



## Big improvement

The City of Marquette's successful implementation of a road diet met some opposition in the planning stages, but ultimately was approved and constructed. "Traffic patterns are calmer, bicycles and pedestrians are able to use it with a higher level of safety, and we've maintained the road's capacity," said Keith Whittington, Marquette city engineer. "Overall, it was a great improvement."



## Extreme Makeover: Road Edition

By Melanie Kueber Watkins, P.E., Research Engineer  
Center for Technology & Training

City of Marquette

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**B**alancing safety with service levels in the Marquette community was the goal of the Wright Street road diet project. The popularity of Wright Street as a connector between US41/M28 and the City of Marquette's busy Third Street business district resulted in increasing traffic volumes and high vehicle speeds. Residents and businesses along that corridor were concerned about the safety of motorists, bicyclists, and pedestrians.

The road diet technique, also referred to as a four- to three-lane conversion, changes the traditional undivided four-lane cross section into two lanes with a two-way left turn lane. With a road diet, space is planned in the corridor for other users as well as motorists by including features such as bicycle lanes, pedestrian islands, and on street parking. Safety features of a road diet include buffer space between vehicle travel lanes, improved speed compliance, decreased crash severity, and improved access for bicycles and pedestrians.

### Improvement needed, plans made

In addition to concerns about safety, Wright Street was due for improvement according to the City of Marquette Community Master Plan. Based on Pavement Surface Evaluation Rating (PASER) methodology, the roadway was determined to be in fair condition; two segments of its approximately 3.7 mile length were rated as a PASER 4 and one was rated as a 5. Visible surface distresses included block cracking, slight rutting, extensive patching, and longitudinal cracking in the wheel path. The recommended treatment for such a pavement is a 2-inch or more structural overlay.

In addition to needing a new pavement surface, Marquette City Engineer Keith Whittington needed to upgrade the water main to increase fire flow issues in that area. "We weren't wondering whether or not to work on Wright Street, we were trying to decide exactly what to do to improve it."

The final plan for Wright Street addressed all needs and concerns; it included a new 12-inch water main and involved redesigning the road cross section to reduce speeds, improve safety, and improve access for non-vehicular traffic. The Wright Street road diet design, which involved changing the four-lane cross section to one lane in each direction, a center turn lane, and a bike lane on each side, was completed in-house by the City of Marquette (see *Profiles and lane markings, before and after road diet*, on page 6).

Tracie Leix, supervising engineer of the Michigan Department of Transportation (MDOT) Local Safety Initiative (LSI) program, has a great deal of experience with road diet projects. She was not involved on the Wright Street project, but she appreciated the design. "The nice feature of this design is that it maintains the same curb lines before and after," she said. "The design strategy would allow the roadway to be converted back to four lanes if the city ever decided to do so."

The road diet concept was not entirely new to the City of Marquette. The MDOT and the City of Marquette completed a similar four-lane to three-lane conversion project on Washington Street in downtown Marquette a few years earlier. The project cut down on crashes, did not impact capacity, and provided additional access for pedestrians.

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**It was early on a Saturday morning.** I was in a conference room overlooking the playing surface at a local ice rink. The ice was dark and quiet at this hour, but the smell of hockey was there (if you've ever been close the sport, you know what I mean; it's unmistakable). At one end of the room, a laptop was connected to a humming projector, which was projecting a red, white, and blue USA Hockey™ logo onto a pull-down screen.

Ten other parents and I sat in folding chairs facing the screen. Amid yawns and droopy eyelids, an instructor strode purposefully to the front of the room, clicked a few keys on the laptop, smiled, and then launched into a short introduction.

Every one of us had other things to do, but we had all volunteered to coach or help in some way with our kids' hockey teams. And *USA Hockey*, the national governing body for the sport of ice hockey in the United States, requires that coaches, managers, and others at all levels—from the tiniest “mites” to the pros—be trained before setting foot (or skate) on the ice.

