

The winning design has tall, H-shaped towers. This rendering shows the bridge as it will appear when it is completed in 2020.

Democratic Bridge Building

by Doug Tattershall

Ted Grossardt learned about democratic decision-making on the family farm in Claflin, a town of 700 people in the middle of Kansas. This community is guided by the farmer cooperative, an institution that strongly supports farm families. After graduating from college, Grossardt returned to work on the family farm and also served on this cooperative.

Central Kansas might seem a long way from Central Kentucky and the Kentucky Transportation Center, a

research center in the UK College of Engineering, but Grossardt's work on improving public satisfaction with bridges and other public projects was inspired by his work on the co-op.

"The idea that large groups of people can effectively make decisions is something I grew up with," says Grossardt, who came to UK in 1993 to pursue a doctorate in geography and worked at the Transportation Center while completing his degree. His experience with the farmer cooperative has served him well,



Working through the Kentucky Transportation Center in the UK College of Engineering, Ted Grossardt (right) and John Ripy have involved hundreds of citizens in public meetings to help select the design of two new bridges.

he says, in a current project involving hundreds of citizens at public meetings in northern Kentucky and southern Indiana who have helped select the design of two new bridges.

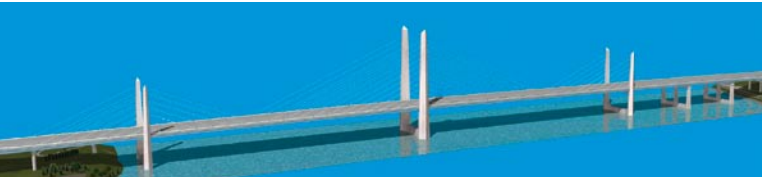
The high-profile Louisville-Southern Indiana Ohio River Bridges project, which began in 2004 with a targeted completion date of 2020, will result in the building of two new bridges over the Ohio River, one of which will be in downtown Louisville adjacent to the Kennedy Bridge. The project is funded by a combination of federal, Kentucky and Indiana tax dollars, and its cost of \$4.3 billion makes it the fifth largest infrastructure project in the nation. Because of the new bridge's prominent location, the state required formal public input into the design.

Compiling useful public information is easier said than done because of the many design factors involved. The bridge structure might be a truss, arch, box, or cable stay. The height might be low, medium or high. The gateway, or the appearance as one crosses the

bridge, might be H-shaped (with sides not touching at the top) or A-shaped (sides touching). The design might be symmetrical or asymmetrical, based on the positioning of the piers, the upright supports that anchor the bridge to the rock bed below the river. And the design may be visually open and simple, or complex in appearance.

These design elements create hundreds of options. A straight vote on all of them would almost certainly fail to present a clear winner, and such a ballot would stymie even the most conscientious citizen.

This project is being guided by a team that includes Grossardt, Keiron Bailey, a UK doctoral graduate now in the University of Arizona Department of Geography and Regional Development, John Ripy, information systems manager at the Transportation Center, and UK graduate students. Grossardt, Bailey and Ripy developed a system they call Structured Public Involvement to draw out public preferences for the design of the bridges.



The winning design (left) and the runner up for the downtown Louisville bridge were determined by input from 170 citizens.



The heart of the process is a 40-minute public meeting. “The goal of this meeting is to get useful, informed feedback from the public,” Grossardt explains. “Engineers have long used such meetings for public works projects, but the meetings we hold are focused on getting the public involved in the decision-making process itself.” Attendees are given a handheld electronic keypad and are shown only a limited number—20 to 30—of the hundreds of bridge design possibilities, electronically rendered into a photo of the actual environment.

When attendees see a bridge, they are asked to react to it on their keypads, giving it a rating of 1 to 10. This range allows for a more accurate rating than simply “yes” or “no,” and allows Grossardt and his team to determine degrees of reaction. Another advantage of using keypads is that the people at the meeting see immediately what designs the others in the group prefer.

Grossardt sees at least three advantages of Structured Public Involvement: it allows a large group to get involved, it provides a model that allows participants to handle multiple and sometimes complex variables, and it can be used with many engineering issues—from bridges to street patterns to urban development to highway routes. “It has always been a challenge to get the public involved in these design decisions, mostly because the people who came to such meetings questioned whether their input would really count,” Grossardt says.

With the data gathered from 170 people who attended four public meetings in 2006, the research team moved from an intuitive sense of what the public preferred to a scientific valuation of public preferences, and the researchers came to several conclusions. In the scoring on the Louisville bridge, the people at the meetings favored an open, H-shape gateway if the bridge was going to be a tall arch, but preferred a closed, “basket-handle” arch for a shorter

bridge. Conversely, if the bridge was a cable-stay structure, they preferred the shorter designs to be open, or H-shaped. They also wanted the new bridge to match the height of the other bridges around it, but wanted a simpler design because that stretch of the Ohio is already so visually busy. The design for the downtown bridge was chosen, with citizen input, in December 2006.

“This was an intelligent process that showed us what characteristics people liked and didn’t like,” says J.B. Williams, project manager and vice president of the Michael Baker Corporation’s Louisville office. “Ted and his team didn’t just throw up some bridges and say, ‘Which one do you like?’ Structured public involvement requires us to create more renderings, but in the end gives us more intelligent information.”

The SPI process has already been used for several public works projects with results that are specific to the community and the project at hand, Grossardt points out. For example, where the Louisville bridge project showed a public preference for a relatively simple bridge design, another bridge project at Land Between The Lakes yielded a much different result. The 300 participants in that process preferred something more monumental, an architectural statement in an environment dominated by nature.

Grossardt emphasizes the point that while the public gets to vote on the design, the designer maintains creative control. “This process doesn’t dictate the design—it supports the design decisions.”

In his farming days, Grossardt participated in decision-making that balanced the work of cooperative managers and the input of a board of farmers elected by other area farmers. “I’ve been surprised that this business model has not been used more,” he says. “It makes the organization listen to its members, and that’s what happens here with Structured Public Involvement. It allows people to take a proprietary interest in how their community looks and functions.” ■