

# Crossroads

The Quarterly Journal of the County Road Association of Michigan

Volume 3 | Issue 2

Winter 2017

## *Beyond Roads*

*The Little Rapids Restoration Project*

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## Crossroads

*Crossroads* is the quarterly publication of the County Road Association (CRA) of Michigan. The 83 county members of CRA represent the unified, credible and effective voice for a safe and efficient local road system in Michigan.

The Association, headquartered three blocks north of the State Capitol, is dedicated to helping members promote and maintain a safe, efficient county road system including stewardship of the county road right-of-way in rural and urban Michigan.

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## Next Publication

The Spring 2018 issue of *Crossroads* will preview some of the trending topics that will be presented at the 2018 Highway Conference: The Road Ahead.

*Crossroads'* editorial team wants to hear from you. Call CRA at 517.482.1189 and share your ideas for future issues!

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## PRESIDENT'S CORNER



Over the past year, I have had the opportunity to attend CRA's sectional association and council meetings across the state. Regardless of location, I have been inspired by the collaborative spirit that fills each room.

I have experienced, first-hand, how our members dedicate themselves, not only to the success of their own agencies but also to the overall strength of the state's county road

and bridge system. It is within these meetings that our different perspectives become our strengths and viewpoints formed from geographic diversity offer invaluable insights.

This type of engaged, ongoing collaboration is essential to addressing common challenges like the increased demand on public rights-of-way or regulations that impose greater restrictions on our agencies' ability to successfully deliver services.

Our commitment to speaking with one voice makes us a considerable force in Lansing, where legislative action impacts our present and future.

Perhaps no recent legislation has affected us more than the long-awaited transportation funding package. Since its phase-in began this year, transportation revenue has increased by 23 percent.

From my observations around the state and in Kent County, we are making good use of these additional dollars to improve our road networks. I encourage all agencies to communicate with their legislators, boards, residents and other stakeholders regarding how these additional funds are being spent and how they have been allocated for future improvements.

In addition, we must clearly articulate the consequences to our networks should the Michigan Legislature fail to fully implement the transportation funding package with committed General Fund dollars.

It is imperative that we tell our story and that the Legislature understands how their home districts will be affected by not fulfilling this promise.

In 2015, our collective voice helped to secure the transportation funding package. Now, we must continue our collaborative efforts to ensure that the promised, but not constitutionally guaranteed, funding is fully realized

Steven A. Warren  
CRA President  
Managing Director  
Kent County Road Commission

## CROSSROADS EVENT Calendar

### February 8-9

#### **UP Road Builders Winter Meeting**

Representing the 15 Upper Peninsula county road commissions, the UP Road Builders Meeting covers current issues, legislative updates and more. This year's winter meeting is at the Holiday Inn, Marquette.

### February 13-15

#### **CRA County Engineers Workshop**

Learn about new engineering topics in this CRA conference organized by LTAP. Continuing education credits available. Held at Shanty Creek Resort, Bellaire.

### March 13-15

#### **2018 CRA Highway Conference and Road Show**

The **2018 Highway Conference** looks to the future of transportation in Michigan. **The Road Show** is Michigan's biggest infrastructure trade show. Both events run concurrently at the Lansing Center, Lansing.

For additional details on CRA events, visit [micountyroads.org/events](http://micountyroads.org/events)



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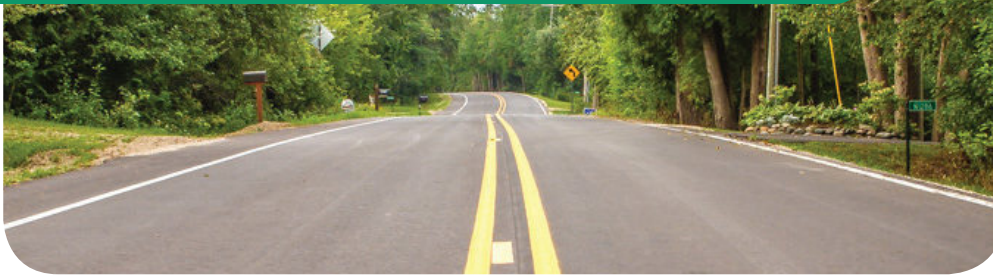
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## MEMBER PROFILE

# MACKINAC COUNTY



It's a little-known fact that Mackinac County has shrunk over the years since it was created by territorial governor Lewis Cass in 1818.

At that time, it was called Michilimackinac County, and included all of the Lower Peninsula down to Macomb County and nearly the entire Upper Peninsula!

In the years since, many other counties were sectioned off, the county still stretches 120 miles from east to west.

The area remains an important nexus of tourism and natural resources for Michigan, located at the north end of the Mackinac Bridge.

### Operating on State Street, St. Ignace

The **Mackinac County Road Commission** is located in downtown St. Ignace in a 60-plus-year-old building, built for the Michigan State Police.

MCRC commissioners are dedicated to the community and to being active in the County Road Association (CRA) of Michigan. The road commission's motto is to "offer the highest level service to the public of Mackinac County, as efficiently as possible."

MCRC engineer-manager **Dirk Heckman** notes that his grandfather, Miros Butcher, worked as an equipment operator for MCRC back in the 1940s and 1950s. One of his duties was the maintenance of Rogers Park, where an interesting UP Road Builder's monument sits. His father was city manager of St. Ignace for many years, and may still hold the title for Michigan's longest-serving city manager, Heckman said.