As we settled in to “learn” a bunch of stuff we thought we already knew, I looked around and started to feel sorry for the instructor. Besides him, nobody appeared remotely interested or engaged. “It’s going to be a long day,” I thought to myself.

A short time later, I was leaning forward, elbows on knees, with a lump in my throat. Almost six hours later, I wished it wasn’t over.

I’ve been a fan of hockey all my life. I’ve been in countless locker rooms as a player, coach, manager, and parent. Three of my boys play, and one is a referee. I’ve worked the clock at games, taken stats, and served as a goal judge. I understand the game of hockey from many different perspectives, but I still learned a lot that day in the conference room overlooking the ice.

Here’s why: several different coaches from many levels of the sport talked about various aspects of hockey. They discussed big-picture things like planning practices, evaluating players, and developing game strategies. They also talked about little details like communicating with parents, maintaining equipment, and even filling water bottles. Throughout the day, they showed us videos, physically demonstrated positioning and positions, and shared personal stories and anecdotes. These guys were extremely knowledgeable, they spoke clearly, and they knew how to use a wireless mouse to flip through a PowerPoint presentation. But none of those things made the training great. The thing that made me sit on the edge of my chair was *passion*. Each of the coaches who talked that day obviously loved the sport of hockey, and their passion and enthusiasm pulled the rest of us in. It was awesome.

At the Center for Technology & Training, we coordinate and execute thousands of hours of road- and bridge-related training every year. For each event we look for a variety of presenters to provide a good view of the big picture and to get into the details. The subject matter is often less exciting than a hockey game (in my opinion), but we are fortunate to work among some of the best, brightest, and most passionate experts in the world. It’s obvious they love what they do and they enjoy sharing their experience and expertise with others.

If you haven’t been to one of our workshops or conferences lately, watch your email or our web site for announcements and then sign up for one. You probably won’t be moved to tears, but you will learn a lot—no matter how many years of experience you already have.

Also, if you have specific needs that you would like to see addressed at a future workshop or conference, or if you have a topic you would like to share at one of our events, let us know. We’re always looking for more ideas and more experts who are willing to share their experiences.



# The Bridge

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Local Technical  
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The Center for Technology & Training is part of the Michigan Tech Transportation Institute at Michigan Technological University in Houghton, Michigan. The mission of the CTT is to develop technology and software, coordinate training, and conduct research to support the agencies that manage public infrastructure. In support of this mission, the CTT houses Michigan’s Local Technical Assistance Program, which is part of a national effort sponsored by the Federal Highway Administration to help local road agencies manage their roads and bridges. For more information, visit [www.MichiganLTAP.org](http://www.MichiganLTAP.org).

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# Projects prove viability of Safety Edge<sup>SM</sup>

John Rynanen, Editor  
Center for Technology & Training

Bailey Drive in Kent County is one of three paving projects on which the Kent County Road Commission (KCRC) used the *Safety Edge* paving technique in the past two years. Improved safety and durability of the roadway, minimal extra cost, and lower expected maintenance costs have contributed to an overwhelmingly positive opinion of the innovative edge treatment at KCRC. This photo shows the *Safety Edge* before shoulder material is added and graded flush with the top of the pavement.



Center for Technology & Training

In the past two years, Kent County Road Commission (KCRC) completed three paving projects that incorporated the *Safety Edge* paving technique. The *Safety Edge* technique creates a 30 degree taper on the edge of the pavement, which eliminates vertical pavement edge drop offs that result when shoulder gravel settles or is worn away. Pavement edge drop offs exacerbate roadway departures, which account for 53 percent of fatal crashes in the United States.

The *Safety Edge* was developed jointly by the Georgia Department of Transportation and the Federal Highway Administration (FHWA) to provide a gradual and safer transition between shoulder and pavement for autos, motorcycles, and bicycles. It is one of five key innovations associated with the FHWA *Every Day Counts* initiative. For more information see [www.fhwa.dot.gov/everydaycounts/technology/safetyedge](http://www.fhwa.dot.gov/everydaycounts/technology/safetyedge).

