

CONCRETE & ASPHALT "ASK THE EXPERTS"



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Power in Paving

Sustainable solutions impact future for asphalt and concrete products

By Linda Mastaglio

Southshore Asphalt group paves US-61 in Jefferson Parish, La.

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Ask the Experts: Paving the Way for Future Innovations

A variety of trends are having an increasingly important impact on the paving industry. In the following segment, leading experts share their take on innovations that will influence the direction of our future roads.



Dan McCoy, R.L. McCoy:

Environmental sustainability and life cycle analysis are going to become a huge part of commercial construction, according to Dan McCoy with R.L. McCoy of Columbia City, Ind. "The Biden administration and the U.S. Dept. of Transportation have taken major steps to incorporate and encourage designs and materials that reduce CO₂," he says. "The goal for most of these conversations is to

eliminate fossil fuels by 2035. Given that asphalt bitumen is a petroleum-based product, it will be interesting

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Vice President for Engineering,
Research and Technology,
National Asphalt Pavement
Association

to see how asphalt will be viewed on the environmental and price scales." In relation to concrete paving, McCoy

says that a main goal will be to increase life cycle duration and reduce CO₂ by decreasing the amount of cement use. "That being said," McCoy adds, "the traditional supplementary cementitious materials we have relied on, such as fly ash, come from coal-burning power plants. With more energy producers switching to natural gas from coal for either environmental or economic concerns, the reduction in fly ash will generate shortages we are already seeing in the industry. As supply is reduced and demand increases, traditional fly ash will inevitably become more commensurate in price with straight cement." McCoy also sees some challenges ahead once autonomous vehicular traffic begins to impact the conditions on highways and roads. "These vehicles' computers and controls are extremely precise," he says. "The vehicles will be



Over a period of two and a half years, 100% of Lindy Paving crews contributed to resurfacing 42 lanes miles of SR 279 in Pittsburgh with 203,992 tons of asphalt. A pilot for performance testing in Pennsylvania, the project earned Lindy Paving and the Pennsylvania Dept. of Transportation-District 11 the National Asphalt Paving Association's 2020 Sheldon G. Hayes Award.

PHOTO: COURTESY OF LINDY PAVING

much more likely to travel the same wheel path than drivers do. Combine this precision with heavier vehicles due to electric vehicles weighing 30% to 50% more than a combustion engine vehicle, and you will see much more wear in the form of rutting with asphalt pavement. This will either increase maintenance costs to existing asphalt systems or promote more rigid pavement design in the form of concrete." User issues are also driving change when it comes to paving solutions. "The public is demanding that the agencies look at how to reduce congestion by reducing the number of times a road needs to be taken out of service or repaired," says Scott Mueller, vice president of marketing at the American Concrete Pavement Association. "No one likes to have a disgruntled road-user call and complain about repairs and resurfacing again and again. Longer-term solutions help increase community happiness, reduce energy and provide a greener environment. We actively promote the benefits of a healthy competition pavement program at the state and local level. Healthy competition spurs innovation, enhances quality and lowers paving costs (when using a two-pavement system for bidding)."

The Paving/Funding Conundrum



J. Richard Willis, PhD, Vice President for Engineering, Research & Technology, National Asphalt Pavement Association:

The biggest trend or issue for the paving industry right now is funding, according to J. Richard Willis, Ph.D., vice president for engineering, research and technology at the National Asphalt Pavement Association. "As of July 2021, we are waiting to hear what is going to happen with either the U.S. House or Senate highway reauthorization bills or the Senate's infrastructure package," he says. "These pieces of legislation have the potential to be game changers for the industry by allowing owners

to know the funds they will have to maintain their current infrastructure for the coming years. The most significant change we may see from these bills could be the incorporation of sustainability in road projects. Both the Senate and House reauthorization packages focus on infrastructure resilience and climate change. They want to tackle these issues head-on. The paving industry will need to be ready to provide new solutions to address these concerns. The other issue that increased funding may bring to the forefront is

"The key to all of this is high-quality, real-time data for decision making."

— Brett Williams, Director of Engineering & Technical Support, National Asphalt Pavement Association

workforce. Like many other industries, the construction industry continues to face challenges with finding enough people to complete the workload, which will impact how companies recruit and retain people. This will also impact technology adoption—companies may seek even more ways to automate as many of the tasks as possible, focusing first on those that would increase worker health and safety."

