

A managed environment for engineering data helps accelerate Kentucky highway projects

Roadwork in Progress

H

Highway planner Tom Clouse has no doubt: "This project just wouldn't have gotten done" without the power of a managed environment for engineering data, built on Bentley solutions.

The project—a mile-long road widening in Renfro Valley, Ky.—is one of many to benefit from a new level of collaboration at the Kentucky Transportation Cabinet (KYTC), the commonwealth's highway department.

It's also a sign of things to come as KYTC expands its managed environment to achieve faster, more efficient workflow across distances and disciplines.

Clouse ran into a crunch as he managed the project design for KYTC District Eight in south central Kentucky. Though he had moved to his new job as a planner, Clouse still had to see the Renfro Valley design through—including a 4,000-foot drainage system.

A modest-sized project, perhaps. But the highway widening meant business to the town of Renfro Valley, with an economy fueled by tourist traffic to its country music venues.

Still, "I just did not have the man-hours available to do the drainage design," Clouse said. "And nobody else in the office had extra time."

Collaborating across miles

The job might have stalled indefinitely, but for design engineer Kevin Martin—and for KYTC's managed environment.

Based 80 miles away in KYTC's central office, Martin jumped in on the Renfro Valley project as drainage designer. The task kept him busy full-time for seven months, most of it spent in the Frankfort central office.



Organization

Kentucky Transportation Cabinet (KYTC)

Vertical market

Civil

Location

Kentucky, U.S.

Project objectives

Allow collaboration and data sharing among 13 highway design offices statewide.

Archive project data, making it easily accessible across disciplines.

Make data administration more efficient by centralizing data.

Fast facts

KYTC now has the flexibility to assign designers to any project statewide, regardless of a designer's home office—allowing projects to be completed faster, and making cost-effective use of staffing resources.

After deploying Bentley solutions in its highway design department, KYTC is extending its managed environment to enable data sharing across the entire agency.

KYTC also uses Bentley solutions to publish engineering data for contractors via the agency's Web site.

Products used

MicroStation
Bentley ProjectWise
Bentley Publisher
Bentley InRoads

"I did make three or four trips down to Renfro Valley," Martin said. "I'm a strict believer that you have to go look at the site."

But mostly, Martin collaborated remotely with the rest of the project team. After creating design files in the MicroStation platform and its InRoads application, the team managed project data in Bentley ProjectWise.

The Renfro Valley project files reside on District Eight's server at its Somerset office. But for Martin in Frankfort as for Clouse in Somerset, opening ProjectWise gives the same view of project directories and the same access to files.

Martin's part is largely done, but Clouse "still calls me now and then to ask questions," he said. "I'll get on ProjectWise and look at what he's talking about."

A statewide network for project data

Each of KYTC's 12 districts has its own ProjectWise server, as does the Frankfort office. "We're all connected to a central database," said Jim Fisher, administrative branch manager in Frankfort. "You can access information on any project from anywhere in the state." ProjectWise provides multiple levels of security, starting at the document storage area, to give users or groups appropriate access rights.

Thanks to this federation of data, highway designers in the Frankfort office can jump in as needed on projects anywhere in Kentucky.

"We freelance for the whole state," Martin said. "Madisonville, Louisville—whatever needs to be done, they come to us and we have access to all the project files."

The central office's six designers spend about half their time helping other districts, either as part of a project team or with quick troubleshooting.

"And it's not just from the central office," Fisher said. "We can do this between any of the districts. If we've got an engineer low on work in one district, we can have him help out on a project in another district."



By shifting talent to where the work is, KYTC makes the most cost-effective use of its design staff. "It's going to become more and more prevalent," Fisher said. "With reduced funding and staffing resources, we have to help each other out."

Besides enabling collaboration, ProjectWise serves as an archive for reusable engineering data. "If you know a particular culvert or guardrail was used in another project, you can pull up those plans as a reference," Fisher said.

Efficient data administration

It's a far cry from a few years back, when each KYTC district ran its own independent document management system—aging, underpowered, and abandoned by its vendor.

"Our project data got scattered all over the state, in systems that didn't talk to each other. And the systems were failing," Fisher said. Projects were so fragmented that "it took us a couple of years to gather all this data up and get our arms around it."



KYTC's managed environment connects its 12 district offices with the central office in Frankfort.

But after moving the state's highway designs into ProjectWise, "we know where all our data is," Fisher said. "Hunting around different workstations looking for project data—that's over."

Centralized data management makes administration more efficient, he said: "Try to back up data on 200 workstations, and you'll see how difficult it is."

Now, however, ProjectWise acts as an online backup. Designers work on local copies of project files. If a designer accidentally deletes a large amount of data, the original file still remains intact in ProjectWise. So restoring data can happen instantly, rather than calling for an administrator to restore from backup tapes.

A seamless suite of solutions

KYTC enhanced its managed environment with Bentley Publisher, to publish engineering data via the agency's Web site. Contractors can get drawings of standard components—manholes, barriers, culverts. Highway designs refer to the standard drawings by number, "so we don't have to put them in every plan," Fisher said.

Because contractors view the actual DGN files designers work on, updated data is published immediately. Bentley Publisher can as easily handle other formats such as raster files and AutoCAD's DWG format.

The KYTC managed environment shows Bentley solutions in seamless integration:

- Engineering data is created with MicroStation and InRoads
- Data is secured, shared, and stored with ProjectWise
- Up-to-date data is shared externally through Bentley Publisher

Extending the managed environment

When it comes to making the most of the managed environment, "we're just scratching the surface," Fisher said.

He wants to take advantage of workflow aids such as ProjectWise's workspace feature, which associates a file with the appropriate workspace view, regardless of user or computer. Another efficiency boost: using a ProjectWise database to manage file attributes such as title block data for each individual drawing.

But Fisher has bigger plans for broadening the use of Bentley solutions agencywide.

Project information fragmented across divisions and disciplines will be united in a single data set, Fisher said: "Our projects can start coming together in a unified platform."

Initially, KYTC created its managed environment to help the highway design department work more efficiently. Now, the agency is bringing those benefits to other divisions such as traffic, planning, environmental analysis, and construction.

"We have a huge resource of intelligent data online, now at everyone's fingertips. Other divisions are realizing the value and coming online."

For instance, the traffic division lays out the location of lighting and signage. But rather than developing their own plans

from the ground up, "they can reach into ProjectWise, grab a plan sheet for the project, and add to the existing data, saying, 'Here's where we put the lights,'" Fisher said.

Environmental analysts can likewise benefit: "If we make an alignment change, they have ready access to it. They can see if we're going through protected lands, or if we'll need some kind of special permitting."

For now, KYTC's construction division works from paper plan sets. "Our goal is to give them intelligent electronic data," Fisher said. "If they have to make a change on an approach or an alignment, they can have all the intelligence the original designers put in."

In the coming months, Fisher said, project information fragmented across divisions and disciplines will be united in a single data set. "My goal is one-stop shopping for the entire project," he said. "Our projects can start coming together in a unified platform."

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