

Hot in Place Recycling Longitudinal Joint Repair: Success in Tennessee

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Special Collaboration



There is relief in sight for agencies who are struggling with how to deal with ever growing maintenance work and shrinking budgets. We can save the asphalt highway or runway from the spreading of asphalt degradation that almost always begins at the construction joints. This problem has



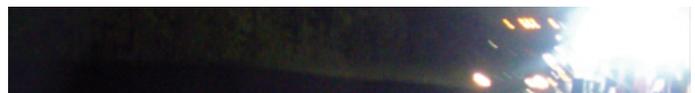
been the cause of untold billions of dollars unnecessarily spent worldwide.

This process will allow agencies to get a handle on maintenance and capital budgets by slowing considerably the frequency of reconstruction and rehabilitation projects.

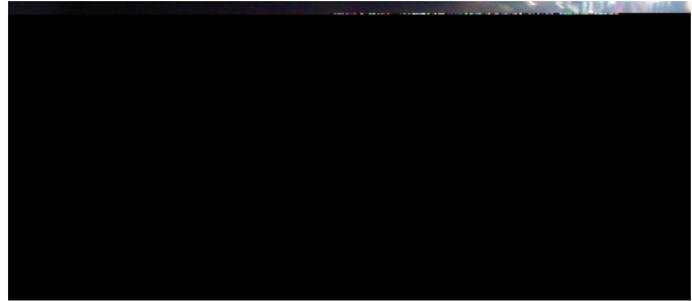
The process developed by Heat Design Equipment of Kitchener, Ontario, through many years of research and considerable investment is now bearing fruit. The process of Hot in Place Joint repair is similar to the full lane method of Hot in Place Recycling. The equipment is scaled down to work for the recycling of the problem joint and outlying areas from 60 cm to 70 cm wide.

The heart of the process are the powerful infrared heating units that allow us to heat, penetrate and soften the asphalt from 38 mm to 50 mm depth, with no burning of the asphalt or light oils contained within.

**Tennessee Experience: Recycle 38 miles of
Longitudinal Joint**



Working for the state through a General Contractor Delta Construction and a subcontractor Pavement Restorations Incorporated we supplied the equipment and training to make this job happen. Starting the last week of April 2015, on a tight schedule the contractor was hoping to recycle one mile of joint per day on Interstate 40 Near Camden Tennessee.



Previous work experience meant this was going to be a considerable challenge, not to mention this was base asphalt which poses heating challenges and work at night with cool temperatures. The bar was raised high indeed.

To meet the challenge we needed to recycle faster be efficient and lay down a quality product. Extra heaters were added to the recycling train allowing for 1.7 m of heat 76 mm wide. Next we improved the processing of the asphalt by adding a bobcat mount tiller to further scarify breakdown and mix the asphalt with the ARA-3P rejuvenating agent. The rejuvenator process was improved by increasing storage capacity and heating to 60°C. Running the rejuvenator through a flow meter gave us exact measurements in real time.

At the back of the skidsteer loader was an attached paver box to screed the recycled mix and add new mix when necessary.

With the first night bugs worked through and minor adjustments, we were able to exceed the contractor's expectations and ours with 1.8 km of centreline joint recycled. Now through 2 weeks of on the job we are averaging the 1.6 km a day the contractor was so desperately hoping to achieve.



With respect to product quality which without it nothing else matters, I am pleased to report that we are core sampling every night and the results are fantastic. Joint and mat density consistently at 97%. No visible joint at edges and compacted asphalt is straight and aesthetically pleasing.

The project is a success and the Tennessee DOT is at this time adding on lane miles to the work. That fact speaks volumes to the success of this process and it's potential to have a significant impact in the construction and maintenance industry worldwide.

Attached Equipment

Tiller Features: Hydraulically powered with speed control, 8" mixing tines with adjustable depth control on outside carbide runner skis. Material is windrowed to centre via adjustable plows, and contained with heavy rubber skirting and metal flashing.

Paver Box: Heated Paver box holds 400lb of mix which can be released when needed via a hydraulic operated door. The strike off plate is controlled by adjusting the levelling jacks on outside runner skis. A further heated compression screed is mounted behind to enable more fines at the top and better compaction. Paver box is attached to the back of a toolcat with the tiller in front of toolcat.

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