

PAVING *the* WAY

A PUBLICATION OF THE PLANTMIX ASPHALT INDUSTRY OF KENTUCKY AND THE KENTUCKY ASPHALT PAVEMENT ALLIANCE

Quality Transportation Drives Economic Success

By Brian K. Wood, Executive Director of PAIKY

A new study indicates that Kentucky's roads could create economic potholes for the state's overall productivity.

The study, published by the National Chamber Foundation® (NCF), a division of the U.S. Chamber of Commerce, says that the overall transportation system in the United States may not have sufficient funding to maintain optimum maintenance levels; thus, decreasing overall productivity.

Currently, funds from all governmental levels contribute to federal highway maintenance and public transit financial needs. According to the study by the NCF, these funds are not sufficient to maintain the current quality of the road systems. Improving the roadway conditions with the current funding methods would be impossible.

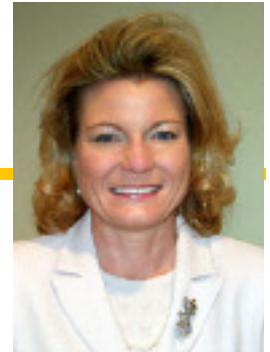
Although the study addresses federal maintenance and funding levels, those who work or drive on Kentucky roadways know that the Commonwealth is no exception to this issue.

"Maintaining" roadways, as defined in the study, means that all road surfaces, including bridges, and travel levels would need to remain the same as they are today. In order to maintain optimum productivity levels in Kentucky, the state and local governments would need to provide the additional funds that are not met at the federal level.

When the legislature was faced with this challenge during the recent session and budget negotiations, they delivered. Kentucky's endeavor to maintain roads – and prosperity – will be supported through the budget. The NCF proposes both long-term and short-term strategies to generate the needed revenue. Some short-term suggestions are

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PAIKY Profiles New generation of Industry leaders



Marcie Mathews

Two leaders of the highway industry recently accepted noteworthy positions. They may have divergent backgrounds, but they share a few commonalities such as education, expertise and a passion for their jobs and the people they serve. Those things and a set of X chromosomes.

Marcie Mathews has been working for the Kentucky Transportation Cabinet for the past 20 years. In February, Governor Ernie Fletcher appointed Mathews the new state highway engineer for the Kentucky Transportation Cabinet. Between her significant experience and her leadership and problem solving abilities, Mathews seems to be the ideal person for the job and she is thrilled with the opportunity.

"It's the goal of a lifetime for me," Mathews said. "It gives me an opportunity to use the knowledge I have gained through hard work and dedication during college and my career to be able to ensure we improve our highway network and provide the greatest possible efficiency and quality for Kentucky taxpayers."

In her position as state highway engineer, Mathews will oversee and approve the engineering functions of the Department of Highways and perform as advisor to the Commissioner of Highways, which includes meeting with organizations such as the Plantmix Asphalt Industry of Kentucky (PAIKY) to expand partnerships and work together efficiently in the project delivery process.

Mathews recognizes that the position also offers her a chance to get involved with all aspects of the transportation industry.

"I think understanding the bigger picture helps me more effectively address issues that specific industry groups such as PAIKY may have."

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Quality Transportation *(continued)*

indexing the motor fuel taxes to keep pace with inflation and creating more revenue and investment options by increasing the use of tolls.

Proposed long-term solutions include creating various travel fees that would classify vehicles by weight, fuel type and consumption, environmental impact, road systems, and geography to try to offset the cost and wear on each roadway user.

Certainly, the roadway systems are important to Kentucky and the nation. The availability of an adequate highway and transportation system, and the strategic changes needed to maintain it could drive economic success in Kentucky.



Tons of Change for Bluegrass Airport *Runway 4-22 to be repaved*

The project begins on August 18 and, according to Amy Caudill, who represents the airport, it will be a major regional project.

"Almost every asphalt resource in central Kentucky will be dedicated to working on this project on August 18-20," said Amy Caudill, Bluegrass Airport community relations manager. "Most likely, this will be the only resurfacing project taking place this weekend due to the large size of the project."

Watch *Paving The Way* for additional coverage.

PAIKY Profiles *(continued)*

Mathews received a Bachelor of Science in Civil Engineering from the University of Kentucky. Her passion for the highway industry stems from her educational background. She is also motivated by the reward that comes with the ability to provide a service that is critical to everyone and much appreciated.

"Transportation is a vital link to social and economic prosperity in Kentucky," Mathews said. "Without safe, reliable, roads, we could not get to schools, jobs, and other activities that enhance the quality of life. We certainly could not accomplish this without the asphalt industry."

One of the people with whom Mathews will closely work is also a newcomer to her position.

Lori Harper received a BA from Transylvania University in 1984 and, through a job in aggregate sales following college, became interested aggregates, asphalt and construction. This has led her to a career in the asphalt industry, and her recent election as PAIKY president.

Harper appreciates PAIKY's contributions to the transportation and asphalt industries and considers her position as president of this association a chance to give back to the entire industry.

"As PAIKY President, I'll have the opportunity to work with other individuals in the industry to conduct business, maintaining a standard of educational opportunities and representation with governmental agencies that enhance and enforce laws and regulations that affect our industry," said Harper.

Like Mathews, Harper recognizes the importance of the industry she works in.