Jon Rice, managing director of KCRC, learned about the *Safety Edge* through his involvement with the National Association of County Engineers (NACE), where he serves on several committees that deal with roadway safety and pavement preservation. Rice decided to try the *Safety Edge* on paving projects in Kent County to determine the economic and practical viability of the technique for local road agencies in Michigan. Rice knew that engineers at KCRC and from other road commissions had concerns about cost to implement, durability of the tapered edge, and the ability of the edge to hold shoulder gravel.

KCRC and the Michigan Department of Transportation (MDOT) planned *Safety Edge* projects together; the KCRC projects—two during the 2011 construction season and a third in June 2012—were the first to use the technique in Michigan. Since then, MDOT, Wexford County Road Commission, and Allegan County Road Commission have also successfully completed projects.

## Accommodating new technique

The FHWA has established three different methods for installing the *Safety Edge* as part of an asphalt paving operation (see Table 1).

All three installation methods require either attaching a specially-designed wedge device or adding an adjustable end plate to

► *Safety Edge*, page 5

Table 1: FHWA guidelines for installing the *Safety Edge*.

<p>For single lift overlay</p>	<p>Shoulder is trenched to the lower edge of existing HMA pavement. <i>Safety Edge</i> is installed over the edge of existing pavement, and then shoulder material is added and graded flush with the top of the new pavement.</p>
<p>For <math>H \leq 5</math> in.</p>	<p><i>Safety Edge</i> is installed on both lifts of HMA over crush and shape or virgin base course material. Shoulder material is added and graded flush with the top of the new pavement. Total thickness of both courses of HMA is five inches or less.</p>
<p><math>H &gt; 5</math> in.</p>	<p>First course of pavement is installed over crush and shape or virgin base course material with standard pavement edge. <i>Safety Edge</i> is installed on top two lifts of HMA, and then shoulder material is added and graded flush with top of new pavement. Thickness of top two courses of HMA is approximately five inches; thickness of first course of HMA varies.</p>

Adapted from [www.fhwa.dot.gov/everydaycounts/technology/safetyedge/specs.cfm#tab1](http://www.fhwa.dot.gov/everydaycounts/technology/safetyedge/specs.cfm#tab1)

# Ordering parts only when you need them

John Rynanen, Editor  
Center for Technology & Training



The stock room at Saginaw County Road Commission is spacious, neat, and efficient thanks to a just-in-time parts management philosophy recently adopted by Fleet and Facilities Manager Randy Emeott. “Brake parts, shocks, tie rod ends, and other common wear parts are all kept in stock at our suppliers anyway, so shifting to just-in-time ordering was pretty easy,” he said.

The stock room near the vehicle maintenance shop at Saginaw County Road Commission (SCRC) looks like a department store candy aisle the day after Halloween. But it’s much neater. In the past year Randy Emeott, SCRC fleet and facilities manager, has reduced his on-hand inventory by more than half which has enabled him to remove 17 of 33 shelving units. The result is a much neater and more efficient parts area.

At SCRC, equipment vendors build and deliver new vehicles and equipment. After delivery, the SCRC maintenance crew—five mechanics, a welder, and an assistant mechanic—perform all maintenance and repairs over the life of each vehicle. The SCRC fleet currently includes 49 plow trucks, 28 pickups and SUVs, and 18 pieces of specialized equipment (sweepers, tar trucks, motor graders, and others).

## Money on the shelves

Emeott began to adopt a just-in-time parts management philosophy soon after he assumed responsibility for the stock room. The road commission’s existing parts management process, which involved keeping up to six of each part for every vehicle in stock, struck him as cumbersome and inefficient. In addition to general disorganization because of the sheer number of parts on the shelves, he and his mechanics often found it difficult to locate parts when they needed them, and they would often find parts for vehicles the road commission no longer owned. “In the stock room I saw a lot of money tied up in

parts sitting on the shelf just waiting to be used,” he said. “It was inefficient, especially considering that budgets are tight in every area of the road commission. So I started looking at ways to minimize our overhead.”