"It is very rewarding for me, in this next generation, to work in my own county and see the impact of our work as a road commission that my own family and friends can benefit from. It can also be a detriment, as everyone knows who to call," he joked.

Mackinac County communities support the local roads, with 10 of its 11 townships having long-term local millages.

"The millages have become about half of our MTF, and that has made our federal-aid primary roads among the best in Michigan," Heckman said. "At the other extreme, we have many primary roads that are still not paved and many of them that are closed for weeks each year due to wet conditions. We certainly have work to do."

MCRC has embraced an asset management approach to its road system, and volunteered as a test site for the new unpaved road rating system being developed by Michigan Technological University's Local Technical Assistance Program (LTAP).

### Logging in Mackinac County

Logging is an important year-around industry in Mackinac County. About 53 percent of the county's land is owned by the Michigan Department of Natural Resources, making it a sportsmen's delight and a commercial timber tract. Another 24 percent, or 153,000 acres of the county is the Hiawatha National Forest.

While many of the timber sale proceeds go to townships in lieu of tax payments, this creates a very small tax base with which to build roads, Heckman said.

Heckman works closely with the loggers and haulers servicing state and federal timber harvests, and has also assisted CRA's efforts to work with logging interests statewide.



**+** *Dirk Heckman, PE, engineer-manager of the Mackinac County Road Commission in front of the UP Road Builders monument dedicated to former state highway commissioner, Frank Rogers.*



## JUST THE

## Facts:

**Office Headquarters:** St. Ignace

**Staff:** 21 full time; 4 seasonal

**No. of Commissioners:** 3 (elected)

**Miles of Road:**  
Total paved: 648 Primary: 264 Local: 384  
Total unpaved: 356 Primary: 69 Local: 287

**MDOT Contract:** No

**No. of Bridges:** 22

**Annual Budget:** \$5.5 million (FY 2016-17)

**Local Revenue:** \$1.2 million (FY 2016-17)

**Annual Snowfall:** 90 - 125 inches

**MCRC established:** 1912

**No. of Garages:** 2

**Office Built:** Early 1950s

**FUN FACT:** Mackinac County has a unique stone monument, located at a former MDOT rest stop.

"On a huge bolder is a bronze plate at the top of a 15-foot high monument comprised of stones supplied by all 15 counties of the Upper Peninsula of Michigan. The inscription is:



*"To Frank Rogers,  
Deputy State Highway Commissioner,  
1905 to 1913  
State Highway Commissioner,  
1913-1929"*

Conceived by the **U.P. Road Builders Association**, this monument was unveiled on June 4, 1930, with an impressive ceremony attended by several thousand spectators. It was erected to honor the man who worked to develop his 25-year vision of a network of paved roads in Michigan, unequaled in the US, and who gave the best years of his life to fulfill that vision. This monument was placed at the junction of US-2 and US-31 (now the corner of Mackinac Trail and M-123) and it remains solid and impressive to this day."

—**SaintIgnace.org**

[Saintignace.org/history-of-st-ignace/tidbits-of-history](http://Saintignace.org/history-of-st-ignace/tidbits-of-history)

"We offer a 20 degree and colder permit that allows normal legal designated loads during the seasonal weight restriction period, to help work with the logging industry. The permits are good for the season and are enforced by our Department of Motor Carriers," Heckman said.

## Environmental considerations govern many activities

"Out in the county, environmental regulations are the biggest challenge we have," Heckman said. "So much of our land is wetlands. We have several primary roads that are federal-aid eligible, but we are prevented from hard surfacing them, due to environmental regulations related to wetlands."

Heckman noted one road in particular, St. Ignace Road, has a 4-mile segment closed for weeks to months every year. It is one of the main routes for locals.

"Last year it was closed more days than it was actually open," Heckman said.

Putting hard surfaces on primary roads that have wetlands on both sides will be expensive in order to meet state regulations on wetland impacts.

"Realistically, it will cost us \$200,000 to lift a road like St. Ignace Road" that is underwater so often, Heckman said. "Paving it would cost another \$100,000 to \$200,000."

Yet paving St. Ignace Road and others like it are on the job list for MCRC.

## Highway Conference General Session

**"This guys loves Michigan winter!"**

**March 14, 9 A.M. - 9:30 A.M.**

John Dee loves Michigan's winter! Dee will talk about the weather he's observed over 20 years in Michigan's snowiest county — the Keweenaw Peninsula.

The road commission is likely to take advantage of Michigan's new Local Agency Wetland Mitigation Bank Program, called MiWB, Heckman said.

Legislation sought by CRA members and passed in 2016, sets aside \$2 million per year that allows road agencies to create mitigation areas that impacts roadwork in environmentally-sensitive areas.

Six county road agency and municipal road department members were appointed to the MiWB board this summer, and recently-retired MDEQ staffer **Jeff Silagy** has been hired as the program administrator.

"This program was created for problems exactly like those faced in Mackinac County," said CRA's legislative liaison and deputy director **Ed Noyola**. "With new MTF dollars now showing up at road agencies, some of the road projects will require expensive wetland mitigation that can be funded with competitive grants from the MiWB, making them more affordable."

## Island roads – outsourced

Mackinac County includes two popular islands, regularly accessed by ferries: Mackinac Island and Bois Blanc Island.

Bois Blanc (pronounced: Bah-Blo) Island has 30 miles of roads. MCRC hires a private contractor to handle all winter and summer maintenance of those roads.

