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Two Burns & McDonnell Projects Recognized for Engineering Excellence by Missouri Chapter of the American Council of Engineering Companies

St. Louis Environmental Project Wins Grand Award

Kansas City's US-169/I-70 North Loop PEL Study Wins Grand Award

KANSAS CITY, Missouri — An environmental project to close an ash basin at a large coal-fired power facility near St. Louis and a study that delivered four alternatives for a new bridge to serve downtown Kansas City each have received awards from the Missouri Chapter of the American Council of Engineering Companies.

Meramec Energy Center Ash Basin Closure Wins Grand Award

By early 2015, the U.S. Environmental Protection Agency had finalized an extensive set of rules for the management and disposal of [coal combustion residuals](#) (CCR) in landfills and ash basins that are frequently located adjacent to coal-fired power facilities. In response to the rule, Ameren Missouri decided to move aggressively to implement a program that would exceed deadlines for compliance and incorporate a range of strategies to benefit the environment. Ameren's program includes increasing beneficial reuse of coal ash produced at Ameren facilities, ash basin closures, water safety assessments and significant reductions in water usage for power production.

[Burns & McDonnell](#) was brought on board to assist with the first ash basin closure at the Meramec Energy Center, a 923-megawatt (MW) coal and natural gas-fired facility located at the confluence of the Mississippi and Meramec rivers in St. Louis County. The plant had been solely coal-fired until 2016, when two of its four units were switched to natural gas. The project was to close two ash basins totaling more than 30 acres located on the power plant site.

The \$8 million project was more than a simple closure. It required an intensive review of federal and state regulatory requirements for storage and disposal of coal combustion residuals as well as Missouri's solid waste regulations and rules for stormwater management and wastewater treatment and discharge. These reviews were vital to ensure the facility remain in compliance during all phases of construction and afterward when the basin closure was complete.

Though the smaller of the two basins was closed with a conventional cover system, the project team wanted to evaluate other options for a final system at the larger basin. A review looked at three alternatives — two of which incorporated a synthetic turf cover system with lower geomembrane component. A third system — the one selected — consisted of a composite high-density polyethylene (HDPE) flexible geomembrane material, a geocomposite drainage layer, 18-inch soil layer, and a 6-inch erosion control layer that accommodates plant growth. This system was judged to be most effective and also yielded a construction cost savings of \$2 million, plus another projected \$1 million in operational savings over a 30-year life cycle.

“Ameren takes environmental stewardship seriously because it’s the right thing to do,” says [Steve Nalefski](#), vice president and general manager of the Environmental Services Group at Burns & McDonnell. “We were proud to play a role in helping Ameren establish a leadership position as the power industry navigates toward compliance with these very complicated rules for disposal and mitigation of coal ash basins. This project now serves as a model that is being used by Ameren to close ash basins across its generation fleet while reducing long-term water usage by approximately 11 billion gallons a year.”

New Vision for Buck O’Neil Bridge and Downtown Kansas City Earns Grand Award

By 2016, annual inspections had made it clear that the Buck O’Neil Bridge, connecting downtown Kansas City with the metro’s northern suburbs, had numerous structural deficiencies that were too urgent to ignore. But instead of proceeding with a conventional bridge rehabilitation, the City of Kansas City, Mo., and the Missouri Department of Transportation (MoDOT) decided to take a pause to do a comprehensive study that would look at a full range of issues that would yield a new vision of how a future bridge could correct longstanding deficiencies and help continue the economic resurgence of Kansas City’s downtown.

MoDOT, the City and the Mid-America Regional Council (MARC) joined together in consultation with local leaders in a unique partnership to complete the first [planning and environmental linkages](#) (PEL) study in the state of Missouri and the Kansas City region. This yielded a whole new vision for the future of the Buck O’Neil Bridge and the North Loop of Interstate 70 as it passes through Kansas City’s downtown.

The North Loop of I-70 and Buck O'Neil Bridge were built to serve a different era and different kind of downtown. Constructed in the mid-1950s to enable efficient commuting to and from Kansas City's growing suburbs, the downtown loop cut through vibrant business districts and historic residential zones. The PEL study enabled a thoughtful conversation about how the 28 acres currently dedicated to the I-70 North Loop could be repurposed and contribute to the city's continued economic momentum.

The study has gained national attention because it was one of the first to examine the effects of autonomous and connected vehicles (AV/CV) on future regional travel times and patterns. Modeling showed that if 20 percent of vehicles were AV/CV by the year 2040, there would be a nearly 200 percent increase in projected capacity and a 20 percent reduction in travel times.

Analysis based on feedback from thousands of area stakeholders resulted in support for four alternatives for highway interconnections coming off the bridge and separating traffic destined for downtown. None of the alternatives would expand the interstate and all explore opportunities for new development and urban redesign in the context of public input and environmental needs.

"This study has gained the attention of transportation authorities around the country because it recognizes we need new approaches to upgrade our roads and bridges in today's era of limited funding," says [Ben Biller](#), vice president and general manager of the [Transportation Group](#) at Burns & McDonnell. "We're very proud to have been recognized for our role in a process that will be the foundation for one of the most important infrastructure projects in Kansas City in many years to come."

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