After a bit of research he realized that all of his major parts vendors were within 15 minutes of the road commission. “I figured why tie up our money, time, and space to purchase and manage the parts when we could probably order them as we need them instead?” Emeott said.

## Getting started was easy

To begin, Emeott talked to his mechanics to get their input, and then he simply stopped replenishing his on-hand supply; instead of reordering right away, he would wait until a mechanic needed a part. “Brake parts, shocks, tie rod ends, and other common wear parts are all kept in stock at our suppliers anyway, so shifting to just-in-time ordering was pretty easy,” Emeott said. “For more

specialized parts—hydraulic cylinders and some drive line parts—it makes more sense to keep some on hand because they’re a little harder to come by. Our rule of thumb is if we can get it within a day, we don’t keep it here.”

As the stock room shelves emptied and Emeott gained more experience with a just-in-time approach he started to look for ways to accelerate and refine the process. After conducting a brief audit to identify parts for vehicles they no longer owned or ones that were not used very often, he contacted his suppliers. “I explained what I was trying to do, and then I gave several of them a tour of our stock room and shop to familiarize them with our facilities, mechanics, and operation,” Emeott said. “They were very receptive; in most cases I was able to return the obsolete and unpopular parts for credit on future orders, or I exchanged them for equivalent parts. Now when we need a part, one of our suppliers can typically deliver it to us within an hour—the next day at the latest.”

If delivery of a part delays the repair of a vehicle, Emeott considers keeping that part in stock. So far, the just-in-time approach to parts management has not extended the repair time on any vehicles.

## Smoothing out the wrinkles

As Emeott and his maintenance crew continued to refine the new process, they identified an area where they would have to compromise on their just-in-time approach. “From December to March, one of our mechanics moves to our third shift to perform all the preventive maintenance on the trucks at night,” he explained. “To make sure he can do his job and keep the trucks on the

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## Another option: Bring the parts store to you

In the past 15 years, contract parts management and supply services have grown in popularity. Some advantages of a fully-functional, independently-managed parts store within a public agency fleet facility include: reduced parts transaction costs, streamlined warranty and core processing, and minimal agency liability for cost of inventory. In some cases the service is part of a parts supplier’s national corporate strategy; in others it is up to the local store owner. Services can be customized for fleets of any size. Contact your local parts supplier to learn more.



the paver screed. For more information, see *Modifying a paver to install the Safety Edge*, on page 7. With the special equipment on the paver, the *Safety Edge* paving operation proceeds like a traditional paving project.

The only additional adjustment in paving production has to do with rolling the asphalt after placement. To prevent shoving or deforming the tapered edge, FHWA recommends the roller stay six to ten inches away from the edge until the last pass.

For the KCRC *Safety Edge* projects, Director of Engineering Wayne Harrall chose three roads that were prone to gravel loss on the shoulders. All three had horizontal curves, very little pavement beyond the painted edge line (two feet or less), and relatively narrow gravel shoulders. On two of the projects he tried two of the FHWA installation methods, and on the third he tried a variation of one of them (see Table 2).

Given the concerns about constructability, durability, and maintenance, he wanted to determine the most effective method for his agency and others that might be interested in trying the technique.

### Minimal extra cost

When calculating the cost per mile for installing the *Safety Edge*, Harrall took into account the additional hot-mix asphalt (HMA) required and additional labor for trenching when necessary. The projects on Bailey Drive and Ada Drive did not require trenching, so there was no additional labor cost.