Roads on Mackinac Island, which are not open to motor vehicles, are maintained by the island, which receives Michigan Transportation Fund disbursements. ---

# Beyond Roads

## *The Little Rapids Restoration Project*

### It takes a community to restore a habitat.

The Little Rapids Restoration Project off the Northeast shore of Sault Ste. Marie was a community effort nearly 20 years in the making. The project took out almost a mile of road and replaced it with a bridge, using \$8.5 million in grant funds originating from the Great Lakes Restoration Initiative.

With the **Chippewa County Road Commission (CCRC)** at the helm, nine organizations formed a community that's bringing "life" back to the St. Marys River.

### The back story: Restoring St. Marys natural habitats

The St. Marys River is a binational shared channel connecting Lake Superior and Lake Huron, two of the largest freshwater bodies in the world.

The Little Rapids Restoration Project, located a quarter mile from the Canadian border on Sugar Island, included removal of a causeway which was replaced by a modern-day bridge.

The causeway in the St. Marys River Little Rapids area was first installed in the late 19th century by the US Army Corps of Engineers as a water diversion for shipping purposes.

Over time, the diversion berm became the causeway that would be used as a landing dock for the Sugar Island Ferry and served as the main road connecting the landing to the island.



Aerial view of the bridge over the Little Rapids in the St. Marys River.

Unfortunately, the causeway blocked the free flow of water, which was harmful to native fish, such as lake sturgeon and whitefish, and introduced salmon that require rapids habitat for spawning.

The Little Rapids Restoration Project was first conceived in the 1990s, and had several attempts at funding. It wasn't until Congress passed the Great Lakes Restoration Initiative, which targeted projects in "Areas of Concern," was funding able to be secured.

The St. Marys River became an "Area of Concern" under the 1987 Great Lakes Water Quality Agreement due to industrial and municipal discharges, and sewer overflows that impaired water quality, sediment and wildlife habitat.

With support from the Great Lakes Restoration Initiative, the National Oceanic and Atmospheric Administration

#### The Little Rapids Restoration Project Team:

- National Oceanic and Atmospheric Administration (NOAA)
- The Great Lakes Commission (GLC)
- **Chippewa County Road Commission (CCRC)**
- Lake Superior State University
- Eastern Upper Peninsula Regional Planning & Development Agency
- Michigan Department of Environmental Quality (MDEQ)
- US Environmental Protection Agency (EPA)
- St. Marys River Binational Public Advisory Council
- Chippewa Ottawa Resource Authority



(NOAA) and the Great Lakes Commission used funds from their Regional Partnership Program to construct a bridge to replace a portion of a causeway and two undersized culverts in the Little Rapids area of the St. Marys River.

By opening the causeway, the flow of the St. Marys River over the historic rapids between two islands has been restored.

"The Little Rapids Restoration Project is a great example of local team work and efficiency using federal dollars to restore the Great Lakes ecosystem while improving local infrastructure and recreational opportunities," said **Dick Timmer**, Chairman for the Chippewa County Road Commission.

## Chippewa County Road Commission heads it up

CCRC was captain of the design-build construction for a new bridge to Sugar Island.

"We and our consultant AECOM developed the concept, documents and specifications to utilize a design-build method to deliver the project," said **Rob Laitinen**, superintendent/manager of CCRC.

"The design-build method puts a lot of design details in the hands of the contractor, saves times and allows for innovation. It is far more efficient to



*The new bridge over the St. Marys River.*

invite the contractor to incorporate their own innovative tactics and materials instead of the owner saying here's what we're building and here's how we're going to do it," Laitinen said.

Contracting firms Payne and Dolan, and Zenith Tech, worked together with both their own engineers and consultant engineers from Northwest Design Group, Integrity Structural Design and others on designing and building a bridge over the Little Rapids.

## On budget, ahead of schedule

From construction of a two-lane temporary roadway, to ongoing ecological monitoring, to inclusion of a pedestrian walkway and fishing access,

all organizations including CCRC worked cooperatively to ensure the interests of Sugar Island visitors, residents and the restored natural habitat in St. Marys River would be properly protected.

Construction started in May 2016, and the bridge opened to traffic just five months later. Remaining punch-list items were completed in spring 2017, and the new bridge was officially dedicated this past August.

The final product is a striking five-span structure that is 620 feet long. The bridge has two driving lanes, a pedestrian path and fishing access separate from the roadway.

The project re-established water flow and is expected to improve the habitat for native fish populations and increase opportunities for fishing and bird watching.

"There are really amazing and talented people across every agency involved in this project," Laitinen said. "We completed this project on budget and two weeks ahead of schedule. For a project this size that's pretty rare."

The completion of the Little Rapids Project on the St. Marys River is one of the final steps towards the removal of the "Area of Concern" designation — leading to healthier Great Lakes, in part due to leadership of the CCRC, and a community focused on the goal. ---



*Attendees at the Little Rapids Restoration Project Dedication at Rotary Park, in Sault Ste. Marie (August 24, 2017).*



