

HOT-IN-PLACE RECYCLING

Presented by:
Patrick A. Faster



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Who is **GALLAGHER** ? **ASPHALT**

- Founded in 1928
- 3rd-Generation, Family-owned Highway Paving Contractor
- Asphalt Plants throughout the Chicagoland area
- Well-respected and active member of NAPA, ARTBA, NCAT
- Hot-in-Place Recycler for over 65 years
- 3rd Largest HIP Recycler in the U.S.



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Who is



Chicago Testing
Laboratory, Inc.

?

- Founded in 1912
- A Full-Service Engineering and Construction Management firm
- Industry leader in QC/QA of asphalt, asphalt materials, liquids, aggregates, concrete and soils
- Provides testing, inspection, training, consulting & research
- Well-respected and active member of NAPA, ARTBA, NCAT
- Provides over 150 years of combined expertise, state-of-the-art facilities and a high degree of professionalism

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The logo for Hot inPlace Recycling features the text 'Hot inPlace' in a bold, sans-serif font, with 'RECYCLING' in a smaller font below it. To the right of the text is a stylized recycling symbol composed of three arrows forming a triangle, with a green leaf-like shape integrated into the design.

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ARRA

The word "ARRA" is written in a bold, green, sans-serif font. It is positioned over a black graphic element that consists of a horizontal line with a dashed center, which curves upwards and then forms a circular arrow pointing to the right. The entire graphic is set against a white rectangular background.

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The logo for "Hot inPlace RECYCLING" features the text "Hot inPlace" in a stylized font, with "RECYCLING" in a smaller font below it. To the right of the text is a recycling symbol (three chasing arrows) and a small green sprout with two leaves.

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ARRA Recycling Disciplines

- Cold Planing / Milling
- Hot in Place Recycling
- Cold in Place Recycling
- Full Depth Reclamation
- Soil Stabilization



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ARRA Sub-categories within the HIR Discipline

- Surface Recycling (ie. Heater Scarification)
- Remixing
- Surface Repaving



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Gallagher Asphalt's Hot-in-Place Recycling Options:

- Re-HEAT
- Surface Recycling (Heater Scarification)

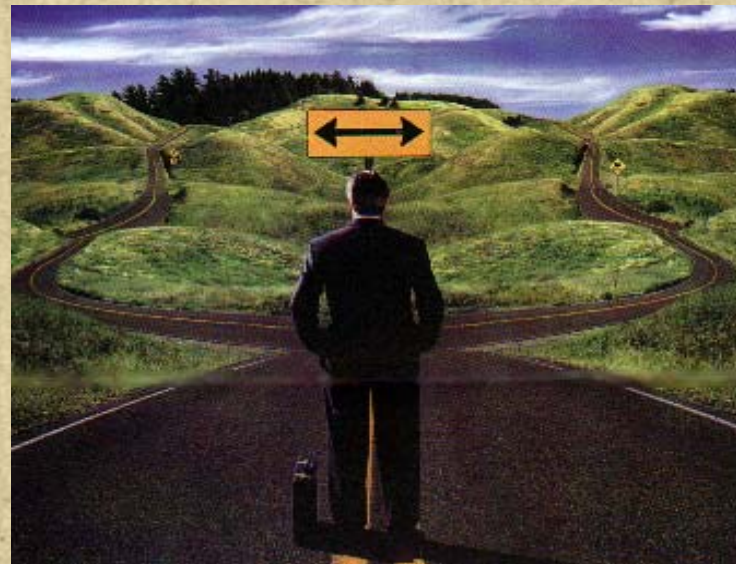


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HIR

Where Does IT Fit In?

