

# PAVING<sup>the</sup>WAY

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

## Green Construction invades the Bluegrass State



Bernheim Arboretum and Research Forest boasts one of Kentucky's LEED-Platinum ratings. All of the asphalt pavements at this site utilized recycled materials.



Kentucky's landscape is known for its blue grass, plank and stone fencing, and rolling hills. Under a new law to improve the state's energy efficiency and sustainability, green buildings may become a staple of the state's picturesque scenes as well. Porous asphalt will play a role in helping designers and contractors achieve that green status.

In an initiative announced by Gov. Steve Beshear in February, new public facilities or renovations built with 50 percent or more state funds are required to be designed and built according to the nationally recognized energy efficiency standards outlined in a rating system called Leadership in Energy and Environmental Design (LEED).

The LEED program, developed by the U.S. Green Building Council (USGBC) in 1998, rates buildings as LEED certified, LEED silver, LEED gold or LEED platinum, based on a

building's performance and its environmental impact.

The initiative requires state building projects exceeding \$25 million to be certified as LEED silver or higher; those with costs ranging from \$5 million to \$25 million should receive LEED certified status or higher; and projects with costs of \$600,000 to \$5 million should be designed using the LEED rating system as guidance. In cases where obtaining LEED certification is deemed an extraordinary hardship, the secretary of the Finance and Administration Cabinet may grant a waiver.

"Kentucky's law is getting a lot of accolades and is a model law," said Joan Pauly, executive director for the Kentucky Chapter of the USGBC. "Many states are looking to Kentucky as a leader in green building."

According to Buck Hinkle, Jr., who is with the law firm of Stites & Harbison and specializes in construction law, the LEED certification process begins with registering the project through [www.GBCI.org](http://www.GBCI.org).

"Once the project is registered, several steps will have to be completed during the design and construction phase," Hinkle said. "A project cannot be LEED certified until it is finished."

At the end of April 2009, there were 14 LEED-certified projects in Kentucky and 83 registered projects. More than 500 professionals are LEED certified in Kentucky, according to Pauly.

The costs to build to LEED standards may or may not be higher than typical construction—depending on the design and construction approach.

"However, green construction advocates attribute many benefits to LEED certification, such as healthier work environments, improved recruitment and retention, reduced operating costs and good environmental stewardship," Hinkle said.

Jeffrey S. Moneypenny, AIA, LEED AP, president and chairman of the USGBC Kentucky Chapter, outlined the categories that determine the LEED points for building projects. Those categories include:

- Sustainable sites;

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## Green Construction

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- Water efficiency;
- Energy and atmosphere;
- Materials and resources;
- Indoor environmental quality; and
- Innovation in design.

Both Moneypenny and Pauly cited the important role porous asphalt can play in LEED certification under the sustainable sites category.

"Porous asphalt can contribute to minimizing stormwater runoff and can help improve stormwater quality," Moneypenny said. "Less water goes into the stormwater system, and the porous asphalt drainage system can help improve the quality of the rainwater absorbed back into the ground."

By adhering to LEED requirements, owners can reduce a building's negative impacts while improving the work environment for employees.

"That's what porous asphalt is all about," said Brian K. Wood, P.E., executive director for the Plantmix Asphalt Industry of Kentucky (PAIKY). "Porous asphalt performs at a high level while not only minimizing its impact on the environment, but in some cases improving the surrounding area."

### LEED RATING SYSTEM

The LEED rating system has 100 total points available (plus six more for innovation and design), with the following points required for various levels:

LEVELS	TOTAL POINTS
Certification	40-49
Silver	50-59
Gold	60-79
Platinum	80 or more

## Stormwater runoff: its issues and remedies



Shamick Gaworski, a graduate student in the University of Kentucky's Martin School of Public Policy and Administration, has deep convictions regarding the environment. In fact, he focused his graduate capstone project on an environmental issue of particular importance to many cities in Kentucky: stormwater runoff.

In his study, "Cost efficiency of porous asphalt to reduce stormwater runoff from paved impervious surfaces for Fayette County Urban Areas," Gaworski noted some findings that many municipal governments should consider when dealing with stormwater issues.

"Stormwater runoff is not just a costly issue in the short term," said Gaworski. "It has environmental implications for generations to come."

Gaworski said that stormwater runoff is a significant source of water quality impairment, creating about 40 percent of stream pollution. He particularly noted a problem known as "first flush," when impervious areas—such as roofs and paved roadways—are cleansed when an initial rainfall drains into and contaminates local waterways. Some contaminants found through this first flush include phosphorous (from lawn fertilizer and animal waste) and gasoline and oil from automobiles, industrial equipment and lawn

mowers. These contaminants drain straight from lawns and other surfaces onto the roadways and into water sources.

Once Gaworski began to study green infrastructure further, he narrowed his focus to the use of permeable pavements, particularly porous asphalt, as one significant remedy to stormwater runoff.

Gaworski said he favors the use of porous asphalt because it has been proven to minimize its environmental impact by creating a smooth, hard surface that filters stormwater and stores it in a stone-filled reservoir underneath the surface that gradually dissipates the water into the ground.