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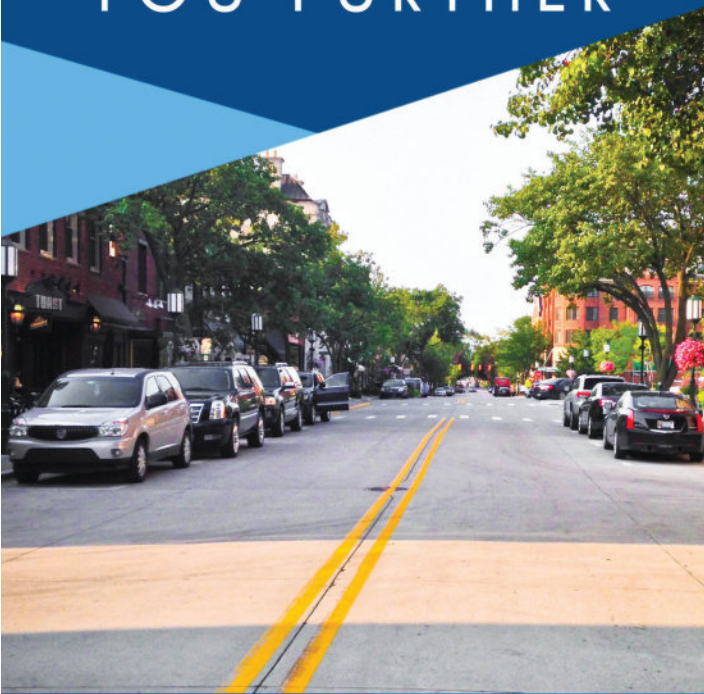
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# Ask **THE CRA ENGINEER**

## Local Federal Exchange on the path to unrestricted trades

As the audience watched, Steve Warren, CRA president and managing director of the **Kent County Road Commission** (KCRC), dropped three shiny quarters into the palm of Mark Christensen, superintendent/manager of the **Montcalm County Road Commission** (MCRC), in exchange for Christensen's crisp dollar bill.

And everybody was happy about it.

That was the metaphor used during an October presentation on Local Federal Exchange, a CRA-developed program that allows county road agencies to sell their federal Surface Transportation Program Rural (STPR) funds, saddled with federal rules and regulations, for more flexible non-federal dollars to another county road agency at a rate that benefits both agencies.

The first exchange was in 2016, when KCRC purchased Montcalm's federal STPR allocation. In 2017, the KCRC-MCRC exchange was repeated, and four other county road agencies joined the Local Federal Aid Exchange Program: **Dickinson County Road Commission**, **Delta County Road Commission**, **Leelanau County Road Commission** and the **Menominee County Road Commission**.

**Breaking news!** In fiscal 2018 (now underway), the program will triple in size, allowing 15 county road agencies to trade federal STPR allocation for less restricted dollars.

*Crossroads* sat down with CRA's engineering specialist **Steve Puuri**, PE, to talk about the expansion, including two new requirements for the exchange program.

**CRA: What's new with the Local Federal Aid Exchange Program?**

**STEVE PUURI (SP):** In May, CRA officially requested that MDOT remove the five-county selling cap and move beyond the pilot status. In early November, we achieved an expansion to 15 "sellers!"

The two new requirements are more detailed tracking of how the non-federal dollars are spent; and that the selling county must perform the project that was listed on its Transportation Improvement Program (TIP) with the nonfederal funds. This provides more transparency in the Rural Transportation Fund

(RTF) process, ensuring the county performs the agreed-upon TIP activity.

MDOT is also willing to expand the program to include cities, townships, villages and transit entities, once they provide their own federal exchange guidelines. These may or may not be patterned on county road agency guidelines.

**CRA: What's the timeline for implementation?**

**SP:** I will be working with MDOT's Planning Division during November to revise guidelines for the Local Federal Exchange Program to include the two new requirements. Once the guidelines are update, up to 15 selling exchanges will be accepted in fiscal year 2018.

**CRA: What advantage does a trade provide for selling road agencies?**

**SP:** On average, considering administration and oversight on federal projects, a selling county can save somewhere around 25 to 30 percent on its road work, and avoid significant delays and the burden of the federal aid documentation process.

The selling road agency can advertise for local bids, getting more flexibility in how the work is done, without necessarily having to outsource planning or design.

Buying counties also win by getting more federal aid for their dollars, allowing them to advance federal aid projects they normally would have broken up into future years.

**CRA: How can a county sell its federal STPR allocation?**

**SP:** To secure one of the 15 selling slots, the selling and buying county road agencies must first pass resolutions of intent. Once I have those resolutions, one of the slots is reserved.

I can assist with identifying buyers, and have all official documents to guide a road agency through the process. Exchanges for the current fiscal year must be finalized by May 1st.

At press time, CRA was aware of seven counties that intend to sell their aid in the current year.



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## LEGISLATOR PROFILE

### REP. SHANE HERNANDEZ

An architect-turned politician, at just 34 years old Rep. Shane Hernandez (R-St. Clair) was elected to represent the 83rd District, covering Sanilac County and parts of St. Clair County, and is chair of the House Appropriations Subcommittee on Transportation.

A strong believer in community-level activism, Rep. Hernandez regularly holds public meetings in his district to hear the concerns of those he represents.

Rep. Hernandez recently sat down with CRA's deputy director Ed Noyola to talk about his experience serving in the Legislature since being elected in 2016, and who his go-to transportation resources are.

#### Where it all started

Representative Shane Hernandez became interested in politics from an early age, growing up with a politically active family.

Wanting to do more in politics than the outreach platforms like social media could offer, Hernandez became a well-known activist and community leader before running for State Representative.

Hernandez is a lifelong resident of the 83rd district, where he lives with his wife, Renee, and his three- and five-year-old daughters.

Every day the House is in session, he drives four hours so he can spend more time with his family.

**CRA:** Rep. Hernandez, were you active in transportation issues prior to being elected to the House of Representatives?

**REP. HERNANDEZ:** My background is in construction. I have some minor experience related to transportation in relation to that, building driveways to MDOT specs and similar projects, but my first real venture into transportation-related politics was with Proposal 1.

