

# Bio-Derived Rejuvenator Offers Pavement Preservation Option to Tennessee County

BY THERESE DUNPHY

**F**or most local agencies, pavement management is a numbers game that focuses on the number of miles of roads to be maintained, average life expectancy of those roads, and material and labor costs necessary to pave or preserve them. A change in any one number can have a significant impact on all of the others. The winning equation is one that offers the longest pavement life at the lowest cost.

In Trousdale County, Tenn., the county highway department pays particularly close attention to these numbers for a good reason: it paves all its own roads. “I’ve been here for 40 years,” says Bill Scruggs, superintendent of roads. “We’ve done our own paving all those years. We have our own pavers, rollers, everything.”

With responsibility for the county as well as the city of Hartsville, the highway department has 200 miles of roads to keep in good repair.

## KEEPING UP WITH CHANGE

At one time, Trousdale County had quick access to a local quarry and hot-mix plant for all the necessary construction materials. Over decades, the quarry worked through the high-quality section of its deposit and began to encounter mud seams. As it became less economical to maintain, the quarry was sold.

“Now, we have to go close to an hour’s drive one way to pick up asphalt,” Scruggs says. “Our turnaround time is a whole lot different than it used to be.”

The change had a significant impact on the department’s transportation and labor costs, which became even more apparent as the department began to put down more pavement.

Tennessee’s *IMPROVE Act*, which passed in 2017, added significant dollars to the county’s road budget. The legislation increased gasoline and diesel fuel taxes over three years, with the revenues allocated to cities and counties for infrastructure investment. Trousdale County saw its roads budget grow from \$200,000 to \$500,000 a year.

“Our revenues stayed stagnant for a long time,” Scruggs says. “This has probably saved a bunch of highway departments in Tennessee.” Prior to the legislation, he explains, the county was simply performing road maintenance. Since then, it has been able to make some improvements, including paving many of its gravel roads. Today, only 1 percent of its roads are still gravel.

## PROTECTING ITS ASSETS

Trousdale County currently budgets about 75 percent of its funds toward overlays and 25 percent toward new roads. For roads that receive state aid, the department aims for 15 years of service life. Those maintained with county dollars must last longer, typically 20 to 25 years.



*Contractor Pavement Restorations, Inc. places bio-based Delta Mist at an application rate of 0.10 gal./yd<sup>2</sup>*

As roads were recently paved, Scruggs became concerned that they may not last as long as needed. “It used to be that you could pave a new road and that year or the next year, it would still look pretty new,” he explains. “Now, you can pave a road in the spring and by the fall, it’s gray and looks like it’s 10 years old. Once it starts to oxidize, it doesn’t take long for the sun and salt to affect it.”

During a conversation with a friend at Pavement Restorations, Inc. (PRI), a Milan, Tennessee-based pavement restoration company, Scruggs mentioned he was looking for a treatment that would extend pavement life. The timing was perfect as PRI was searching for a road to treat with *Delta Mist*, a plant-based asphalt rejuvenator manufactured by Lowell, Mass.-based Collaborative Aggregates LLC.

It wanted to evaluate the rejuvenator’s performance for Tennessee Department of Transportation approval as an early-stage preservation technique. After some discussion, they settled on Sulfur College Road, which was paved within the last couple of years.

One lane of the road was treated with an application rate of 0.10 gal./yd<sup>2</sup>, with about 8,500 yd<sup>2</sup> being covered. The application was on a single lane so a clear comparison could be seen between the treated and untreated pavement. TDOT materials test personnel were on site during the application to observe.



Plant-derived rejuvenator is white when sprayed, but turns clear as it dries. In this application, dry time was a little over an hour



Dry application is transparent but leaves oxidized pavement a little darker

“We had a light breeze, and the temperatures were 70 to 75 deg F,” says T.J. Dixon, PRI’s construction operations manager. “I think we almost had a lab control situation. That really helps with a lot of things such as drying time and adhesion.”

In addition to the test lane, Scruggs asked PRI to treat a three-foot strip on the center joint of approximately 6.5 miles of roads. Many of the department’s pavement challenges stem from those center joints, particularly when both lanes are not paved on the same day. The rejuvenator is sprayed onto roads, penetrating

the surface and softening the asphalt binder to improve cohesion while minimizing the development of surface cracks.

“Usually, for a year or so, the roadway won’t give us any trouble. After that, it will start cracking or unraveling on the joint,” Scruggs says. “If I can get the center joint under control, I think the asphalt life would be extended to 15 to 20 years.”

#### EVALUATING RESULTS


As the green rejuvenator was sprayed, both Scruggs and Dixon noted a change in color for the lane, which looks damp. Another clear differentiator was the lack of strong odor. Typically, Dixon says, the smell of other products has been a source of complaints, particularly when working in residential areas.

The rejuvenator began to dry within 45 minutes and was ready for traffic after a little over an hour. Dixon says the dry time makes it a good option for subdivisions where homeowners may need quick access to their driveways, with no long-lasting concerns of tracking. “We were able to have traffic back on it within a couple of hours,” Dixon says. “That’s a savings of time and money, so that’s a plus.”

Since the application, Scruggs says they’ve evaluated the lane for skid resistance and found that the rejuvenator had no negative impact on the road. “The test strip looks really good so far,” he says.

Both PRI and TDOT will be watching the application for about six months. If everything goes according to plan, PRI will return to Trousdale County in the spring to treat the other lane.

For his part, Scruggs is eyeing the addition of a preservation component to his annual roads budget. As he balances lane miles, road condition and costs, a new preservation option offers significant value for the county.

“I told them if they could come up with something that they could show me would help, I’d be glad to use some of the asphalt money to do preservation,” he says. “You can get a whole lot more mileage doing preservation than you can doing paving.” 

*Edited by Pavement Preservation Journal from material contributed by Collaborative Aggregates LLC. Therese Dunphy is a long-time editor and writer in the construction trade press. Images by Collaborative Aggregates*

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