

Application on high-speed pavement with significant life extension, and millions saved in taxpayer dollars.

Saved taxpayers millions of dollars

Traffic interruptions kept to a minimum

Surface life significantly extended

BACKSTORY:

Georgia's interstate system has some of the highest quality pavements money can buy: open graded friction courses (OGFCs). These mixes make excellent wearing surfaces due to their high friction properties and surface permeability. OGFCs are much safer to drive on during heavy rainfall than dense graded surfaces because the mixture is designed to significantly reduce vehicle spray. The tradeoff is this same property makes OGFCs susceptible to raveling, particularly in areas that experience frequent snow, ice and areas of severe sunlight. They are also expensive to maintain. In the case of Interstate 475, just like many other roads across the country, there simply wasn't enough money in the state's budget to repave the aging roadway. As it reached 12 years of service life, I-475 experienced preliminary raveling, and in some places, total section loss. GDOT needed a way to preserve approximately 90 lane-miles of the six lane road until they could afford a more long-term solution. Funding was not the only issue GDOT faced. Safety was also a major obstacle to the substantive repair of this pavement. I-475 is a busy interstate route located south of Atlanta. Dense, high-speed traffic makes repair work a dangerous job and would require any preservation product to support a quick return to traffic. GDOT's Transportation Section Manager and District Maintenance Manager Clayton Moore, said, "Upon discussing with the State Maintenance Office and weighing all available pavement preservation techniques at our disposal, a rejuvenating fog seal was chosen due to ease of application and its low cost versus a micro mill and inlay project."

PROBLEM:

Raveling, and in some places total section loss, plagued 90 lane-miles of a 12-year-old Open Graded Friction Course (OGFC) surface along Interstate 475 (I-475) in Georgia.

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— Clayton Moore, GDOT's™ Transportation Section Manager and District Maintenance Manager

SOLUTION:

Ergon Asphalt & Emulsions, Inc., a Jackson, Miss., based company that has served the asphalt industry for more than thirty years, recommended eFog rejuvenating fog seal as the most effective pavement preservation solution for this situation. Rejuvenating fog seal corrects more severe distresses than a conventional fog seal and can extend the service life of OGFCs by three years or more. Because of its polymer-modified asphalt base, rejuvenating fog seal provides a denser film thickness compared to conventional fog seals, which increases durability and resistance to tracking. Its rejuvenating qualities restore essential elements in the existing asphalt that are lost due to oxidation from UV exposure and during the mix manufacturing, storage and application processes. It is also capable of carrying traffic as soon as 30 minutes after application. These characteristics made rejuvenating fog seal an ideal candidate for I-475.

Under Moore's supervision, GDOT's District 3 maintenance crews initially applied the rejuvenating fog seal at a rate of 0.14 gallons per square yard. Bill Evans, Ergon Asphalt & Emulsions' eastern region technical marketing manager, noticed that the pavement was quickly absorbing the emulsion and recommended increasing the rate to 0.20 gallons per square yard. This proved to be the ideal application rate, as it completely coated the exposed aggregate. Crews applied between 10,000 - 11,000 gallons of rejuvenating fog seal per day. The project lasted approximately five weeks with warm temperatures and only a few light rain showers throughout. To keep traffic interruptions to a minimum, GDOT strategically closed down small portions of the roadway over the duration of the project. District 3 maintenance staff skillfully applied the rejuvenating fog seal to these closed sections, restriped the pavement and quickly moved on to the next portion of the roadway.

It's not typical for fog seals to be used on a high-speed pavement, as there is a temporary reduction in friction associated with the application. GDOT was aware of this possibility, but determined that the risks associated with a temporary reduction in friction could be minimized with the proper safety precautions. In this instance, they elected to close lanes to traffic the entire evening after an application. Friction numbers on OGFCs are high to begin with, so the temporary reduction had no impact during the project or in subsequent months. No application issues or accidents occurred, and motorists did not encounter any unexpected delays. "A review of the project after two months revealed less stone on the shoulders," said Moore. "Less stone raveling off onto the shoulders is a direct indication that the rejuvenating fog seal is holding the stone in place so the pavement surface life is significantly extended. GDOT saved the taxpayers of Georgia millions of dollars while responsibly maintaining the safety of the traveling public."

PHOTOS:

