



## Project Summary

### Organization

US Army

### Vertical market

Geospatial – Government Agencies

### Location

Bamberg, Germany

### Project Objectives

- To improve access to the garrison's CAD and engineering documentation
- To introduce CAD standards and new department-wide workflows to ensure data integrity and the validity of 'as-built' views of the facilities
- To be able to access more than 50,000 CAD drawings through an intuitive map-based interface

### Bentley Products Used

MicroStation, ProjectWise Geospatial Management

## Fast Facts

- The US Army's Bamberg Garrison in Germany extends to 3,300 acres including 6 million square feet of housing, office and industrial space, 20 miles of roadway, an airfield and a railroad
- The garrison has a population of 10,000 – the equivalent of a small town
- By using ProjectWise Geospatial Management, the spatially-enabled version of ProjectWise Integration Server, technicians were able to organize more than 50,000 CAD drawings in just a few days
- The use of a structured way to access engineering documentation allowed the garrison's Department of Public Works to dispense with using PDF files distributed by e-mail and to migrate from a folder-based system where CAD files were stored on PCs without organization-wide access to this important resource

# ProjectWise® Enables Organization-Wide Access to Facilities Engineering documentation Through an Intuitive Map-Based User Interface

Bamberg, Germany, is a quaint German town in the state of Bavaria that dates back to at least 902 A.D. Because Bamberg is one of the few German cities not destroyed by World War II bombing, its Old Town is authentically medieval in appearance and is listed as a UNESCO World Heritage site. Bamberg is famous for its nine traditional breweries, a high number for a city of just 70,000.

Bamberg is also the home of U.S. Army Garrison Bamberg, one of several U.S. Army installations in Germany. Bamberg Garrison got started in 1945 when the US Army took over an existing German Kaserne. Since then, the 3,300-acre site has been extensively rebuilt and expanded, and now encompasses 6 million square feet of housing, office and industrial space, 20 miles of roadway, an airfield, railroad, golf course, and protected forest land, which services a surrounding and internal population of about 10,000 with all the supporting infrastructure required to service what is in effect a small town.

Bamberg Garrison's Directorate of Public Works functions much like any small town's public works department and oversees a staff of 200 host nation employees, including 50 engineers, architects and technicians. Over the years, design and construction work has been performed by the U.S. Army Corps of Engineers (USACE), by in-house staff, and by contract with host nation firms. The directorate also partners as needed with the city of Bamberg and with German Federal Agencies.

The amount of work and the different sources of design talent created a classically complicated CAD situation at Bamberg Garrison; a situation familiar to many Directorates of Public Works in mid-sized U.S. cities. Deputy Director of Public Works Eddie Johnson, R.A., AIA, succinctly stated the situation as of 2004, "We had just two seats of MicroStation®, one plotter, one CAD technician, no CAD standards, no network, no backup

system -- and 50,000 CAD drawings kept in a folder-based system with no workflow, audit-trail, or the ability to be sure that the latest drawings captured the as-built state of the facilities."

He continued, "When I arrived at U.S. Army Garrison Bamberg in 2004, CAD seemed to be a foreign concept, with only one person who had any basic understanding or relevant experience. That is, this was the only individual out of a 200-person engineering organization who would do CAD work. Furthermore, this was the only person who could even access the CAD file system, which resided on the hard drive of a single desktop PC with no backup. This strangled the organization's ability to function as an engineering entity."

Since there were no file-naming conventions and no overarching organizational scheme, files relating to particular locations were hard to find and it was difficult to be sure that all relevant files had been assembled. Since there was so little CAD knowledge or suitable workstations, it was even more difficult to work with CAD files, even if the relevant files had been located. And without a network, there was no good way to share electronic drawing files or to impose better filing schemes.

As a consequence, employees who needed access to CAD drawings developed a parallel system that relied on PDF versions of a majority of the CAD drawings, filed idiosyncratically on individual computers. With PDF files, at least CAD programs did not have to be opened. But it was not a very good system, as it required enormous amounts of disk space and often forced engineers to work with hard copies that were not to scale. Not surprisingly, staff often consulted the flat files rather than deal with CAD files. A significant resource was barely being used.