“The extra cost for the *Safety Edge* was pretty insignificant when compared to the

**Table 2: KCRC *Safety Edge* Projects.**

Road name	Method of Placement	Length of Project	Cost Per Mile	Total Project Cost
18 Mile Road	Trench shoulders, install <i>Safety Edge</i> on single-course overlay	1.50 Miles	\$ 4,800.00 (includes trenching)	\$ 144,000.00
Ada Drive	Crush and shape, install <i>Safety Edge</i> on both courses of two-course overlay	1.31 Miles	6,600.00	370,000.00
Bailey Drive	Crush and shape, install <i>Safety Edge</i> on top course of two-course overlay	2.65 Miles	3,300.00	450,000.00

total cost of a project,” Harrall said. “It only required about one percent more HMA per mile.” His experience is in line with FHWA guidelines, which advise that paving with a *Safety Edge* typically requires less than one percent additional asphalt.

### Compacting and maintaining

In addition to cost, compaction and shoulder maintenance were the other major concerns when the *Safety Edge* was first discussed among local road agencies in Michigan. Adequate compaction of HMA eliminates air voids, which increases the strength of the pavement and prevents water infiltration. It was generally believed that adequate compaction would be difficult to achieve on the 30 degree taper because it was not possible to roll right to the pavement edge, as with traditional paving.

Curtis Bleech, pavement design engineer at MDOT, said he believes that paving with the *Safety Edge* creates better compaction on

the pavement edge than traditional paving practice. “With normal paving, the asphalt establishes an angle of repose on the edge of the mat,” he explained. “With the *Safety Edge*, the asphalt is extruded which produces an initial density that is actually higher than that of a free edge.” MDOT has completed several projects with the *Safety Edge*.

Regarding shoulder maintenance, local agency engineers were concerned that the tapered edge would shed gravel and would require constant grading to pull shoulder material flush with the top of the pavement. The cost of shoulder maintenance is significant. According to Jerry Byrne, director of maintenance at KCRC, \$450,000 was spent to maintain shoulders on Kent County Roads in 2011; over \$160,000 of that cost was for new gravel. But the cost for equipment, labor, and materials isn’t the only thing that concerns Byrne about shoulder maintenance. “I worry about our shoulder

► [Safety Edge, page 7](#)

## Safety Edge and Every Day Counts

The *Safety Edge* paving technique creates a 30 degree taper on the edge of the pavement, which provides a more gradual and safer transition between pavement and shoulder. For more detailed information about the *Safety Edge*, including case studies from completed projects, detailed construction guidelines, and a sample construction specification, see

The screenshot shows the website header with the 'Every Day Counts' logo and navigation menu: Home, About EDC, Shortening Project Delivery, Accelerating Technology, Events, Contact Us, EDC Forum, Communities of Practice. Below the menu is a photo of a construction worker in a safety vest using a tool on a road edge. To the right of the photo is the text: 'The Every Day Counts Initiative' followed by a description of EDC's goals and 'The Safety Edge' section describing it as a solution to reduce pavement edge-related crashes. A 'Read More >>' link is at the bottom right of the photo area.

→ [www.fhwa.dot.gov/everydaycounts/technology/safetyedge](http://www.fhwa.dot.gov/everydaycounts/technology/safetyedge)

