# Qk4 Revolutionizes Bridge Survey Program, Saving Kentucky USD 300 Million

OpenRoads™ and ProjectWise® Enable 90% Reduction in Bridge Survey Time, Accelerating Critical Infrastructure Repairs Across Kentucky

## A THOUSAND BRIDGES IN JUST SIX YEARS

The Kentucky Transportation Cabinet (KYTC) faced an urgent problem. Across the state, bridges were damaged by extreme weather or had simply degraded over time. This presented an even more immediate challenge: inspecting, documenting, and rehabilitating or replacing 1,000 failing bridges. The volume of this project alone would have constituted a major challenge, but the difficulty was doubled by an ambitious six-year timeline.

With an initial projected cost of USD 700 million, the Bridging Kentucky program required innovative solutions to survey and document bridges across the state, from modest rural crossings to major highways, all requiring immediate attention to ensure public safety.

KYTC tapped Qk4 to execute the bridge surveys. However, to meet the necessary timeline, Qk4 had to rapidly modernize their survey methodology. Past methods typically allowed for 40 bridge surveys a year. To meet the incredibly tight deadline, they would have to cover more than four times that amount.

## SEARCHING FOR A BETTER BRIDGE SURVEY METHODOLOGY

This project's scale necessitated a departure from traditional methods to find efficiencies at every step, starting with surveying. Historically, bridge surveys have been lengthy, labor-intensive processes. Moreover, most surveyors nationwide produced only 2D contour drawings, which lacked the comprehensive data bridge designers needed. Each bridge survey traditionally required 182 hours of work and could cost USD 20,000 to USD 30,000, making the conventional approach financially and temporally unfeasible for the program's magnitude.

To get the job done, Qk4 needed to find a way to do more, faster, with less. The team also had to find ways to conserve resources wherever they could, all while maintaining the highest standard of accuracy and providing engineers with reliable, detailed data for design work.

## TRADITIONAL SURVEY WITH DRONE IMAGERY AND 3D LASER SCANNING FOR GREATER EFFICIENCY

Qk4 revolutionized its approach by becoming early adopters of OpenRoads Designer Survey. This Bentley application enabled the team to create intelligent 3D models that combined traditional survey data with drone imagery and 3D laser scanning. They could now train field crews in intelligent coding to create digital terrain model features at the point of collection. Then, through ProjectWise, engineering teams worldwide could collaborate seamlessly on the same platform, accessing comprehensive 3D models that included survey control, underground utility information, and right-of-way locations.

The 3D models developed across the state provided infrastructure professionals with more information than ever. With a comprehensive model of each asset in an open, collaborative space, Qk4 and KYTC could make more informed decisions at greater speed.

## SAVING TAXPAYERS OVER USD 300 MILLION

The digital transformation of the Bridging Kentucky program yielded an impressive ROI. Qk4 reduced survey processing time by more than 50%, bringing individual bridge survey costs down from USD 24,440 to USD 14,220. Within eight months, the team achieved the capability to survey 50 bridges

## PROJECT SUMMARY
### ORGANIZATION
Qk4, Inc.

### SOLUTION
Bridges and Tunnels

### LOCATION
Kentucky, United States

### PROJECT OBJECTIVES
- To survey and document over 1,000 deficient bridges across Kentucky.

- To accelerate traditional bridge survey methods to meet aggressive timeline.

### PROJECT PLAYBOOK
Bentley Descartes™, Bentley LumenRT™, iTwin® Capture, MicroStation®, OpenRoads, ProjectWise

### FAST FACTS
- The Bridging Kentucky program was initially projected to cost USD 700 million over six years.

- KYTC tapped Qk4 to execute the bridge surveys, requiring them to rapidly modernize their survey methodology.

- Qk4 revolutionized its approach by becoming early adopters of Bentley's OpenRoads Designer Survey.

### ROI
- By implementing Bentley applications, Qk4 reduced survey processing time by 50% and overall program costs by USD 380 million.

- The team saved USD 3.5 million in survey costs alone, eliminating approximately 20,000 land survey hours.