"The project was to establish a CAD knowledge-based staff while building a file system that was accessible, expandable, and stable enough to

*"In terms of numbers to date, we have consolidated approximately 50,000 drawings and related data totaling 40 years worth of facility information into a single graphical display"*

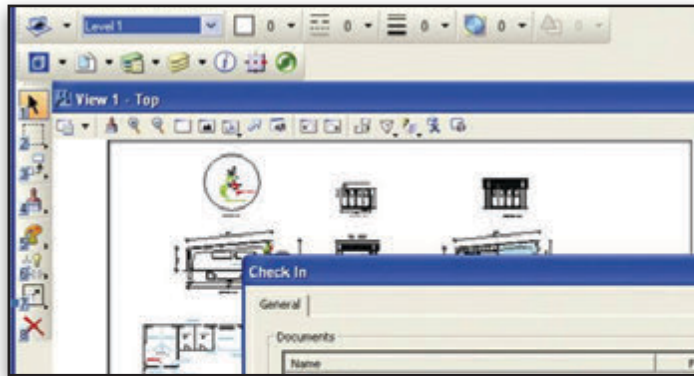
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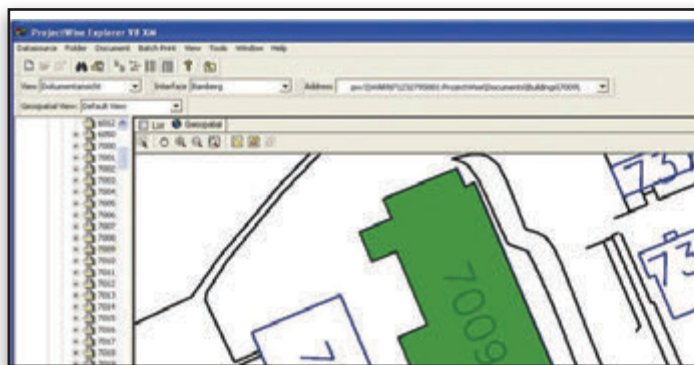
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*ProjectWise provides a platform for document version control and audit trails for changes and usage*



*With Bentley Geospatial Management engineering documentation is accessed through an intuitive map-based interface*

support the Directorate of Public Works' work processes," Johnson explained. "Sometimes entering the CAD arena is not as intimidating for an organization as it may seem. In fact, it can even make your work easier, more than you could ever imagine."

Johnson obtained funding in 2007 and in less than a year he had implemented a network and a backup system, purchased additional licenses of MicroStation and new licenses for ProjectWise, extended by ProjectWise® Geospatial Management (to allow CAD files and other documents to be indexed and searchable spatially), to organize CAD files. He emphasized on-site training from the beginning, developing a cadre of eight motivated individuals skilled in MicroStation and ProjectWise.

Johnson noted that the major challenge of this project was establishing a common platform to access the drawing and project-related information through a friendly, intuitive, graphical user interface. By creating a spatial interface in ProjectWise, Johnson was able to quickly address one major issue even before standards had been enforced — since users could simply click on

relevant buildings in an online map of the garrison, they did not even have to know a file name to find relevant drawings. By using Bentley Geospatial Management's geo-referencing features, technicians were able to organize all 50,000 drawings with just a few days of administrative work.

Summarizing the system in 2008, Johnson said that Bamberg Garrison now has a stable and accessible system, a trained, knowledgeable staff, greatly improved workflow, and has realized substantial savings in dollars and man-hours. The initial investment was a reasonable \$40,000 and he expects to see a full payback within three years.

By combining the right tools with the right attitude, Bamberg Garrison was able to implement major improvements in

CAD management with minimal investments of time and money. The database cleanup work is continuing, workflows get better every day, and Johnson is looking forward to expanding the user base. Currently the project is expanding to other directorates in the garrison structure to include the morale, welfare and recreation group, tenant units, and command headquarters.

"In terms of numbers to date, we have consolidated approximately 50,000 drawings and related data totaling 40 years worth of facility information into a single graphical display: accessible, secure, and integrated. The new efficiency that we enjoy can only be fully appreciated by those who struggled with the limitations of the previous system," Johnson concluded. "Experiencing this new shared, integrated platform has enabled our staff to make use of CAD and geospatial technology at a more practical level, whereas previously a visit to the flat files may have been easier. The dollar savings are realized daily as we mature in the ProjectWise environment. The fact that our internal customers have the ability to access the database at all is a testament to the project's success in efficiency and time."