Re-Construction



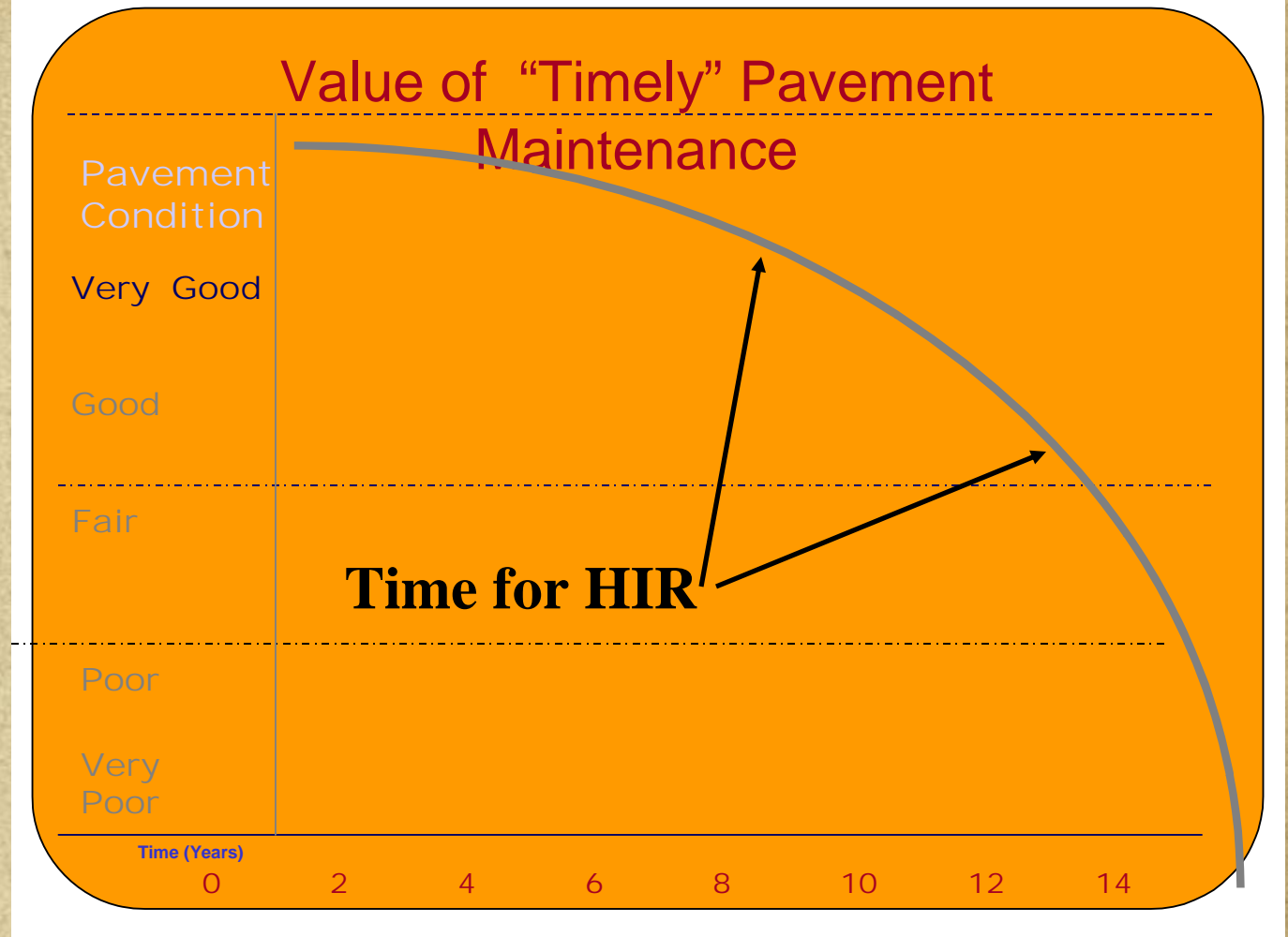
Preventive
Maintenance

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Value of "Timely" Pavement Maintenance



Typical Grind & Overlay

- Grind to a 2" depth
- Haul grindings away
- Tack course
- Haul leveling course to jobsite
- Place level course
- Roll It
- Haul surface course to jobsite
- Place surface course
- Roll It



So, Re-HEAT or the Conventional
Heater Scarification?



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What is the Hot-in-Place Recycling **SURFACE METHOD?**

Hot-In-Place Recycling Surface Method is an on-site, in place, pavement rehabilitation method that consists of **heating, scarifying, mixing, replacing and re-compacting** the existing bituminous pavement.



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What is the Conventional Heater Scarification **SURFACE METHOD**?



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Surface Recycling: Step 1

- 1st Pre-Heater takes pavement temp to 180 – 200 degrees



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Surface Recycling: Step 2

- 2nd Heater takes pavement temp to 280 – 300 degrees



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Surface Recycling: Step 3

- Introduction of rejuvenating agent



Surface Recycling: Step 4

- Spring-loaded tines set hydraulically at prescribed depth will drag over existing structures to avoid damage