- Survey costs per bridge reduced from USD 24,440 to USD 14,220.
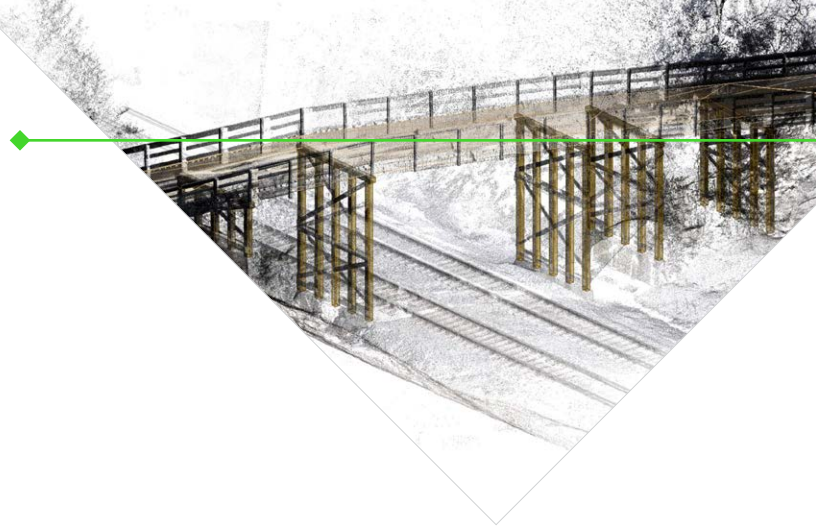
> "A picture is worth a thousand words, and a model is worth a book."
>
> – *Royce Meredith, PE, Program Manager for Bridging Kentucky,*
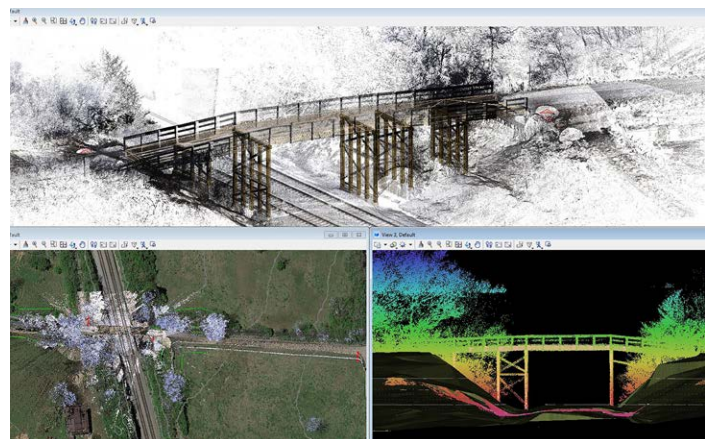> *Kentucky Transportation Cabinet*

in a single month—more than KYTC's previous yearly output. The program realized USD 3.5 million in survey cost savings alone.

The efficiency gains extended beyond just survey work. The entire Bridging Kentucky program, initially projected at USD 700 million, required only USD 380 million in authorized funds and spent just USD 320 million—a 20% savings on authorized fees. More importantly, the accelerated timeline meant rural communities received critical infrastructure improvements sooner, ensuring safe passage for school buses, emergency vehicles, and daily commuters.

The success of this digital approach led KYTC to adopt these new survey methods and policies as standard practice for their bridge delivery program, establishing a new benchmark for infrastructure survey efficiency across the state.
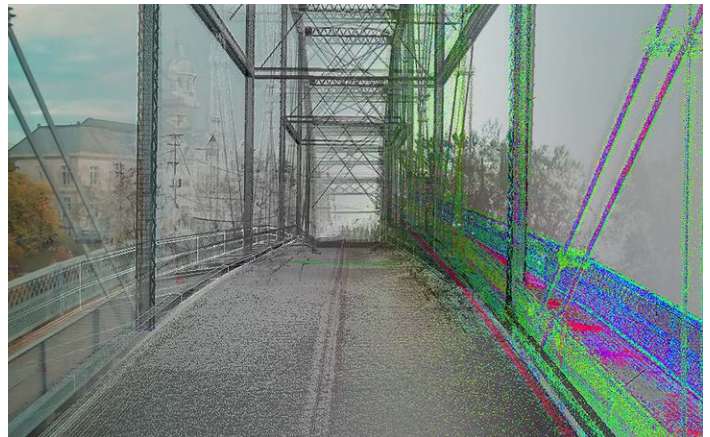


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