

The Alabama county's comprehensive pavement preservation program dramatically improves road quality throughout the network. Learn what 17 years of improvements can do for a small network, with a small budget.

Maximizing a small annual budget of \$5,000 per mile to deliver outstanding results

58% reduction in roads with PCS of 79 or below

89% increase in roads scoring 80 or higher over 11 years

BACKSTORY:

Located just north of the state capital of Montgomery, Elmore County contains a network of 1000 miles with an annual road maintenance budget of approximately \$5,000 per mile. For this small county, developing systems that do more with less is necessary to keep the road network economically viable.

PROBLEM:

When Richie Beyer, PE, was hired in 2003, Elmore County's roads were in poor condition. An assessment in 2004 showed only 45% of miles scoring a PCS of 80 or higher with 55% of miles at 79 or lower. Using traditional applications with a worst-first system, the county had been spending millions of tax dollars while falling further behind in road maintenance every year.

SOLUTION:

Under Mr. Beyer's direction, the country instituted a proactive system, utilizing a comprehensive pavement preservation toolbox that today includes FDR, crack seal, fog seal, slurry seal, micro surfacing, and cape seal. By 2016, 79% of Elmore County road miles scored a PCS rating of 80 or higher with 55% scoring a PCS of 90 or above.

"We began the turnaround by using Full Depth Reclamation (FDR) on the worst sections of roads that were otherwise in good condition, working on small areas that were only 200 to 1500 feet," explained Mr. Beyer. "With FDR's reduced unit costs, we were able to complete 15-20 miles, three to four times more than would have been completed using traditional methods. That success opened up other opportunities for surface treatments to keep roads in top condition for years to come."

"Every mile in the county is inspected every two years. That inventory is included in our Pavement Management System (PMS) database and tied to our GIS system," continued Mr. Beyer. "We track project costs, maintenance schedules and public complaints."

With a thorough knowledge of road conditions, the engineers can recommend the right surface treatment at the right time. Elmore County crews do much of the maintenance prep work, helping to stretch budgets and making contracts go further.

Using a variety of surface treatments, the county spends an average of \$2300 per mile to keep 79% of the roads in top condition. That allows them to spend \$11,500 per mile using FDR and other applications on the 21% of roads that are in worse condition. By not allowing the roads in good condition to deteriorate, the county saves money and each year adds more roads to the "top condition" category.

Adopting a proactive approach required the education of country commissioners, citizens and other stakeholders, who were more accustomed to the reactive, worst-first strategy. Although many didn't want to risk trying a new system, the county's pavement preservation program now serves as an example throughout the region.

PHOTOS:

Elmore County's Toolbox

Treatments Used in Elmore County, Alabama		
Treatments	Year Implemented	Miles Treated
Thin LIR Overlay	2004	50+
FDR	2005	500+
Chip Seal	2007	500+
Crack Seal	2008	20
Slurry Seal	2009	15
Fog Seal	2009/2010	5
Micro Surfacing	2011	173
Cape Seal (chip/micro, scrub/micro)	2012	6 completed. The county also places surface treatments like micro or slurry over most FDR and chip seal where patching fails.
Regenerator	2014/2015	3

Elmore County's Treatment Toolbox

Network Condition Today

FY 2004 Paved Road Inventory			FY 2021 Paved Road Inventory		
Grades	Mileage	Percent of Paved Roads	Grades	Mileage	Percent of Paved Roads
70 and below	143.8	19%	70 and below	96.8	12%
71 to 75	123.8	16%	71 to 75	35.0	4%
76 to 79	146.9	20%	76 to 79	69.6	9%
80 to 89	203.3	27%	80 to 89	267.9	33%
90 and above	133.5	18%	90 and above	349.8	43%
Total Mileage	751.3		Total Mileage	819.1	
Total Mileage and Percentage of Roads Grading Below 79	414.5	55%	Total Mileage and Percentage of Roads Grading Below 79	201.44	25%
Total Mileage and Percentage of Roads Grading 80 or Above	336.8	45%	Total Mileage and Percentage of Roads Grading 80 or Above	617.69	75%

FY 2021 Graded 1,069 Road Segments			
Reduction in Roads Grading Below 79 from FY 2004 to FY 2021	Mileage	Percentage	Percentage
	213.06	51%	

Comparison of Paved Road Inventory from FY 2004 to FY 2021.

Network Condition Change 2004 to 2021