



Dustrol's 2" Hot-In-Place Recycling Process

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What is HIR?

Heating, reworking and rejuvenating the top 2 inches of an existing asphalt pavement in preparation for either a seal coat, micro-surfacing, nova chip, asphalt overlay, chip seal or other surface treatment.

Mobile Asphalt Recycling System.

- The MARS train consists of 8 units and is 900 feet long.

It begins with a Preheating Unit.





- Next is the first milling heater which will continue to heat the roadway and remove the first lift of material and windrow it. Removing the material at $\frac{1}{2}$ " increments.





The material is windrowed to expose the next lift of material for heating.



Special Tunnel heaters are used to allow the windrow to enter the heaters ovens. There the underlying asphalt is heated and the windrow is kept at temperature.



One to two more sets of Preheaters and Milling heaters with Tunnel ovens will be used to remove the existing asphalt in lifts to maintain heat.

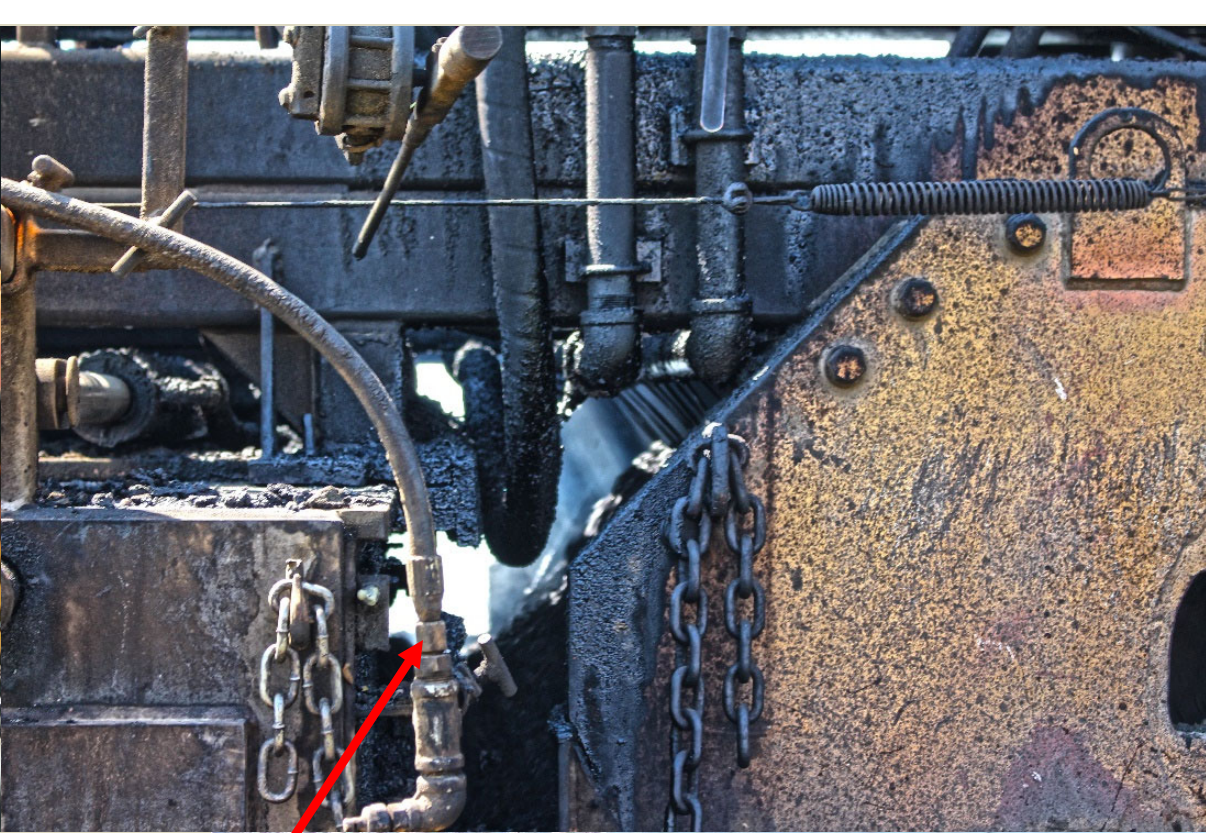




- The last set of heating units is another tunnel heater followed by a milling heater with an emulsion system on board.



- The last milling heater will remove the last lift of asphalt down to the desired depth and inject the emulsion in the milling drum.



- The metering system adds the emulsion based upon the mix design using a Mass Flow Meter.
- Emulsion is added to the heated asphalt.

ARA-2P

Hot in-place recycling uses an innovative emulsion specially developed for the process. The emulsion includes rejuvenator oils for bringing the aged asphalt back to life and polymer modified asphalt for added adhesion, elasticity, temperature resistance and durability.

Moisture, rutting, and crack resistance are also improved.