**CRA:** Were there any funding or program surprises last year as chair of the Appropriation Subcommittee on Transportation?

**REP. HERNANDEZ:** I came in with a mindset of embracing efficiencies and focusing on directing funding to pavement. I would like to see road funding go to exactly that: The roads.

I was surprised to learn that the department was funded for hundreds of unfilled positions, even during peak construction times;

And I didn't know MDOT owned five planes.

**CRA:** How have issues like the catastrophic flooding in Gogebic County and the Macomb County sinkhole impacted your views on funding and budgeting?

**REP. HERNANDEZ:** Natural disasters are an obvious place to find flexibility in the budget. I believe the House response to the Macomb sinkhole was appropriate. Money was set aside for exactly this kind of event, so that's we believe it should be used for.

**CRA:** Have you had an opportunity to introduce any transportation-related legislation?

**REP. HERNANDEZ:** I introduced House Bill 4954 in this September, covering nonmotorized vehicles. The bill would provide local road agencies with more flexibility in how much of their allocated funding they are required to spend on nonmotorized transportation paths. Counties should be able to spend their funds in the way that makes the most sense for their residents. This bill helps achieve that.

**CRA:** Despite your heavy schedule, have you had an opportunity to visit your road commissions?

**REP. HERNANDEZ:** Engineers and commissioners from both the **St. Clair County Road Commission** and the **Sanilac County**

**Road Commission** have visited my office in downtown Lansing. I've also made sure to regularly reach out to them for guidance and advice on transportation issues.

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**CRA:** Are your road commissions your go-to resource for transportation related information?

**REP. HERNANDEZ:** They are. Kirk Weston [managing director, St. Clair] and Robb Falls [county highway engineer-manager, Sanilac] have been valuable resources.

They can provide a ground level view of some of the challenges facing road agencies that might be overlooked if you aren't working through them daily.

I've also been keen to hear the innovative ways they're using funding and some of the program ideas they have for pushing technology forward and creating efficiencies. One suggestion I liked was providing incentives for using innovative materials and processes. I was also very pleased to learn how the St. Clair County Road Commission was able to cut costs by purchasing old Army trucks and making snowplows out of them. I thought that was a very creative way to solve a problem, and exactly the reason I feel locals should have more flexibility in their road budgets.





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## Key transitions at...

### ...Road Commissions and Departments

**Shawn Beckman** is now project manager at the **Emmet County Road Commission**.

**Lisa Kleeman** has joined the **Emmet County Road Commission** as finance director.

**Pete John Paramski** has been appointed commissioner at the **Luce County Road Commission**.

**Kenneth Kline** has been appointed commissioner at the **Menominee County Road Commission**.

**Pat Reinke** is the new managing director at the **Ogemaw County Road Commission**.

**Louis Csokasy** is the interim engineer-manager at the **Berrien County Road Commission**. The five road commissioners have been replaced by the county commissioners.

ASMCR's board has named **Joyce Whisenant, Muskegon**, to serve the remainder of the one-year term vacated by Larry Brown.

### Mile Marker

**Dawn Martin**, accounting clerk, has retired from the **Emmet County Road Commission** after five years.

**Scott F. Assenmacher**, county highway engineer, has retired from the **Monroe County Road Commission** after 19 years.

**Michael P. Schulz**, engineer-manager, has retired from the **Ogemaw County Road Commission** after 24 years.

### In Memorium

On September 13, 2017, **Daniel F. Provost**, former engineer-manager for the **Gladwin County Road Commission**, passed away. He was with Gladwin for 31 years.

Do you have a staff member you want recognized in *Crossroads*? Call Alexandra Contreras at 517.482.1189, or email [acontreras@micountyyroads.org](mailto:acontreras@micountyyroads.org).



# WEST MICHIGAN: PUBLIC WORKS CAMP

*By Maura Lamoureux, Communications Manager, Kent County Road Commission*



*Students pose during the Public Works Camp (July 17-20).*

Seeking to provide young teens with a hands-on opportunity to learn more about the professions dedicated to improving everyday lives within their own communities, the **Kent, Van Buren and Muskegon County Road Commissions** teamed with the Michigan Department of Transportation and West Michigan-area municipalities to facilitate a four-day Public Works Camp July 17-20, 2017.

Sponsored by Grand Rapids Community College (GRCC), the camp invited seventh through ninth grade students to visit local agencies and explore a myriad of jobs available within the realm of public works.

Every day for four days, students embarked on a new journey, whether it was participating in a simulated water main break or exploring the

construction and maintenance efforts of road agencies.

**George Smith**, superintendent of employee safety for **Kent County Road Commission (KCRC)**, joined Grand Rapids Public Services (GRPS) employees for a morning tour of the GRPS facility, where students ventured through the garage and climbed aboard the equipment used to improve and maintain roads and bridges.

"It's one thing to explain to kids what we do, but when the students actually have the opportunity to sit in our equipment and tour our garages, the learning experience is heightened," said Smith.

To extend outreach to high school graduates, a special committee comprised of agencies affiliated

with the Public Works Camp began investigating avenues that could increase exposure to public works professions.

Currently, the group is designing a Public Works Academy curriculum with GRCC. The Academy would train students with the skills needed for public works professions and help develop a strong workforce for the future.

**Steve Warren**, County Road Association of Michigan president and KCRC's managing director, concurred, adding that the benefits of these types of opportunities are a win-win for agencies and students, alike.