Surface Recycling: Step 5

- Full width reversible augers to re-mix



Surface Recycling: Step 6

- Re-profiling with standard paving screed



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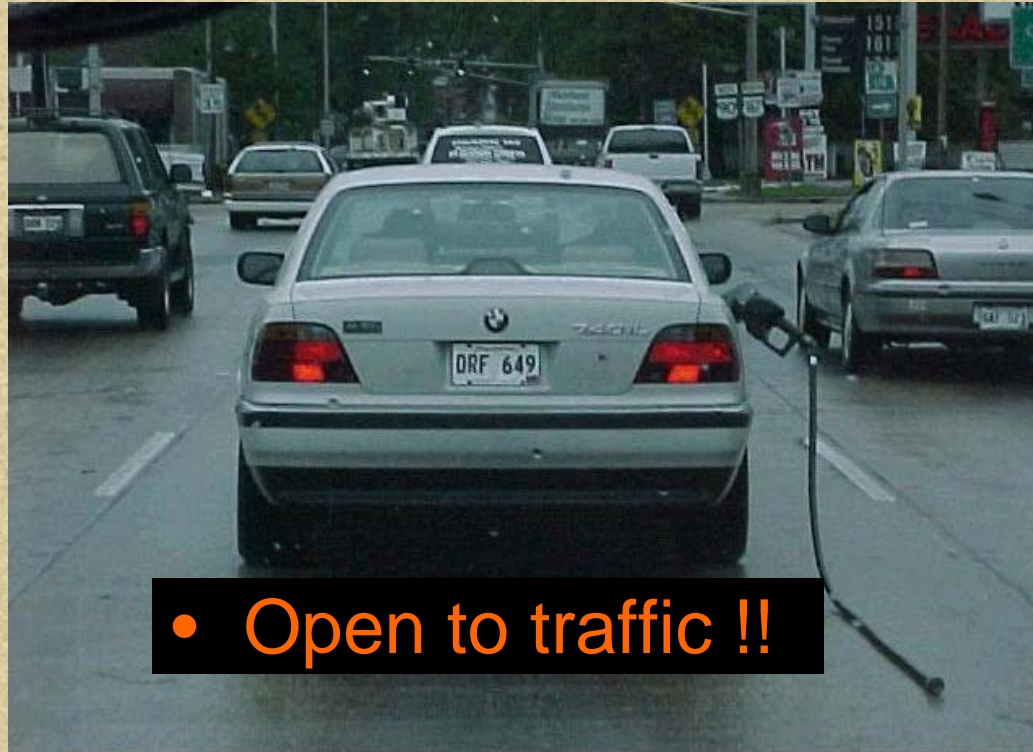
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Surface Recycling: Step 7

- Roller



Open to Traffic. . .



Surface Recycling: Step 8

The now re-plasticized asphalt is ready to receive its final surface course; such as:

- Hotmix
- Microsurface
- Slurry Surface
- Chip Seal



What is the Hot-in-Place Recycling



METHOD?

Re-HEAT is an on-site, in place, pavement rehabilitation method that consists of **heating** the existing pavement, **removing** the top surface course, **adding** an asphalt rejuvenating emulsion, **mixing** the material uniformly in an on-board mixing drum, **re-laying** the recycled material, followed by **compacting**.



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What is  ?



?



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Step 1: Heating the Existing Pavement

- The road surface is softened with radiant convection heat.



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Step 2: Removing Top Surface Course

- A rotary blade system dislodges the material for processing.



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Step 3: Adding Asphalt Emulsion

- Additives are injected to reconstitute the rejuvenated asphalt.





Step 4: On-Board Mixing Plant

- A heated mixing plant uniformly blends the additives with the asphalt.



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Step 5: Relaying Recycled Material

- The rejuvenated asphalt is immediately placed to the correct slope and grade.



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Step 6: Compaction

- While still hot, the newly recycled asphalt pavement is rolled to final compaction.