Material Sampling.

- Obtain material from project site
- Spread out sampling
- Cores are recommended
- Keep mix design material same as project design
- Cut cores to thickness.





- After the emulsion has been added the windrow is picked up by the elevator.





- Dustrol uses a paver equipped with two counter-rotating augers that re-blend the material as it is delivered to the screed. This significantly helps reduce segregation of material.





- The recycled asphalt mix is then placed with the paver with a vibratory screed and then compacted.





More Recycling Benefits

- Aged, distressed surfaces replaced with like new surfaces
 - Deformations leveled
 - Surface cracking removed
 - Crowns re-established
 - Clearances, curb/shoulder heights maintained
 - Reuses existing paid for materials
 - Can, itself, be recycled

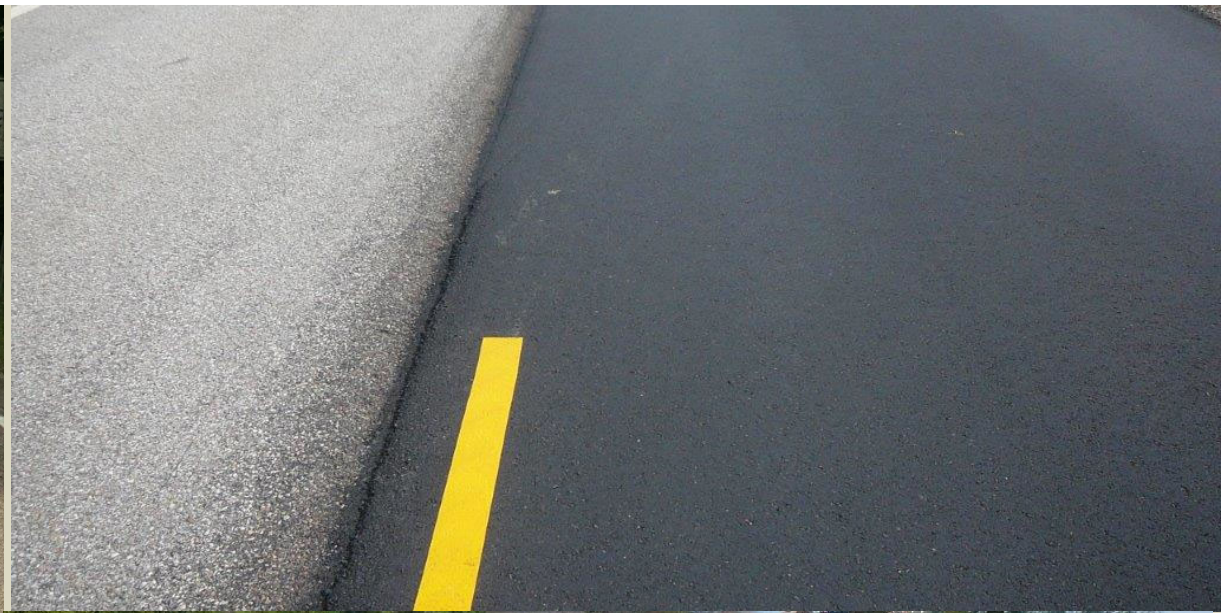


Site Selection

- Can address 11'-15' wide pavement
- Avoid ramps and shoulders/can be done but not cost effective
- Projects in excess of 100,000 SY most economical (production = 2.5 – 4 lane miles/day)
- Excess base failures, full depth PCC patches, utilities may require alternative treatment prior to recycling
- Need 4"-5" depth of HMA beyond the solid base material 4" if over existing concrete

More Benefits

- **GREEN ASPECT:** 100% Recycle of existing surface as opposed to 2" mill & Inlay can only use 30% of RAP on this project so 70% of aggregate needs to be virgin material.
- Only uses approximately 1% new oil verses 3-5% for HMA with RAP.
- Reduces hauling of material over existing roadway.
- Does not increase the elevation of roadway as opposed to overlays and so shoulders don't need addressing.
- No drop offs with this process.



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MODOT I-35





KDOT HWY 160





MODOT SH 54.