Reducing Emissions



Scott Mueller, Vice President of Marketing, American Concrete Pavement:

Industry experts believe that paving materials will continue to evolve in a positive way, reinforcing the importance and impact of innovative solutions. "We are seeing paving moving toward more sustainable solutions. Innovations such as Portland-limestone cements currently reduce greenhouse gas emissions by 10% to 15%. The concrete

and cement industries have set a goal of being carbon neutral by 2050," Mueller says. "In some areas of the country, we are seeing more in-place recycling," he adds. "This eliminates additional trucks to haul away old road. With fewer trucks, there is less fuel consumption, less congestion and an overall reduction in CO₂."

The Software Spectrum



Greg Norris, Marketing Communications Director, B2W Software:

One additional trend involves the impact of software on productivity and production. "Equipment uptime and maintenance costs have a big impact on profitability in paving," explains Greg Norris, marketing communications director at B2W Software. "A growing number of contractors are turning to equipment maintenance software to track and improve maintenance operations and automate preventive maintenance. Also, when data is electronic and structured versus being on paper, contractors can report on it and actually use it to improve performance and safety."



Tarun Nimmagadda, Vice President, CONNEX:

Along the software spectrum, Tarun Nimmagadda, a vice president with CONNEX, says that a major trend impacting the paving industry is going to revolve around electronic ticketing for asphalt and all of the other material types that are going through the DLT (distributed ledger technology) process. "Thermal segregation is a major issue," he says, "that contributes to the premature failure of asphalt roads. To combat this issue and have more control around the quality of the product, all of the information about the product needs to be digitized and shared among all of the constituents that play a role, from production to the last mile."



Alex Moody,
Sales Manager,
CONNEX: Another
game changer
focuses on GPS truck
tracking, telematics
and fleet manage-

ment solutions, according to Alex Moody, sales manager for CONNEX. “We’re finding that truck fleets that use solutions like Command Alkon’s TrackIt and Ruckit average about a 25% increase in fuel economy. They can help reduce fuel burn and expenses through the ability to shorten vehicle routes, decrease engine idling time and identify driver behaviors that consume excess fuel while helping fleet managers recognize when engine performance is affecting fuel economy,” he says.



Brett Williams,
Director of Engi-
neering & Technical
Support, National
Asphalt Pave-
ment Association:

“Software is really

impacting the industry in two major ways. The first is allowing us to harness data more quickly and use it in the decision-making process, and the second is improved communication. Some quality control technicians in the field have iPads that allow them to make comments and take pictures that the plant can use to immediately take action on. Fleet management software allows operators to be more efficient with their trucking and keep the operation moving at a constant rate and in sync with the production facility. E-ticketing allows us to digitally track tickets and material quantities and share this data with our customers electronically (which was critical for worker safety during the pandemic). Software can also help in project management. It can allow people to assess timing, material supply and cost instantaneously before it negatively impacts a job’s total cost. The key to all of this is high-quality, real-time data for decision making.”

Mueller concurs that software and technology continue to positively

impact the paving industry. “At the recent World of Concrete event, we were introduced to the first electric curb machine,” he says. He also points to innovative software solutions like PavementDesigner.org. “This program allows engineers and consultants to build and review different paving solutions and evaluate their performance as part of the planning process,” he says. “And best of all, the PavementDesigner.org program is free to use.”

**“Collaborative
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— Tarun Nimmagadda, Vice
President, CONNEX

Improving Processes to Enhance Productivity

To manage construction activities in a way that keeps paving projects moving smoothly, companies are refining processes to improve production flow and communication among subcontractors. A lot of companies are replacing paper forms, particularly for safety and

inspections. “Electronic forms make it easier and faster to capture better data,” Norris adds. “More importantly, when data is electronic and structured versus being on paper, contractors can report on it and actually use it to improve performance and safety.”

Future Focus

Nimmagadda sees opportunity in technology improvements. He says we will soon be entering a future state where if there is an issue—such as a pothole in the road—then GPS location will be able to pinpoint that pothole and determine which exact truck unloaded that asphalt and the plant that it came from, as well as the time that it took to unload the material. “The ability to gather that amount of data across all of the issues on the roadways and to zero in on them will improve the longevity of asphalt roads,” he says.

Greater adoption of cloud technology will also impact future paving processes. “Collaborative networks through cloud-based solutions are making an impact in the paving industry by allowing companies to leverage network-based intelligence and analytics to optimize processes and gain efficiencies,” Moody says. “Paving contractors and their trade partners can connect and exchange data, providing a deeper understanding of what is happening within the supply chain—both for their inbound and their outbound processes.” ♦



Innovations in paving materials are helping the concrete and cement industries to meet their goal of being carbon neutral by 2050.