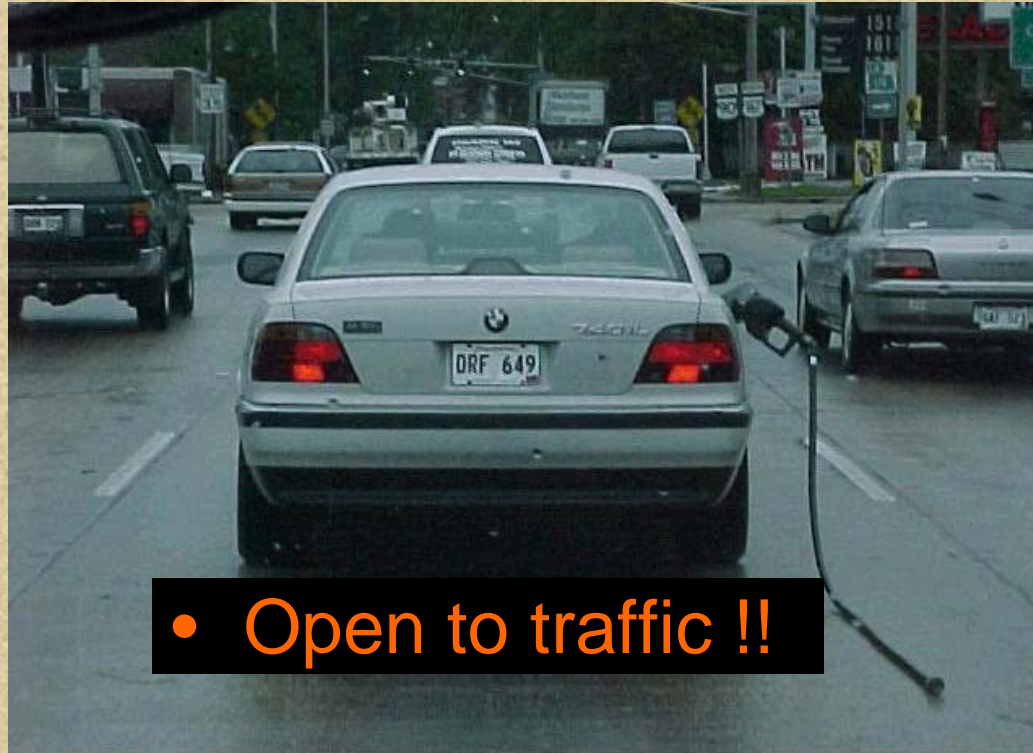


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Open to Traffic. . .



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Rejuvenating Agent Application Rate

Both HIR process will introduce a rejuvenating agent typically at the rate of 1/10th gallon per square yard.



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Pre-requisites for HIR:

- Pavement must be structurally-sound with no base failures
- Pavement must have at least 3" of hotmix asphalt



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What Types of Asphalt Pavements Are Candidates for Hot-in-Place?



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Thermal Cracking



Fatigue Cracking



Patches



Poor Rideability

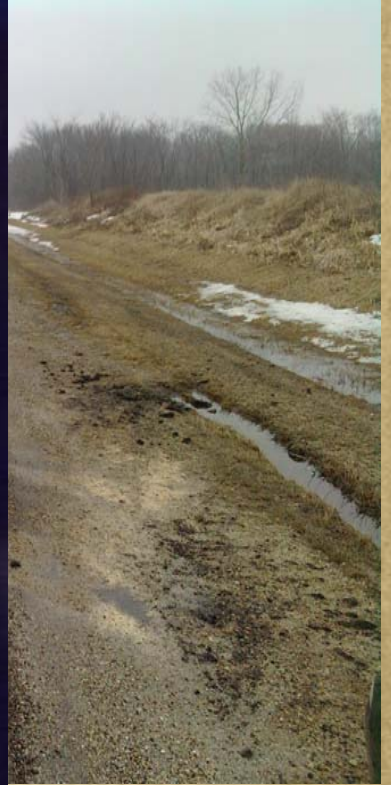


Raveling

WALT Infrastructure Services, LLC



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Waukesha County, Wisconsin

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St. Louis, Missouri

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Hot-in-Place Comparison

	Re-HEAT	Heater Scarification
Need for Surface Treatment /Overlay	No	Yes
Materials Added During Process	Asphalt Rejuvenator	Asphalt Rejuvenator
SYs per Day	4,500	9,000
Pavement Penetration Depth	Up to 2" (Depending on Surface Course Thickness)	Up to 1.5" (Depending on Surface Course Thickness)
In-Place Mixing Capability	On-board drum mixer	Scarifying Tines & Augers
Thermal Bond Effect	Moderate - High	Low - Moderate
Mat Re-Placement	Conventional paving screed	Conventional paving screed
Compaction Equipment	Double Drum Vibratory Roller	Double Drum Vibratory Roller
Budgetary Price per SY	\$7.00 Total	\$3.50 plus Surface Treatment/Overlay



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So What Have We Done?



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- Saves time & reduces “user delays”
- Minimizes the demand on oil & aggregate (non-renewable resources)
- Re-uses/recycles the existing materials – liquid asphalt & aggregates
- Eliminates milling dust & hassles
- Eliminates trucking pollution & traffic
- Reduces overall emissions by 65%
- Reduces carbon footprint by 80%
- Uses propane – a cleaner energy source
- Uses a dual stage incineration system to protect air quality during operation



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Conestoga-Rovers Carbon Footprint Analysis



COMPARATIVE CARBON FOOTPRINT ANALYSIS: HOT-IN-PLACE RECYCLING (HEATER SCARIFICATION/SURFACE RECYCLING AND RE- HEAT) VERSUS TRADITIONAL ASPHALT PAVING

Prepared for:

Gallagher Asphalt

Over 80 Years of Paving Excellence.