"This type of educational outreach provides a unique opportunity to engage students and show them the cohesive nature that links our separate agencies – road commissions, public services, drain commissions – and how our efforts, collectively, help to keep our community's infrastructure safe and running smoothly," said Warren. ---

## **Highway Conference Breakout Session on Interns!** March 14, 1:30 P.M. and 3:30 P.M.

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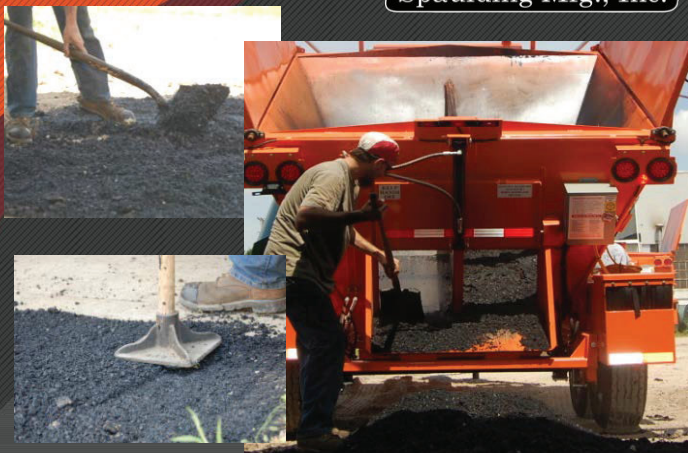
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*Construction of the “clamshell” culvert on 12 Mile Road over the Charlotte River in Chippewa County.*

# CLAMMING UP

## keeps costs low for Chippewa County Road Commission

Thinking outside the box (culvert) helped **Chippewa County Road Commission's** (CCRC) drainage project become a shining example of making the seemingly improbable possible.

In 2017, CCRC installed a 30 feet span by 12 feet rise “clamshell”-style pre-cast box culvert to replace an undersized culvert crossing that was failing on 12 Mile Road over the Charlotte River. The larger structure was needed to meet the Michigan Department of Environmental Quality (MDEQ) bankfull width requirements. The idea was generated during a brainstorming session between CCRC and the Upper Peninsula Concrete Pipe Company. Unlike a traditional box culvert which would come as five pieces

requiring assembly, the clamshell culvert is divided into a top and bottom half, each having three sides. A total of eleven pieces were assembled to make the box.

The clamshell culvert is a variant of the Upper Peninsula Concrete Pipe Company's three-sided culvert with a pre-stressed top slab, trademarked as Low Span®. Low Span® was developed to allow a larger span flat top culvert under the road yet require minimal re-grading, tree removal and other site work that a traditional round culvert would require.

Due to its design, the large span clamshell culvert can be shipped by multiple trucks and assembled with a crane at the construction site. It is precast concrete and hence isn't made on-site.

“Typically, there would be six-foot lay length, full-box sections going in the excavation and then fastened together,” said **Rob Laitinen**, managing director of CCRC. “Wingwall sections would also be added. There is no way you would be able to truck full-box pieces this size or be able to place them with a reasonable sized crane,” Laitinen said. Each piece has a span across the stream of 30 feet and a lay length of 6 feet. The total assembled width across the roadway is 30 feet as well, Laitinen added.

“The wing walls are installed outside of that. Each three-sided piece has a weight of 66,000 pounds and they measure 30 feet by six feet by six. The 30-foot span was a MDEQ requirement,” Laitinen said.





“ To our knowledge, this is the first clamshell culvert using pre-stress reinforcement providing longer span widths. ”

– John Kloet, president and general manager, Upper Peninsula Concrete Pipe Company

The culvert was manufactured in Escanaba, and is a relatively new invention.

“As far as I know, we are one of three producers of a “clamshell” box in North America. The others are in Ontario and Southern California,” said John Kloet, president and general manager of the Upper Peninsula Concrete Pipe Company. “However, those other locales are both “conventional” reinforcement “clamshells”, which would mean shorter span widths than what Michigan needs.”

“To our knowledge, this is the first clamshell culvert using pre-stress

reinforcement providing longer span widths,” Kloet said.

The project cost \$350,000, and the culvert's life expectancy is more than 100 years. Replacing the previous culvert with a bridge would have cost CCRC around \$650,000 to \$750,000.

“We liked the savings, we liked that we could do the project with our own people and these are precast standard elements that can be easily reproduced. It was manufactured in a controlled environment instead of manufactured in the field where weather can become a problem,” Laitinen said.

The site was right for a culvert rather than a bridge. There are very soft soils in the area and on those types of soils to use a bridge foundation would involve deep steel foundation piling and lightweight geofoam backfill, according to Laitinen.

To further complicate matters there is an artesian aquifer in this area and any deep piling would penetrate into that and possibly cause leakage of groundwater alongside the piling. Having a full structural bottom slab embedded well below the streambed is the feature that eliminates both of these very costly elements, he added.

CCRC's culvert project has the approval of the public as well.

“The public likes the aesthetics of the structure and how quickly it went together. The road closure was 30 days. With a bridge it could have easily been 60 or more,” Laitinen said. ---



+ 12 Mile Road over the Charlotte River “after” photo.

+ 12 Mile Road over the Charlotte River “before” photo.



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Again this fall, CRA asked county road agencies across Michigan to tell *Crossroads* about new approaches and new technologies to improve the surfaces of local roads.

With one or more professional engineers on staff or under contract at each of Michigan's 83 county road commissions and departments, there is no shortage of new ideas being applied to the 90,000 miles of roads for which counties are responsible.