# Road Diet (from page 1)

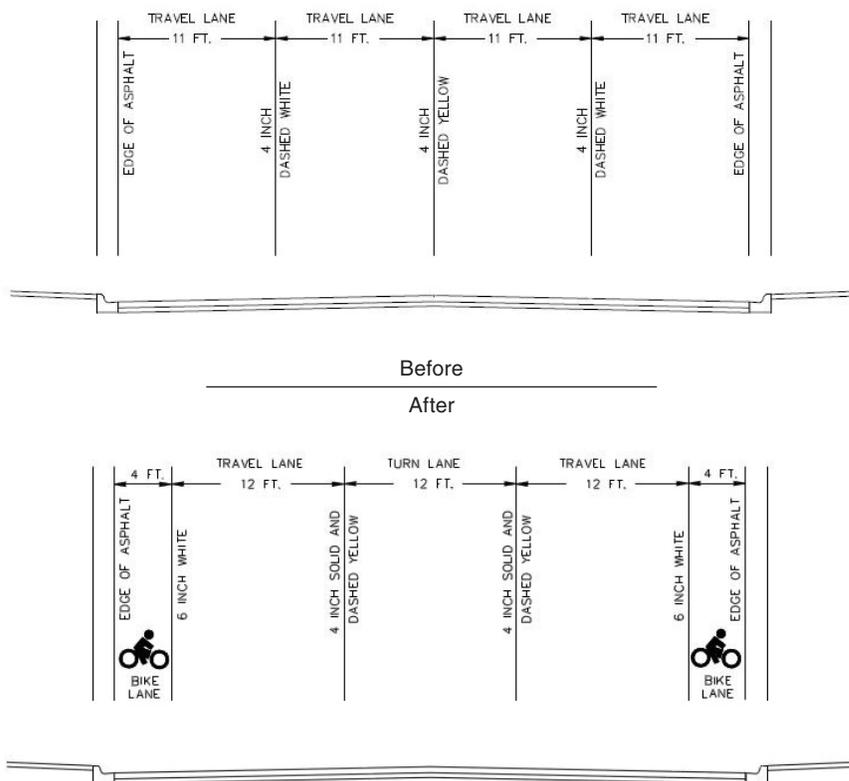
Public opinion about that project was positive.

## Persuaded by data and community

After the Marquette City Planning Commission reviewed and approved the plan, they recommended it to the Marquette City Commission where concerns were raised that multi-modal street use and truck traffic would be a safety problem. Whittington was able to alleviate the concerns by sharing research conducted by the Federal Highway Administration (FHWA) and the National Cooperative Highway Research Program (NCHRP) that showed reconfiguration of this type would reduce traffic speed and the frequency and severity of crashes. Whittington also pointed out the annual daily traffic (ADT) on Wright Street—6000 vehicles—was considerably lower than the ADT on other successful road diet projects across the country. For more information about future capacity, see *It works now, but how long will it last?* below.

To help strengthen the case for the road diet, Whittington also collected endorsements from residents and businesses along the route and several other stakeholders and community organizations, including the Marquette Police Department, Department of Public Works and Department of Community Planning; Northern Michigan University; The Superior Bike Fest; No-quemenon Trail Network; Kitchi-Mi-Kana Bike Club; and several others. “We had plenty of support for the project, it was just a matter of showing the commissioners the data that supported what we were trying to do,” Whittington said.

## Profiles and lane markings, before and after road diet



## Success!

The Marquette City Commission ultimately supported the project, and construction began in July 2009. The newly-configured Wright Street was open to traffic in October that same year. Total cost of the project was \$1.57 million, and it was funded entirely by the City of Marquette using local funds.

A post-construction speed study conducted by the Marquette City Police showed

an overall decrease in vehicle speed. A comparison of crash data from before and after the re-configuration showed a 41 percent decrease in crashes, which was consistent with outcomes from similar road diet projects in California, Minnesota, and Montana, where crashes decreased 53, 33, and 62 percent, respectively.

“Traffic patterns are calmer, bicycles and pedestrians are able to use it with a higher level of safety, and we’ve maintained the road’s capacity,” Whittington said. “We’ve had very few complaints about the new configuration—none from residents or business along that stretch,” Whittington said. “Overall, it was a great improvement.” ■



## It works now, but how long will it last?

A common concern when implementing a road diet is whether or not the reconfiguration will accommodate future traffic volumes. Research conducted by the University of North Carolina Highway Safety Research Center in 2002 shows that traffic congestion will worsen upon implementation of a road diet if the preconstruction average daily traffic (ADT) volume is greater than 20,000 vehicles. In such a case, reconfiguration can lead to negative impacts network-wide because increased congestion often forces travelers to take alternate routes. In cases where the ADT is less than 20,000 vehicles, a road diet project will not increase congestion. For a summary of the research, see [www.fhwa.dot.gov/publications/research/safety/humanfac/04082](http://www.fhwa.dot.gov/publications/research/safety/humanfac/04082).