"In fact, somewhat surprisingly, the 'flush' amount is actually less with porous pavement than it would have been before the area was ever developed," Gaworski said. "This would suggest porous pavement is better than a natural predevelopment state."

Although porous asphalt has been around for 30 years and is the environmental choice, Gaworski said cost issues also were considered.

"It was not economical to demolish current impervious surfaces and replace them with porous asphalt," Gaworski said. "However, I did give considerable thought to using porous asphalt for all new developments."

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## Gas pump savings

Getting more from the gallon



Kentuckians are paying more at the pump than they have historically—barring the spike that occurred last summer. Since we are giving more for a gallon, it has become even more important to get more from a gallon.

Besides the fuel efficiency of a car, roadway smoothness is one of the primary factors in determining how much gas is used. According to a test by WesTrack, a pavement test facility in Nevada, when pavements that have become rough or cracked are repaired, fuel efficiencies increase by 4.5 percent.

“Rough roads can amount to hundreds of dollars each year in car repairs and increased fuel usage,” said Brian K. Wood, P.E., executive director of the Plantmix Asphalt Industry of Kentucky (PAIKY). “That’s why we continue to look for ways to improve asphalt roads, which are already the smoothest paving surface.”

The following are some suggestions for stretching your gasoline budget:

- Avoid a lot of braking and accelerating because that guzzles

gas. In conventional gasoline-fueled cars, a moderate, even speed is the most economical way to drive. When possible, use cruise control.

- Maintain an even “crawl” until you can gradually increase speed if slowing down is necessary.
- Make sure tires are properly inflated to gain as much as 5 percent in gas mileage.
- Remove unnecessary weight, such as car racks and all that “junk in the trunk.”
- Keep filters and converters clean to save your engine a lot of extra work.
- Don’t let the vehicle idle for more than a minute. Idling consumes up to a gallon of gas per hour and wastes more fuel than restarting the engine. Remember, idling gets zero miles to the gallon.
- Keep windows and sunroofs closed, especially when traveling at high speeds. Opened windows can decrease your gas mileage by 10 percent.
- Buy gasoline at the coolest time of day when it is the densest.
- Fill up your tank when the gas gauge reaches the halfway mark. Gasoline evaporates when in contact with air. A full tank evaporates less quickly because there is less air in the tank.
- Avoid rough roads whenever possible because dirt and gravel rob you of up to 30 percent of your gas mileage.
- Park your car so that you can avoid having to put your car in reverse, which uses more gas than traveling in forward gears.
- Use the air conditioner and heater sparingly. Air conditioners reduce fuel economy by 10 to 20 percent.

## KTC Director Paul Toussaint retires



For the past 12 years, Paul Toussaint has been able to provide a lot of answers because he asked the right questions to steer Kentucky toward a safer and more efficient transportation system. Toussaint, who served as the director of the Kentucky Transportation Center (KTC) since 1997, retired from his post on May 31, 2009.

At KTC, Toussaint managed the research and technology transfer program with an annual budget of about \$8 million, a permanent staff of 50, and approximately 50-75 other temporary staff and/or students and faculty. He is a licensed professional engineer in Kentucky; a member of the National Society of Professional Engineers as well as the Kentucky Society of Professional Engineers; and a fellow/lifetime member of the American Society of Civil Engineers.

He also was active in several professional organizations, serving in the research and education division of the American Road and Transportation Builders Association, on the executive committee and board of directors for the Kentuckians for Better Transportation, and as president of the Council of University Transportation Centers (CUTC).

Toussaint’s vision has driven Kentucky toward a better transportation system. He will be missed not only at the KTC, but also by all of us who have worked alongside him in our quest to make Kentucky’s transportation system the best it can be.

## Stormwater runoff *(continued from page 2)*

Porous asphalt costs about 30 percent more than conventional asphalt because of the stone underlayment and additional excavation needed. Even so, Gaworski suggested that local governments consider offering grants for new developments to use porous asphalt.

"I believe government should provide some incentives for businesses to do the right thing for the environment," Gaworski said. "Governments also can encourage individuals to do their part to reduce runoff."

Gaworski cited several green infrastructure practices that can reduce runoff:

- Green roofs—nutritious soil is put on rooftops to grow vegetation, which absorbs significant amounts of water.
- Rain harvesting and downspout disconnection—residential barrels are placed to collect stormwater for later use in gardens.
- Planter boxes—soil-filled boxes are placed on sidewalks or other impervious surfaces to grow vegetation, which absorbs water.
- Rain gardens—gardens filled with vegetation known to absorb a lot of rain are planted in residential yards.
- Green parking—parking lots are altered to include as many trees as possible and minimal paved space, so that only two strips are paved for the wheels of parked vehicles, with the rest of the area remaining grassy.
- Vegetated swales and pocket wetlands—underdeveloped areas are left with vegetation to absorb runoff.
- Trees and urban forestry—numerous trees are planted to absorb stormwater.
- Riparian buffers—vegetated barriers are created next to rivers to protect them from stormwater.

Some local governments are seeking to create taxes or fees to offset the expenses of handling stormwater runoff. Although this may alleviate a financial burden for local government, the environmental problems will worsen if steps are not taken to reduce stormwater runoff now and in the future, according to Gaworski.

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