Following are some of the new ideas from the 2017 construction season.

## Leelanau CRC changes up the sealcoat; paves record number of miles

Sealcoating is a popular surface improvement to local roads, particularly in the more rural parts of Michigan. Its low cost, high impact make it an affordable option for road commission-township funding.

One Michigan road commission took a new look at its sealcoating program this summer.

**Dan Wagner**, PE, managing director of the **Leelanau County Road Commission** (LCRC), said he and LCRC's engineer **Jim Johnson**, PE, took a road trip earlier this year to look at roads and talk to the engineer-managers at the **Gratiot County Road Commission** and the **Montcalm County Road Commission**. They also visited the product development manager for Michigan Paving and Materials Company.

Then LCRC decided to make several changes in the sealcoating process – most of them more costly but better performing.

"Historically, we had used an anionic high-float chip seal emulsion," Wagner said. "Although it cost more, this year we decided to go to a cationic rapid-setting, polymer-modified emulsion, which when combined with our aggregate change would improve stone retention."

The cationic sealcoat was also expected to cure more quickly, allowing its work crew to make faster progress and reduce the likelihood of vehicles tracking through it – generating fewer complaints to the office about fresh asphalt stuck to people's cars.

"Then we substituted a slag stone for the "chip" instead of a locally produced limestone material that we had historically used, which had wide-ranging gradation and was rather brittle and dirty," Wagner said.

"Although more expensive, we thought the slag and its improved gradation would achieve improved binder adhesion with the cationic emulsion, result in less stone loss, less dust and be more durable," he said. "Then we added a second roller to our operation to ensure the stones were quickly embedded, also reducing stone loss."

LCRC applied a fog seal over all roads after sealcoating them, also a newer technique for them.

Initially reluctant to make this many changes to its sealcoating program at once, LCRC crunched the numbers, gained approval of its board of road commissioners, and tested the approach.

"When we saw how the changes were working out, it satisfied any lingering concerns we had," Wagner said. "We set a new record by sealcoating 50 miles of both primary and secondary roads this year, outpacing our best previous year by nearly 20 percent – with less staff."

"Best of all, we did not have a single complaint to the office this year about dust or material on vehicles!" Wagner said. "While the changes we made are not innovative in the industry, they were new practices for us locally."

Leelanau has had a county-wide millage for the last 30 years, which now comprises about 20 percent of its budget.

"The last election it was approved by 84 percent of the voters, one of the highest rates ever," Wagner said. "We view this as our 'report card' that the citizens of Leelanau County believe we are being good stewards of our transportation infrastructure."



Sealcoating in  
Leelanau County.





**+** G Avenue in Kalamazoo County before undersealing.



**+** G Avenue in Kalamazoo County after undersealing was completed.

## Kalamazoo uses flexible underseal, keeps stiff upper lip

These striking before and after pictures by the **Road Commission of Kalamazoo County** (RCKC) show a four-layer, mixed media project that has turned a bumpy, unsightly road into a smooth-looking dream ride for area residents.

"This section of G Avenue was at the midpoint for road quality, but really deteriorated over this past winter," said **Mark Worden**, RCKC project superintendent.

"Decades ago we used to make roads with a concrete base that was paved over with asphalt. And what we've learned over time is that when those materials are placed next to one another they don't play well together," Worden said.

G Avenue is a primary road that handles about 6,000 cars a day, and is a popular commuter route.

This section of G Avenue was called "pothole heaven," said **Rebekkah Ausbury**, project engineer with the RCKC.

"People would call us all the time and the crews were going out every week to patch that section of road because as soon as you put a patch on, it was coming up," Worden added. "You can't maintain a patch that was patched."

Because digging up the entire road and starting over is so expensive, road agencies across the state are looking for good mid-term solutions for these roads.

Enter: The underseal and Tom Wood.

Tom Wood is something of a star in the North when it comes to pavement technology. A 31-year veteran of the Minnesota Department of Transportation and now a private consultant, Wood has spoken at a few Michigan engineering workshops.

Recalling his presentations on road preservation, RCKC invited him to Kalamazoo for advice on the county's approach to chip seal and these mixed-material roads.

RCKC then decided on the underseal approach for 2.3 miles of G Avenue to take advantage of remaining strength in the concrete, albeit cracked and therefore moving around.

"The underseal project entailed milling off two inches of old asphalt, then chip sealing and paving four inches on top with asphalt," Ausbury said.

Underseal protects the pavement from further water leaking into it and freezing, lends some binding properties to the concrete, and reduces cracking of the upper asphalt layers due to its flexibility.

"The four inches of asphalt on top might be the secret ingredient to improved interaction between the concrete and asphalt," Ausbury said.

In layman's terms, Ausbury said the bottom layer of asphalt (over the underseal) is more flexible, again to move with the imperfect concrete base. The top layer is a new SuperPave® mix that contains a more angular type of aggregate that locks together better and provides the stiff upper surface that resists reflective cracking.

The 2.3-mile project cost was \$758,000 and took less than three weeks, Worden said.

RCKC staff did the chip seal and Rieth Riley Construction Company completed the job. The road preservation treatment is expected to last 15 years with proper preventive maintenance.

Underseal is not common in Michigan. RCKC had tried the underseal on a short segment of Portage Road a few years ago soon after Wood's visit. "We noticed that it has performed well, so we said let's try it on G Avenue," Worden said.

## Road Commission of Kalamazoo County performs preventive maintenance for the City of Kalamazoo

Virtually every county road agency in Michigan is working cooperatively with another governmental agency by collaborating on projects, sharing employees, equipment or storage space.