## For more information

To learn more about the road diet technique, please contact the MDOT Local Safety Initiative program:

**Tracie Leix, P.E. Supervising Engineer**  
**LeixT@michigan.gov**  
**517-373-8950**

For links to additional resources, visit:  
[www.MichiganLTAP.org/Bridge/26-3](http://www.MichiganLTAP.org/Bridge/26-3).

## Safety Edge (from page 5)

crews,” he said. “We don’t shut down roads when we do the shoulder work; our crews are working in traffic. They take all the safety precautions, but it’s obviously safest if they don’t have to be out there.”

From a maintenance standpoint, Byrne has been pleased with the performance of the *Safety Edge* on the projects in Kent County. “After a year in use, we saw gravel loss from one half inch to one and a half inches, which is similar to what we expect with a traditional pavement edge,” he explained. “The difference with the *Safety Edge* is that it allows motorists to easily and safely remount the pavement even if there is some gravel loss.” Byrne does not yet have a definitive number for the cost of maintenance, but he expects to spend less

to maintain the shoulder on stretches of road where the *Safety Edge* is installed. He also expects that his crews will spend less time working in traffic to maintain those shoulders. “With a vertical edge drop, any shoulder deterioration becomes an urgent maintenance need. With the *Safety Edge* we won’t necessarily have to rush out to fix low shoulders; we’ll be able to manage them on a more predictable schedule.”

### Good solution to an old problem

In terms of paving production and cost, all of the agencies that have used the *Safety Edge* technique in Michigan have reported positive experiences:

- With a *Safety Edge* device installed on the paver, no additional time or labor is required to place it;

- The additional cost for HMA to install a *Safety Edge* is minimal compared to the total cost of a paving project; and
- The *Safety Edge* paving devices create good compaction on the edge, and durability is better than a traditional vertical edge. So far in Michigan, only KCRC has experience with maintaining shoulders after the *Safety Edge* is installed. They report that the tapered edge holds gravel as well as a traditional paving edge.

“From everything we’ve experienced, this is a good solution to the problem of pavement edge drop offs,” Harrall said. “In Kent County we’re not ready to adopt it as a standard practice on all projects, but it’s definitely something to consider for some roads.” ■



Center for Technology & Training

### Modifying a paver to install the *Safety Edge*

The Federal Highway Administration has conducted several demonstration projects to test and refine the process of installing the *Safety Edge*. Through these projects, they have identified four commercially-available products for installing the edge. The products fall into two categories: 1) **stationary devices** that attach to the screed, and 2) an **adjustable device** that replaces the paver end plate.

The stationary devices attach directly to the inside edge of the paver screed. They are great for long stretches of uninterrupted pavement, but they require manual removal and re-attachment to accommodate driveways, intersections, and other variations of the pavement edge. The adjustable device replaces the standard paver end plate and allows the operator to adjust height, width, and the angle of the tapered edge without interrupting paver operation. The devices range in cost from \$2,500 to \$5,000. For more information about the products, contact one of the companies listed at right.

information adapted from [www.fhwa.dot.gov/everydaycounts/technology/safetyedge](http://www.fhwa.dot.gov/everydaycounts/technology/safetyedge)

#### Stationary

Advant-Edge Paving Equipment LLC  
814-422-3343  
[www.advantedgepaving.com](http://www.advantedgepaving.com)

Transtech Systems, Inc.  
1-800-724-6306  
[www.transtechsys.com](http://www.transtechsys.com)

Troxler Electronic Laboratories, Inc.  
877-876-9537  
[www.troxlerlabs.com/products/paving.php](http://www.troxlerlabs.com/products/paving.php)

#### Adjustable

Carlson Paving Products  
253-278-9426  
[www.carlsonpavingproducts.com](http://www.carlsonpavingproducts.com)

## Parts (from page 4)

road when we need them, we realized we would have to keep a good stock of belts and filters on hand.”

