“Leading the industry by embracing cutting-edge, environmentally-friendly asphalt technologies”

Pat Faster
Gallagher Asphalt Corporation; President, ARRA
To see video:
http://www.hotinplacerecycling.com/scarify.html
Gallagher Asphalt follows a clear mission and core values.

**Mission Statement**
As a 3rd-generation, family-owned and operated paving contractor, we continue to lead the industry by embracing cutting-edge, environmentally-friendly asphalt technologies as we have for the first 80 years of our existence.

**Core Values**
We value being:
- Respected by our employees, vendors, customers, and community.
- Viewed as professionally-run, conscientious and a pleasure to do business with.
- Committed to be “best in class” in terms of safety, customer service and quality of work.
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Who is Gallagher Asphalt?

- Founded in 1928 by James L. Gallagher, “Mr. Asphalt” or “Mr. Recycle.”
- 3rd generation, family-owned, highway paving contractor.
- One of the largest and oldest HMA producers and paving contractors in IL.
- Long-term member of NAPA, ARTBA, NCAT.

[Image of company logos and a photo of construction site]
What does Gallagher Asphalt do?

In addition to the paving operation, there are three separate divisions:

1. Shepley Trucking
2. Street Print
3. Hot In-Place Recycling
ARRA is an international, non-profit trade association of contractors, equipment manufacturers, suppliers, public officials, and engineers engaged in the recycling and reclaiming of asphalt.

Guiding Principle: Use the positive economies of recycling to rebuild a stronger and safer network of highways, streets and roads across the country and around the world.

Pat Faster, Head of Gallagher’s HIR Division, 2012-2015 President of ARRA
The ARRA publishes the **Basic Asphalt Recycling Manual** (BARM)

It covers:

- The Five Accepted Recycling Methods
- Benefits & Performance
- Mix Design Philosophies
- Equipment Requirements & Methods
- QC/QA inspection and acceptance techniques
- Specification Requirements
ARRA’s Five Recycling Methods:

1. Soil Stabilization (SS)

2. Cold Planing (CP) / Milling

3. Hot In-Place Recycling (HIR) -- 1” - 2” depth

4. Cold In-Place Recycling (CIR) -- 2.5” - 5.5”

5. Full Depth Reclamation (FDR) -- 5.5”+
Where are In-Place Recycling Programs in the USA*?

Numbers shown = Lane miles recycled annually and AADT traffic levels of roads done

*From 2011 National Cooperative Highway Research Program (NCHRP): Recycling and Reclamation of Asphalt Pavements Using In-Place Methods
Where is Gallagher’s HIR offered?
When does HIR fit in on an agency’s paving plan?
Typical Mill and Fill Resurfacing Project:

Gallagher Asphalt has developed alternatives.

1. Mill
2. Truck out (50 loads / lane mile)
3. Truck in and place back course
4. Truck in intermediate course (Another 50 loads / lane mile)
5. Place intermediate course
6. Roll intermediate course
7. Truck in surface course (Another 50 loads / lane mile)
8. Place surface course
9. Roll surface course
About Gallagher’s Hot In-Place Recycling

- **Hot In-Place Recycler** for over 65 years. Since 1980 we have completed over 30 million SY of HIR -- over 4000 lane miles.
- **3rd Largest HIR Recycler** in the U.S. offering HIR in 21 states.
- We are the only Hot In-Place Recycler that owns asphalt plants and builds roads.
- We perform with our people and equipment.
Heater Scarification
Intermediate Course Recycling

Go Green, Save Green
HIR-Heater Scarification
HIR-Heater Scarification

• Adding rejuvenating agent
HIR-Heater Scarification

- Scarifying: Spring-loaded tines set hydraulically at prescribed depth will drag over existing structures to avoid damage.
HIR-Heater Scarification in Steps.

- Full width reversible augers to re-mix in paving screed
HIR-Heater Scarification in Steps.

- Re-profiling with standard, vibratory paving screed
HIR-Heater Scarification

• After re-compacting, the pavement is open to traffic. . .
HIR-Heater Scarification Basics

- **Daily production rate per train** = 10,000 SY
  (1 mile, 24’ wide, is 14.080 SY).

- **Minimum state project quantity** = 150,000 SY
  (11 miles, 24’ wide, is 158,800 SY).

- **Budgetary price** = $4.50 SY

- **HIR is not single-source nor proprietary.**
Add wearing course that fits the budget, the road and the community.

Options include (but not limited to):

• HMA (any thickness)
• Chip Seal
Go Green, Save $ Green!

- Saves construction time & reduces “user delays”
- Minimizes the demand for oil & aggregate (non-renewable resources)
- Re-uses/recycles existing materials – liquid asphalt & aggregates
- Eliminates milling dust & related 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
Conestoga-Rovers Carbon Footprint Analysis

This study compared GHG output of conventional asphalt paving (using 20% RAP) with HIR processes:

- **HIR-Heater Scarification**
  28% less Greenhouse Gas

- **Re-HEAT**
  62% less Greenhouse Gas
About Recycling

Rejuvenator Study
by Chicago Testing Laboratory

Samples where taken from an HIR project to represent existing material after the heating process and material after the rejuvenation process

- Air voids improved from 10.1% to 4.9% (3-5% is acceptable)
- Viscosity & penetration improved over 21%
- Tensile Strength Ratio (TSR) of the material improved nearly 8% and increased the stripping resistance of the pavement from a typically failing test to a passing one
- Hamburg Wheel Analysis of the rejuvenated sample resulted in a 3.56 mm average rut depth (a very rut-resistant pavement)
Dynamic Modulus Testing

by the

National Center for Asphalt Technology (NCAT)

This report generated the information INDOT needed to add HIR options into their new Darwin ME system.
What are good candidates for Hot In-Place Recycling?

- Block Cracked
- Longitudinal Cracked
- Ravelled
- Alligator Cracked
- Rutted
- Thermal Cracked

Photos by INDOT
Prerequisites for HIR:

- Structurally-sound, well-drained pavement.
- Best results are with a 3” layer, or more, of hot-mix asphalt.
Not good candidates for HIR

Too much asphalt pavement is missing.

This pavement appears structurally unsound and has poor drainage.
HIR-Heater Scarification and Edge Grinding in sub-divisions
Rural and Urban Projects
Tippecanoe County, Indiana
St. Louis, Missouri
Cobb County, Georgia
2006; 50,000 SY
Waukesha County, Wisconsin
2006-2010; 1 million SY+
Hot In-Place Recycling (HIR) Project: Lake County, Indiana, 2012