us the expedience of using materials on-site. It helps us get the road ready for surfacing faster and achieve a better product when we are done. I have looked for something



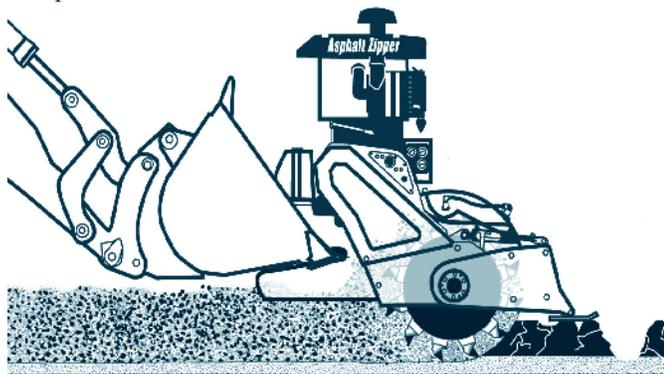
that would help me get the results I need, and the Asphalt Zipper has been just that."

Pulverizers/recyclers can be used for

- Full-depth Reclamation/Recycling (FDR)
- Base Stabilization with cement, lime, or other binders
- Mechanical stabilization with or without adding base materials
- Utility cuts without material removal
- Patching
- Shoulder reconstruction
- Bridge deck rehabilitation
- Parking lot reconstruction or removal

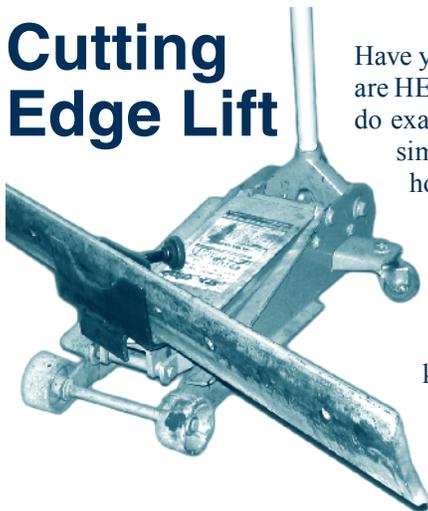
The company claims the Asphalt Zipper can cut and pulverize up to 1,000 linear feet per hour, cuts up to 12 inch thick asphalt, and leaves sub-inch material behind.

Several Michigan agencies and their contractors have experience with this machine and report outstanding results. Contact the manufacturer, Asphalt Zipper, at <<http://www.asphaltzipper.com>> or 1-888-947-7378 for more information, to arrange a demonstration, or to obtain references from Michigan users.

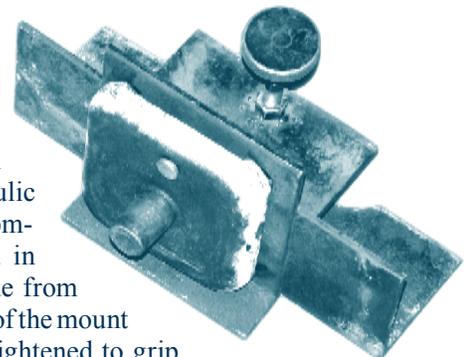


MILLED 1" MINUS MATERIAL CAN BE RECYCLED AS BASE OR BACKFILL

## Cutting Edge Lift



Have you ever tried to lift a moldboard cutting edge? They are HEAVY, and if you drop it on your finger or toes, they'll do exactly what they were designed to do: CUT. Here's a simple device for lifting and moving cutting edges, holding them in place for mounting, and keeping them in place when removing. The lift is a typical hydraulic floor jack, and the cutting edge is held by a custom-designed mount that keeps the blade steady and in position for mounting/removal. The mount is made from scrap found around the garage. The pin in the bottom of the mount keeps it secured to the floor jack. The knob can be tightened to grip the cutting edge. Thanks to Steve Witting of Hancock DPW for coming up with this back and toe-saving device.



# LTAP Workshop Announcements

## 7th National Conference on Transportation Asset Management

November 6–8, 2007, Royal Sonesta Hotel, New Orleans, Louisiana

This conference will provide a forum for practitioners, researchers, and others to share information on a wide range of issues related to transportation asset management. The conference will build on six previous national conferences, recognizing the significant progress made in Transportation Asset Management.

The conference program will include sessions on important emerging issues in transportation asset management. Among them will be organizational leadership, management systems, optimization, and training and education. The conference will feature three thematic tracks and four special topic areas. Go to <http://www.TRB.org/conferences/2007/Asset> for more information on this conference.

## Asset Management Workshops

October-November, 2007

The day-long training sessions being offered by the Michigan Transportation Asset Management Council will spell out the steps you need to take to develop an asset management program for your agency. Topics include:

- Asset management in Michigan
- Assessing the condition of roads and bridges
- Understanding “a mix of fixes”
- Setting program targets and funding levels
- Identifying candidate projects
- Setting priorities
- Establishing a multi-year program

October 11, 2007, Gaylord

October 23, 2007, Farmington Hills

October 30, 2007, Marquette

There is no charge for the workshop or lunch, but you **MUST** register to participate. *No walk-ins will be allowed.*

**Contact the Michigan LTAP office to sign up for these or other workshops.**

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