He was impressed with how one of his suppliers was able to help. “One of our local parts salesmen conducted a detailed audit of our fleet to determine the belts and filters we would need,” he explained. “He also worked with our mechanics to figure out how many of each we expected to use, and then he negotiated a volume discount with his suppliers to keep us stocked.” The salesman also brought in an overhead rack on which to hang the belts, and he rearranged the filters on an existing shelving unit to make them more accessible and easy to manage. He stops by regularly to monitor the inventory.

“Belts and filters have always been challenging because we use so many,” Emeott said. “With the new system our mechanics always have what they need in our stock room and our salesman makes sure they never run out; I just keep an eye on the numbers. It works great.”

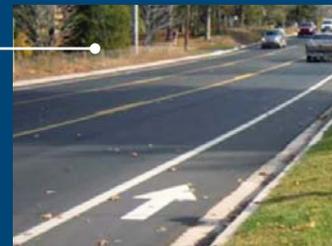
### Great results, more to come

The “numbers” that Emeott keeps an eye on are based on printed work orders from mechanics and printed invoices from suppliers. He keeps track of it all using a simple Excel spreadsheet for inventory control. At some point in the next year he hopes to add parts management functionality to the SCRC in-house business management system. “So

far I have been able to manage well the old-fashioned way, but I want to generate reports and do more detailed forecasting and planning,” he said. “A parts database will help a great deal.”

Emeott is currently in the process of determining exactly how much money he has been able to save by streamlining his inventory. So far, he knows he has reduced the physical volume of parts by more than half, and his neat, well-organized stock room has boosted the efficiency and morale of the entire vehicle maintenance operation. “I realize that this type of arrangement isn’t going to work for every shop, but it’s been great for us,” he said. “Everyone involved really appreciates the improvements.” ■

- ▶ Successful **road diet** in Marquette
- ▶ *Safety Edge* in Kent County
- ▶ Just-in-time parts management
- ▶ Upcoming events
- ▶ Tier 1 bridge load ratings due Dec 31



## Michigan's 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

## Important Reminder

### Tier 1 bridge load ratings due *December 31, 2012*

## Upcoming Events

(details at [www.MichiganLTAP.org](http://www.MichiganLTAP.org))

### Workshops and Conferences

Michigan County Engineers' Workshop

*February 12-14 – Sault Ste. Marie*

Constructing Pedestrian Facilities for Accessibility

*February 23, March 5, and April 17 – Okemos*

Michigan Bridge Conference

*March 19-20 – Howell*

### Webinars

Michigan DEQ Bankful Determination

*January 20 – 10:00 to 11:30 AM*

**Tier 1 bridge load ratings** must be completed and entered into the Michigan Bridge Inspection System (MBIS) or Michigan Bridge Reporting System (MBRS) by December 31st, 2012. The Michigan Department of Transportation (MDOT) distributed lists of local agency Tier 1 bridges last year and has sponsored a technical assistance and training program through the Center for Technology & Training (CTT) at Michigan Technological University. The CTT Bridge Load Rating Program will continue to offer assistance in 2013 for load rating Tier 2 bridges (due December 2014) and Tier 3 bridges (due December 2016). If you have policy questions regarding bridges assigned to any of the tiers, please contact Bradley Wagner, Load Rating Program Manager: [wagnerb@michigan.gov](mailto:wagnerb@michigan.gov).

To assist with load ratings, MDOT has published the following bridge advisories:

- BA 2011-02: Local Agency Load Rating Prioritization and Coding
- BA 2012-01: Modifications and Improvements to Load Rating Data and MBIS/MBRS
- BA 2012-02: Guidance for the use of "Field Evaluation and Documented Engineering Judgment" Ratings
- BA 2012-03: Corrugated Metal Pipe Analysis Spreadsheets

Bridge advisories are available for download from the MDOT web site. For a convenient link to the site, please visit **loadrating.michiganltap.org/links**, and then select **MDOT Bridge Advisories** from the list.

If you require technical assistance for load rating bridges or corrugated metal pipe culverts please contact the CTT Bridge Load Rating Program: [loadrating@mtu.edu](mailto:loadrating@mtu.edu) or **906-487-2102**.