*Chip seal/fog sealed road work in the City of Kalamazoo.*

Yet it's not often that a county road agency does work for a midsize city – as happened this summer when the RCKC did a 1.3-mile chip seal/fog seal project on Burdick Street in the City of Kalamazoo.

"This project was important to our road commission and the city, to show the benefit of preventive maintenance," said **Joanna I. Johnson**, RCKC managing director, CRA vice president and chair of the Michigan Transportation Asset Management Council (TAMC).

"From the history we can recall, this may have been the first chip seal type of project within the city limits," Johnson said.

"The City of Kalamazoo approached the Road Commission of Kalamazoo County in early 2017, and we got into some serious discussions this past spring," RCKC project superintendent **Mark Worden** said. "They recognized the change in our chip seal process and materials."

"Around Kalamazoo County you cannot help but see the change in our road surface – it looks like asphalt rather than chip seal, because we're using a smaller aggregate. This is not your father's chip seal," Worden said.

Historically, cities are not interested in chip seal – the process of pavement being sprayed with asphalt emulsion then immediately covered with aggregate and rolled, followed by a fog seal treatment – because it is typically bumpier and less friendly to bicycles, skateboards and other activities common in urban areas. However, chip seals preserve a pavement surface for up to a 10-year period. Chip seal remains the most cost-effective method to preserve vital infrastructure.

Continuous improvements make urban chip sealing more appealing through RCKC's quality control improvements, such as using vacuum sweeper trucks to capture loose stone as quickly as two hours after a project. That means less cleaning out of storm sewers after a project, and less asphalt and stone churning up onto the bottoms of passing vehicles.

"Burdick Street had a pavement surface evaluation and rating of five, so it was ideal for preventive maintenance," Worden said. The \$67,000 project across a four-lane road was completed over three days in July, and is expected to increase the road's life expectancy by six to eight years.

A comparable hot mix asphalt paving job would have cost the City of Kalamazoo over four times as much, Worden said.

The City of Kalamazoo was so pleased with the collaboration that RCKC is estimating more projects for the City of Kalamazoo and other cities in 2018.

"The success of this chip seal project puts another tool in the toolbox to maintain roads in the City of Kalamazoo," Johnson said.

"What is important is the collaboration between the RCKC and the City of Kalamazoo, and the city's willingness to work together and look at alternatives to preserve its infrastructure. It speaks to the positive relationship between the two agencies," Johnson concluded. ---



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## EDITOR'S NOTE



Collaboration, innovation and efficiency are the three pillars that drive the messaging of the County Road Association (CRA) of Michigan. It may be trite, but we're stronger together than we are apart. And looking toward the future, this will remain true.

The **2018 Highway Conference** theme is **"The Road Ahead."** On the road to the future, there will be challenges as counties begin to ask the

question: "Why are county road agencies important?" and "Will we remain important in 20 years?"

When confronted with such questions your agency must answer, and it is easier to do so with the help of your peers.

CRA's PR Committee is working on messaging that all of Michigan's county road agencies can use when asked these questions.

CRA knows the expertise, problem-solving and time management capabilities our county road agencies can bring to the table. We must ensure that key stakeholders know as well.

In the current climate of government scrutinizing road spending and road agencies, every road agency must be very transparent and have strong communication with local government about the local transportation infrastructure system.

All road agencies should be wrestling with the futuristic questions — and it helps to bounce ideas off your peers in the road business.

At the road agency and beyond, our message is stronger when we work together. That will continue to be today and in the future.

Christina Strong  
Editor and Communication Manager



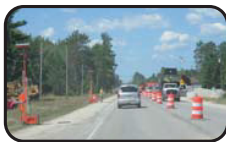
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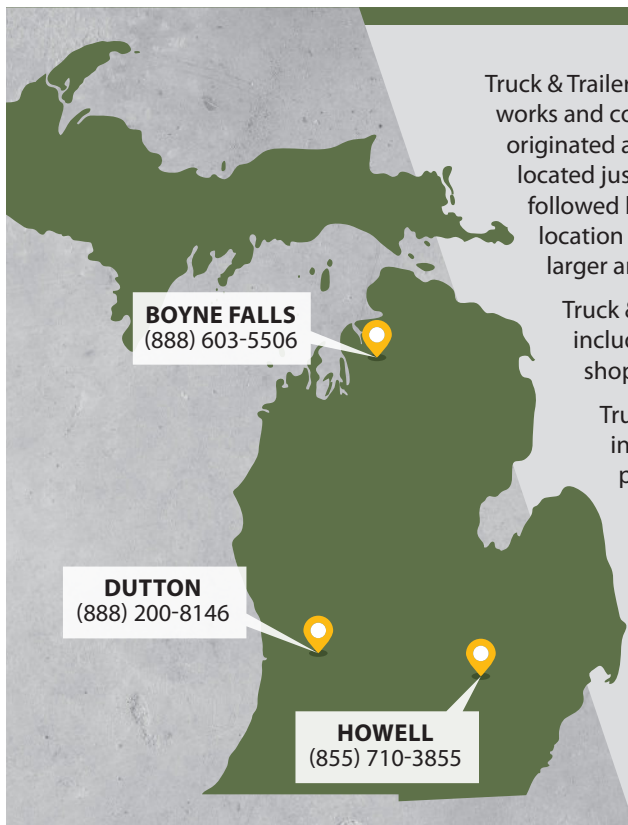
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