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Around the Columns

A bridge just right

Doing more with less — turns out that’s not just something politicians promise during tough times. Erik Loehr, associate professor of civil engineering at MU, is leading a project that could save millions a year on bridge construction in Missouri and serve as a model for other states. The big idea, Loehr says, is to generate information about soils and foundations that bridge designers can use to make structures that are stout, but not stouter than they need to be.

“We can’t always build structures as strong as Fort Knox,” Loehr says.

In the past, engineers had little information about how various soils and bridge foundation designs would react to the massive loads that a working bridge endures. So, they played it safe and made bridges extra strong. By running soil and foundation tests, Loehr will provide detailed information to the Missouri Department of Transportation. In turn, the department will set specifications to ensure that bridge construction is not only safe but also stingy with taxpayer dollars.

An example: In May and June 2010, Loehr tested bridge piles that were built in shale, a common but troublesome soil for bridge foundations. Missouri shale ranges from rigid and stony to a much softer, waxy-feeling material. He embedded sensors in the concrete-and-rebar piles to take measurements as powerful jacks at the bottom of the structures pushed them to failure.

Loehr says the results of this work will quickly make their way into Missouri’s next generation of bridges.

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