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Asphalt & Emulsions

SUCCESS STORY

Data-Driven Cape Seal Application Brings Pulaski County's Roads to a Higher Standard

CHALLENGE

Extend the service life of county roads by at least eight years through preventive maintenance.

SOLUTION

Cape seal combination treatment consisting of eScrub rejuvenating scrub seal to treat medium- to high-density mass cracking followed by eFlex premium micro surfacing for enhanced durability.



LOCATION

Pulaski County,
Arkansas



DISTRESS

Medium- to
high-density
mass cracking



TRAFFIC

Local county
roads



AGENCY

Pulaski County's
Public Works
Road and Bridge
Department



CONTRACTOR

Intermountain
Slurry Seal



SUPPLIERS

Ergon Asphalt &
Emulsions (eScrub
and eFlex)

Background

More preventive versus reactive road maintenance has been the mindset of the Pulaski County, Arkansas, Road and Bridge Department (RBD) for years. Understanding how vital their roads are to livelihoods and economic stability, the County embarked on an aggressive \$15 million road improvement project in 2022 to further improve their overall network and service to constituents.

Solution

A 2021 data-driven assessment of the County's overall road network set the 2022 Road Improvement Project in motion. The County sorted the data collected through their FirstStep Pavement Management System (PMS) to determine prevailing distresses and to give every road a pavement condition index (PCI) rating. The roads that were at or below the County's PCI threshold of 75 totaled 115.7 centerline miles. Rather than a traditional approach of a mill and overlay, Pulaski County utilized a cape seal treatment featuring a rejuvenating scrub seal and high-polymer micro surfacing. Before Pulaski County, a cape seal had not been performed in the state.

What is Cape Seal?

A cape seal is a combination of treatments used to provide long-term protection of underlying road layers and a tougher, more durable wearing surface. Cape seal combinations include chip seal and slurry surfacing systems, and, for roads exhibiting more severe mass cracking, rejuvenating scrub seal and high-polymer micro surfacing. A cape seal can extend a road's life span up to 10 years and reduce maintenance costs by 25 percent or more compared to asphalt concrete hot mix, making it a cost-effective investment to proactively manage pavement.

2022 Road Improvement Project Details

The road improvement project, which was funded by saving unused road and bridge funds, focused on the preservation of the County's hot mix asphalt (HMA) roads and began with equipment calibration on August 1, 2022. Ergon Asphalt & Emulsions (EAE) supplied both eScrub rejuvenating scrub seal and eFlex premium micro surfacing products that were used for the project. eScrub repairs mass cracking and revitalizes pavement by returning maltenes to the original asphalt binder. eFlex inhibits oxidation and provides an extremely durable wearing surface.

Project-level designs for both eFlex and eScrub applications were performed. As part of pre-treatment preparation, pavement edge issues were addressed, and any structural issues present were repaired with full-depth patches. The County's in-house crew and Intermountain Slurry Seal, the contractor on the project, cleaned cracks and swept road surfaces free of trash and other debris. Leading up to the cape seal application, portable road barriers and road closure signs were placed in and around work areas to ensure public safety.

eScrub was applied at the prescribed application shot rate range of 0.28 to 0.30 gallons per square yard. Class 4 mineral aggregate was spread uniformly over treated pavement at an average rate

"Investing in our roads and making data-driven decisions has been a main focus, and it's paying off."

BARRY HYDE, PULASKI COUNTY JUDGE

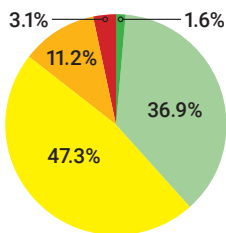
of 20 pounds per square yard. The County performed another round of sweeping to remove excess aggregate before applying eFlex at a shot rate of 25 pounds per square yard.

Altogether, the County resurfaced 121 miles of road in just a year, an achievement the RBD credits to the innovative cape seal treatment applied.

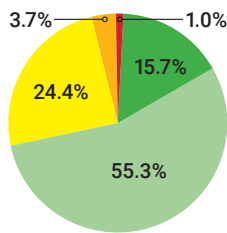
Results

The 2022 Road Improvement Project resulted in significant impacts for the County, their constituents and the state. Pulaski County loses approximately 1,300 lane-mile-years of service life annually, one lane-mile-year of life for every lane mile in its network. The same ratio of annual loss of pavement service life is true for counties across the country without a treatment plan in place to reverse the trend of a deteriorating road network. The 2022 project, in conjunction with the County's existing in-house chip seal program and hot mix overlay program for 2023, is expected to add a total of 3,740 lane miles of service, nearly tripling the amount of annual service life extension needed to maintain their paved roads. Since the project, the County's overall network PCI rating has increased nearly 10 points, from 75.3 to 83.7 — one of the highest county ratings in the state today. "Investing in our roads and making data-driven decisions has been a main focus, and it's paying off," said Pulaski County Judge Barry Hyde.

MAY 2022 | NETWORK PCI: 75.3



MAY 2023 | NETWORK PCI: 83.7



● Excellent ● Good ● Fair ● Critical ● Lost

Cost Savings

Pulaski County manages approximately 800 lane miles of rural chip seal roads and 500 lane miles of HMA roads. The County's cape seal bid was approximately \$80,000 — less than half the cost of a hot mix overlay which averaged between \$185,000 and \$200,000 per mile at the time.

A New Standard for the State

Prior to the 2022 Road Improvement Project, Pulaski County worked with the Arkansas Department of Transportation's (ARDOT's) State-Aid Division to qualify for funds that the state allocates to counties to assist in improving their roads. Due to the County's pioneering work with ARDOT, a cape seal is now an acceptable treatment for state funding that other counties can utilize to improve their roads.

Future Goals

The County plans to apply cape seal combination treatments on an annual basis to help maintain and improve their roads. In addition, the County plans to focus attention on fractionating the reclaimed asphalt pavement it receives from the state and hopes to reach a point where a significant portion of chip and scrub seal aggregate will be recycled material from ARDOT.

A Final Note On Pavement Preservation Excellence

Pulaski County focused on moving from improving distressed pavements to preserving good pavements and was awarded for their achievements in the process. Nominated by EAE for outstanding efforts in pavement preservation, Pulaski County was the recipient of the 2023 James B. Sorenson Award for Excellence in Pavement Preservation. The prestigious award is presented by FP2 Inc. to recognize superior pavement preservation practice of a state agency, county, city or township.

Contact your local Ergon representative for more information on how your roads can benefit from a cape seal treatment.

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