A pre-heater roars over the cracks beginning to spider web across the lane from years of traffic; a second pre-heater rumbles over the softening asphalt before tines scarify the now crumbling road. Rejuvenating oil is added, mixed with the old asphalt, and re-compacted. This process, with minor variations depending on the project, is hot in-place recycling (HIPR).

HIPR is “the process of correcting asphalt-pavement surface distress by softening the existing surface with heat, [either scarifying or] mechanically removing the pavement surface, mixing it with an asphalt binder, and replacing the recycled material on the pavement without removing it from the original pavement site.”

What made HIPR the best technology for one Michigan road?

According to Lance Malburg, Dickinson County Road Commission (CRC) Engineer, “HIPR is a valuable, but little used tool in the road preservation toolbox.” Malburg understood that HIPR has a time and place. “You have to look at the road. You don’t want something that’s completely failed. Cracked, yes, but not all patches.” Pine Mountain Road-Westwood Avenue, located in Kingsford, Michigan, and Breitung Township, had a PASER of 3 or 4 with some patches of PASER 2 and a fairly consistent asphalt depth.

Malburg first learned of HIPR in the mid 1990s while working for the City of West Chicago (Illinois). At this time, HIPR was still proving its worth, but the principle behind the process fascinated Malburg. As Malburg’s career took him to other local agencies, he kept looking for ways to use HIPR on a project and to try new HIPR innovations. Then, in February 2014, Malburg learned about a way to fund a project with HIPR through an Accelerated Innovation Deployment (AID) Demonstration grant.

AID Demonstration grants stem from a branch of the Technology and Innovation Deployment Program (TIDP), an FHWA program made possible by MAP-21. This grant covers a percentage of the project up to the full cost, as long as the total is less than $1,000,000 and is open to any project that is eligible for assistance under Title 23 U.S.C. Of course, projects that use Every Day Counts (EDC) initiatives are encouraged as well as other aspects of highway transportation addressed by the TIDP.

Because of the focus on innovation and development, Malburg wanted to be sure that the results of any project done with AID funds would be visible to the public. This made the Pine Mountain Road-Westwood Avenue project a perfect candidate, both because Pine Mountain Road-Westwood Avenue hadn’t completely failed and because Dickinson CRC feared it wouldn’t have the necessary funding to repair the road before it completely failed.

“The application for an AID grant isn’t difficult. Most everything has templates, even the narrative where you describe your project,” Malburg stated. However, local agencies are not able to apply for AID grants directly; requests have to go through a state department of transportation. Local agencies are only able to apply through state DOTs as sub-recipients. This means MDOT has people—like MDOT Engineer
of Operation Field Service Division, Mark Geib, who was able to help Malburg—ready to help local agencies and pass on grant applications to FHWA.

“The FHWA staff was a big help,” Malburg said. After the application was submitted, FHWA called Malburg and asked if Dickinson CRC would try something a little bit different. Regarding the change, Malburg said, “They asked about whether the project needed the 1-inch hot-mix asphalt (HMA) top course we proposed and I explained our research in HIPR shows only slight improvement in the ride. FHWA staff said a 3/4-inch ultrathin warm-mix asphalt (WMA) would work and qualify for additional funding under AID grant requirements.” The WMA overlay gave Pine Mountain Road-Westwood Avenue a smoother finish as well as several other benefits.

WMA is an EDC initiative that can reduce project costs and keep production temperatures lower than more common HMA methods. In fact, many WMA technologies are already used to improve asphalt binder viscosity and density. The only difference between HMA and WMA is the introduction of a foaming agent—water or other chemical—into the HMA process. This agent can help contractors reduce heat, but Michigan WMA specifications do not require any specific reduction in temperature. The contractor for the Pine Mountain Road-Westwood Avenue project reported that WMA saved 0.1 to 0.2 gallons of heating oil per ton, which may not seem like much, but ended up saving 500 gallons of oil.

With a traditional repairs of this extent, lane closures are usually anywhere between 5 to 8 days for every mile of construction. With Dickinson CRC’s HIPR and WMA overlay lane closures were 3.3 days per mile. This meant, instead of nearly 30 days of construction, the Pine Mountain Road-Westwood Avenue project only saw lane closures for 14 days spread over the 4.2 miles of the project.

Traditional repaving methods used by Dickinson CRC also cost

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**Letter from the Editor**

As the poet Robert Penn Warren once said, “History cannot give us a program for the future, but it can give us a fuller understanding of ourselves, and of our common humanity, so that we can better face the future.”