DISCLAIMER:
SOME FORMATTING CHANGES MAY HAVE OCCURRED WHEN
THE ORIGINAL DOCUMENT WAS CONVERTED TO PDF; HOWEVER,
THE ORIGINAL CONTENT REMAINS UNCHANGED.

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Prepared by:
Conestoga-Rovers
& Associates

14496 Sheldon Road
Suite 200
Plymouth, Michigan 48170
Office: (734) 453-6123
Fax: (734) 453-5201
web: <http://www.CRAworld.com>

Worldwide Engineering, Environmental, Construction, and IT Services



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- CTL Rejuvenator Study



PROPERTIES OF RECOVERED HOT
IN PLACE REJUVENATED
MATERIAL
PRODUCT COMPARISON

Chicago Testing Laboratory, Inc.
8/9/2011



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	\$/SY	Save	\$/Mile	Save
Traditional 2" mill and fill with 2" surface mix vs HIPR with 1" surface overlay	\$9.30 \$6.65	28%	\$130,944.00 \$93,632.00	\$37,312.00
Traditional 2" mill and fill with 2" surface mix vs HIPR with 1" surface overlay with edge milling 1" depth.	\$9.30 \$6.90	26%	\$130,944.00 \$97,152.00	\$33,792.00
PG& C with 2.5" binder and 1.5" Surface vs PG& C with 2" HIPR and 1.5" surface	\$12.79 \$9.83	23%	\$180,136.00 \$138,336.00	\$41,800.00
Traditional 2" mill and fill with 2" surface mix vs HIPR with Chip Seal Surface	\$9.30 \$4.40	53%	\$130,944.00 \$61,952.00	\$68,992.00
Traditional 2" mill and fill with 2" surface mix vs 1" Mill, HIPR, 1" surface overlay	\$9.30 \$8.15	12%	\$130,944.00 \$114,752.00	\$16,192.00
Traditional 2" mill and fill with 2" surface mix vs 1" Mill, HIPR, 1.5" surface overlay	\$9.30 \$9.73	-5%	\$130,944.00 \$136,928.00	-\$5,984.00
Traditional 2" mill and fill with 2" surface mix vs Re-HEAT	\$9.30 \$7.00	25%	\$130,944.00 \$98,560.00	\$32,384.00

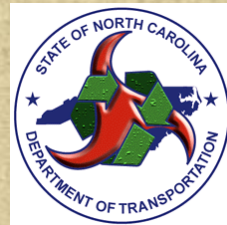


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Used by Many DOTs:



New York State
Department of Transportation



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Thank You! Any Questions?

www.hotinplacerecycling.com



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SEARCHING FOR ONE-STEP ASPHALT RECYCLING
THAT DOESN'T HAVE TO BE OVERLAID?

All roads lead to Gallagher.

GALLAGHER CAN NOW SERVE YOUR NEEDS WITH Re-HEAT ASPHALT RECYCLING—A PROCESS THAT DOES NOT NEED AN OVERLAY.

Re-HEAT Asphalt Recycling:



- 1 Is a sustainable and eco-friendly process that does NOT need an overlay
- 2 Saves your agency time AND money—anywhere from 30% to 50%
- 3 Is a green process that eliminates milling machines, asphalt plants, trucking and tack coat
- 4 Demonstrates your environmental responsibility by reducing emissions by 65% vs. standard paving methods
- 5 Reduces carbon footprint of traditional paving by 80% and virtually eliminates dust

Call us to find out more.

Gallagher Asphalt Corporation is one of the oldest and largest asphalt producers in Illinois. We've been building roads for more than 80 years and recycling them for over 65 years. Give us a call and we'll be happy to share all the ways we can make solutions appear—and your problems disappear!

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18100 S. Indiana Avenue, Thornton, IL 60476 • 800.536.7180 • www.hotinplacerecycling.com

Cobb County, Georgia

- Timing: Summer 2006
- Quantity: Approximately 50,000 SYs



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Washington County, Minnesota

- Timing: Summer 2010
- Quantity: Approximately 60,000 SYs



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Waukesha County, Wisconsin

- Timing: 2006 – 2010
- Quantity: 1 million+ SYs



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City of Manistee, Michigan

- Timing: 2009
- Quantity: 63,000 SYs



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Thank You!



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