



Hot-in-place recycling (HIR) receives thumbs-up from a Michigan county putting it to use.

Budget Stretching in Ingham County

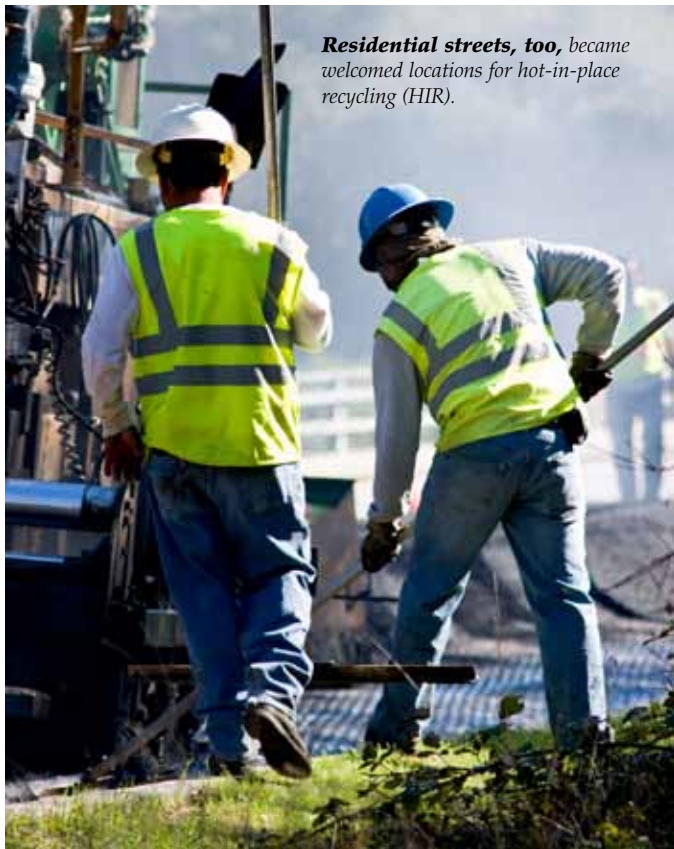
Even though the hot-in-place recycling (HIR) process plus an ultra-thin overlay cost about the same as a mill-and-fill, William Conklin says the HIR process gave the Ingham County (Michigan) Road Commission a better product in the end.

Briefly, the HIR process heats the pavement surface and rejuvenates it in-place.

"We decided that the hot-in-place recycling was the best fit for our situation and generally we have been pleased with the results," says Conklin, managing director for the commission. "We saved the cost of milling and removal of the asphalt, and the HIR doesn't leave a milled surface underneath the overlay. If we had only milled off the top 1 inch and overlaid that, we would have been leaving an old, brittle and cracked pavement underneath. This allowed us to restore some of the substrate properties and not worry about reflective cracking in the overlay."

For Ingham County, the total cost of HIR plus a liquid rejuvenator was \$3.34 per square yard. The unit cost of the ultra-thin overlay was \$85 per ton, applied at 110 pounds per square yard or about 1-inch thick. So, the overlay cost \$4.68 per square yard. That adds up to \$8.02 per square yard for the HIR plus overlay.

"The cost of a conventional 2-inch milling and 2-inch paving would have been about the same cost – at \$8.05 per square yard – assuming conventional asphalt costs \$55 per ton and milling runs \$2 per square yard," says Conklin.



Residential streets, too, became welcomed locations for hot-in-place recycling (HIR).

Last year, the commission turned to Gallagher Asphalt Corp., Thornton, Ill., to perform the HIR process on 7.2 miles of residential streets in Meridian Township. Most of the streets were 20 or more years old, and Conklin says their distress level really exceeded that for which Gallagher normally recommends HIR.

“By all rights some of these streets should have been milled out completely and replaced,” says Conklin. “But to stretch our budget, we decided to do the HIR process. The fact that 1.5 inches of it was recycled and closed up helped the reflective cracking from coming up through the overlay.”

Patrick Faster, national sales manager for Gallagher Asphalt, says he recommends the HIR process for structurally sound asphalt roads that have the typical seven- to 10-year distresses, such as longitudinal and transverse cracking, reflective cracking, rutting, oxidation, and edge raveling. By towing a series of two or three ovens over the old road, Gallagher heats the surface to approximately 300 degrees F. Propane burners heat fire bricks in the oven, which in turn reflect the heat into the pavement.

Once the surface is hot and pliable, Gallagher applies a set of flexible tines, working 1.5 inches deep, to scarify the pavement. Faster says the HIR process works to the same depth as



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Asphalt Recycling Section

the last lift of pavement placed. Next the recycling train introduces a liquid polymer-modified rejuvenating agent at the rate of 0.10 to 0.20 gallons per square yard. Then a set of reversible augers mixes the rejuvenating agent into the asphalt. "The augers pick up the material and feed it back to the paving screed," says Faster.

Compaction comes next, with a double-drum vibratory roller. "After the roller passes, the road can be reopened to traffic," says Faster. "We don't have lane closures; we have lane restrictions."

Depending on the volume of traffic carried by the road, the owning agency typically chooses an overlay treatment to cover the recycled surface. That can range from a chip seal or a slurry seal to an ultra-thin layer of hot mix to a conventional 1.5-inch layer of hot mix asphalt.

"If you do HIR and an overlay, your savings will typically be 30 to 35 percent compared to a 3-inch mill-and-fill process," says Faster. "And the process can be done in about half the time it takes to mill and fill."

"Even at similar cost, HIR and thin overlays should provide a longer life, as the top 1.5 inches of the existing substrate pavement is recycled in place rather than just milled," says Conklin. "Thus reflective cracking and other distresses should be delayed longer from reaching the new overlaid surface." ❖



A combination of hot-in-place recycling (HIR) and thin overlays will last longer, says a Michigan county official.

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