"The asphalt industry is a group of companies made up of a diverse group of individuals who want to see improved asphalt pavement help prosper the daily lives of the people who live in the Commonwealth of Kentucky," said Harper. "Working here has provided me the opportunity to work in an environment that helps the quality of life of many people."

Brian K. Wood, Executive Director of PAIKY, is appreciative of Harper's acceptance of the position.

"She has brought so many talents to the table over the years as a member," said Wood. "We know that her contribution will continue on an even greater scale now that she is President of the association."

Perpetual Pavement Concept Renders 20-Year Standard Obsolete

"Build your roads like you build your house." That's how Jim Huddleston, executive director of the Asphalt Pavement Association of Oregon, sums up his thoughts on the design and construction of roads built for perpetual life. "You don't build your house with the expectation of having to replace it in 20 years. We shouldn't build our roads that way either," he explained.

Huddleston's argument is that the life expectancy of any road, designed thoughtfully and maintained regularly, could be 50 years or more – not the mere 20 that until recently has been accepted as the standard.

"Perpetual pavement" is a concept that has been developed and marketed primarily for high-volume applications like freeways and interstates. And while design and construction specifications are different for low-volume applications, the concept is still applicable, and the results remain the same – a pavement built for long life without requiring major structural rehabilitation or reconstruction, and needing only periodic surface renewal in response to distresses confined to the top of the pavement.

While up to 70% of paved center-line miles in the U.S. could be classified as low-volume roads, no formal standard exists with regard to designing and constructing these roads to meet a perpetual pavement specification. There are two primary reasons why this concept has taken longer to catch on for low-volume applications.

First, "We've always done it this way." Since the interstate program was established, a 20-year life expectancy has been the norm supported by AASHTO guidelines in the U.S., as well as paving standards in other countries. Without the benefit



of knowledge we have today, and with an inability to predict future traffic demands, the Federal Highway Administration historically funded highways that were built to last for 20 years, and did not appropriate funds for exploration of designs or concepts with potential for longer life.

Second, there is a misconception of true costs. While highway departments have begun questioning the 20-year approach to road construction in favor of more forward-thinking concepts like perpetual pavement, local agencies often continue to construct 20-year designs on the premise that they are saving money. It's true that initial construction costs may be lower for a 20-year design versus pavement designed for longer life – but that is not always the case, Huddleston explained. And when you consider maintenance and rehabilitation costs over the life of the pavement structures, the savings achieved by perpetual pavement designs can far exceed any money saved during initial construction.

So what is the real difference between a long-life pavement designed for low-volume applications and a more "disposable" option? In the past, common practice was to design the pavement structure utilizing a relatively thick aggregate base and a minimal asphalt surface thickness. These designs were typically

adequate to protect the subgrade from deforming, but proved to be inadequate in terms of fatigue resistance in the asphalt layer. In twenty years or less, a road constructed on this premise would have full depth alligator cracking and the all too familiar potholes that come with full depth failures. Corrective options are limited to full depth repairs with thick overlays or total reconstruction – either of which is expensive, time consuming and typically "not in the budget."

What we have learned from recent studies and past experience is that the asphalt fatigue life is not highly influenced by the thickness of the aggregate base course. It is, however, very sensitive to the thickness and properties of the asphalt layer. The best approach to optimize the fatigue life, Huddleston explained, is to use only enough aggregate or improved sub-base material to support construction equipment and properly grade the site. "Anything more is a waste of money," he said.

The remaining structural requirements should be placed in the asphalt layer, a practice which can actually result in savings at the construction stage. Huddleston explained the cost advantages of this approach, stating that approximately 1 inch of additional asphalt can reduce the aggregate base requirement by 4 inches. With one inch of asphalt costing roughly the same as three inches of aggregate, savings multiply each time the materials are traded. And, thinner aggregate bases require less excavation, resulting in additional savings. Add to that the fact that each additional inch of asphalt effectively doubles the fatigue life of the pavement. The chart on page 1 illustrates the benefit of an additional inch of asphalt and the potential perform-

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Perpetual Pavement *(continued)*

ance and cost benefits of shifting the primary structural burden from the aggregate layer to the asphalt layer.

"There is a misconception that perpetual pavement designs are much more expensive (than 20-year or disposable pavements)," Huddleston said, "but when you consider the potential to effectively double the structural life on lower volume roads by adding only one inch of asphalt thickness, the true cost may not be that much more." Adding an inch of asphalt to an existing project typically increases the cost only by that of the material delivered to the site. In that case, it is the cheapest inch of asphalt an agency will ever purchase. "When you consider maintenance and rehabilitation costs over the life of the pavement, as well as increased fatigue life, the long-term savings are substantial," he concluded.

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Jim Smith Contracting Co. Wins NAPA Paving Award

Jim Smith Contracting Co., of Grand Rivers, Ky., won a 2005 Quality in Construction Award for a non-typical asphalt pavement from the National Asphalt Pavement Association (NAPA). The award is for the hot-mix asphalt construction of Highway 80 in Calloway County.

Over a three year span, the company graded, drained and surfaced approximately 14 miles of the new four-lane highway.

NAPA was founded in 1955 and represents and supports the interests of hot-mix asphalt companies at the national level. More than 1,100 companies are members of NAPA.



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