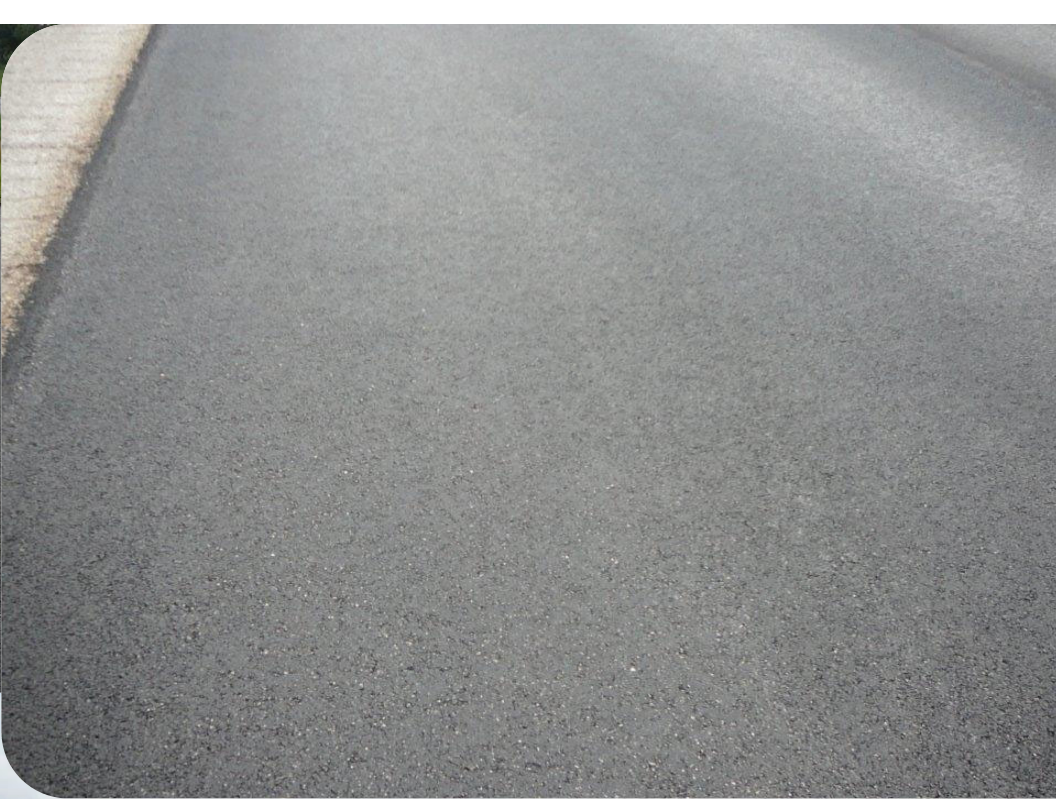




TNDOT SH22







PIN	R4 Prior	County	Rt.	Bundle With	Beg LM	Termini Description	End LM	Length	Lanes	LnMiles	ADT	RR Xing	RR Status	RR Cert - EF	Current Let Date	Mix/Treatment Type(s)
131915.00		Lauderdale	3		0	From Tipton Co. Line to SR-19 overpass	8.85	8.85	4	35.4	13060	No			8/18/2023	Hot Recycle in Place w/ 411TLD
133168.00		Lauderdale	3		20.180	From near SR-88 to the Dyer Co. Line (Halls to near Fowlkes)	25.000	4.82	4	19.28	11840	No			8/18/2023	Hot Recycle in Place w/ 411TLD
132671.00		Crockett	20		8.23	From Birmingham/Lyons Rd. to SR-76 [Alamo to Bells]	17.64	9.41	4	37.64	11957	No			8/18/2023	Hot Recycle in Place w/ 411TLD
133803.00	3	Henry	22	133818.00	0.00	From Carroll Co. Line to Weakley Co. Line	1.81	1.81	4	7.2	8,150	No			2/9/2024	Hot Recycle in Place w/ 411TLD
133818.00	3	Weakley	22	133803.00	0	From Henry Co. Line to SR-217	10.3	10.30	4	41.2	6032	No			2/9/2024	Hot Recycle in Place w/ 411TLD
133789.00	4	Decatur	69		14.01	From South of 3-Way Rd to Brooksie Acc.	19.73	5.72	2	11.44	2386	No			2/9/2024	Hot Recycle in Place w/ 411TLD or Mill & 411D @ 159 lb/sy
131906.00	8	Hardin	69	131907.00	10.57	From Holland Creek Rd to SR-226	17.94	7.37	2	14.74	3027	No			2/9/2024	Hot Recycle in Place w/ 411TLD
131907.00	8	Hardin	69	131906.00	17.94	From SR-226 to near Higgins Dr.	20.618	2.68	2	5.356	5678	No			2/9/2024	Hot Recycle in Place w/ 411TLD
									Total:	172						
133801.00	33	Hardin	128		12.44	From SR-15 to near Clifton Rd.	19.22	6.78	2	13.56	2641	No			5/10/2024	Hot Recycle in Place w/ 411TLD

An aerial photograph showing a long, single-file line of trucks, including several semi-trailers and smaller trucks, moving along a two-lane asphalt road that stretches into the distance. The road is flanked by vast green agricultural fields. In the background, there are scattered trees and a few buildings under a blue sky with light clouds. The word "Questions?" is overlaid in large black font in the upper right quadrant.

Questions?

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ASPHALT
100% RECYCLABLE
“IN-PLACE”

PANE

MOBILE
ASPHALT
RECYCLE
SYSTEM II