Although I am a professional technical writer with many years of industry experience, I did not write a word of the first sentence that I have used to introduce myself to you.

Behind the scenes here at *The Bridge*, our writing team scribbles out hurried rough drafts. These drafts get revised and refined...and revised and refined some more. Along the way, however, we lose some of our darlings—cool quips that we penned and dearly love that, in the end, really do not fit in a given article.

The sentence quoting Warren's words was one of Cassandra Matchinski's darlings that did not survive in her article for this issue. Over the past few years, Cassandra has been a part of the Michigan LTAP story. On our technical writing team, Cassandra is unparalleled in her understanding of content that is appropriate for and worthy of *The Bridge*. She is also our resident expert on Adobe RoboHelp and is teaching our interns everything she knows about documenting Roadsoft using RoboHelp. Cassandra creates outreach materials like banners, posters, flyers, and graphics that capture the spirit of CTT. And, she has built relationships in the transportation industry—she has been integrated into our team, has met a number of you at Winter Operations Conference in 2015, and has corresponded with several of the people mentioned in *The Bridge* in the past few years.

As a new employee, I find my most valuable associate has been Cassandra. Half of the battle in adjusting to a position in a new workplace is learning how to navigate the organization's resources and culture. Cassandra and I—who both serve as full-time technical writers and as editors for *The Bridge*—have adjacent cubicles. So, it is easy for me to talk with Cassandra and learn about the organizational culture of Michigan LTAP and CTT from her.

But, Cassandra took on this job as a student and just graduated this past December. While she is with us full time until the end of spring semester, she will be leaving us to move to Minnesota. Having her here to transmit her knowledge of Michigan LTAP and CTT history is giving me a fuller understanding of our current common goal: the Michigan LTAP mission and CTT history is giving me a fuller understanding of our current common goal: the Michigan LTAP mission and CTT history. The organizational history that Cassandra is sharing with me is preparing me to continue communicating the Michigan LTAP and CTT message. What Cassandra's darling captured from Warren's writings was right!

Two of the articles in this issue of *The Bridge* deal with experts leaving a workforce but giving their protégés a fuller understanding of the organization's mission and goals. In this issue, we are sharing with you what some local agencies are doing to transition new employees into roles that have been left vacant by invaluable retirees. And, we are spotlighting Ken Skorseth, who is retired but continues to share his tacit knowledge of gravel roads with South Dakota LTAP.

We are also capturing some knowledge about hot in-place recycling of asphalt and bridge asset management resources. Lance Malburg’s HIPR project in Dickinson County came to fruition because of the knowledge he’s gained about the technology over the course of his career. With the help of MDOT resources, he was able to set the project in motion. Transferring knowledge like this advances our common goal of better and safer Michigan roads.

Victoria
more than this HIPR project, even with the need for an overlay. For the Pine Mountain Road-Westwood Avenue project, HIPR with a WMA overlay cost approximately $189,000 per mile versus an estimated $380,000 per mile with a traditional crush, shape, and pave project. The total project cost was $790,000—$760,227.69 for construction and $30,000 for engineering, documentation, and testing. Overall, this added up to a savings of over 40% for the Pine Mountain Road-Westwood Avenue project.

Before Malburg could have a successful project, he needed to gain community support. Support was gained through technology transfer, or how new technology is passed between inventors, scientists, and engineers—like Malburg—to end users—like the people using Pine Mountain Road and Westwood Avenue every day. Not only is technology transfer an integral part of the AID grant process, but technology transfer keeps the public informed of innovations that help the community. He was able to facilitate technology transfer through town hall meetings, articles in local papers, and project showcases. “Surprisingly, I had little trouble getting local approval for the Pine Mountain Road-Westwood Avenue project,” Malburg states. This answer most likely had something to do with the lengths taken to inform the community about the innovations used on this project.

Even though the asphalt has cooled, it doesn’t mean this project is over. One of the most important parts of trying something new is seeing how it lasts. Malburg and the Dickinson CRC will continue monitoring Pine Mountain Road-Westwood Avenue each year, using photos to see how it handles stress, and compare the results with similar roads using traditional treatments.

“I’m proud that our project is on the cutting edge and in the Upper Peninsula of Michigan,” said Malburg. Initiatives like Malburg's show that counties, cities, and local agencies can come together to apply innovative roadway technologies throughout our pleasant peninsulas.

ARRA Basic Asphalt Recycling Manual is an introduction to asphalt recycling and reclaiming. It is available from www.arra.org.