Gremmer & Associates, Inc.

Customer Success Story

AutoCAD® Civil 3D®
Autodesk® Storm and Sanitary Analysis

Faster, more efficient roadway design.

Wisconsin consulting firm completes challenging roadway design project with help from AutoCAD Civil 3D software.

From a manager's point of view, being able to make design changes more quickly with Civil 3D was instrumental to meeting the deadline—especially when you multiply those savings over the lifetime of the project. We can't begin to measure how much time we saved.

—Tom Lanser, PE
President
Gremmer & Associates, Inc.

Post-construction photo of US 41 and Witzel Avenue.
Image courtesy of the Wisconsin Department of Transportation.

Project Summary
Established in 1977, Gremmer & Associates, Inc. is a consulting engineering firm that delivers a variety of services, including transportation and municipal design, site design, stormwater management, surveying, and construction management. For many years, the company's professional engineers relied on Computer Aided Civil Engineering (CAiCE) software to complete projects for municipal, state, and private-sector clients throughout Wisconsin. Several years ago, in response to an increase in demand for model-based design, Gremmer initiated a test of AutoCAD® Civil 3D® software. "The response from our engineers was so positive that we moved forward based solely on their recommendation," says Tom Lanser, president of Gremmer & Associates. Since adopting Civil 3D in 2007, the company has used the software to help complete 18 projects for the Wisconsin Department of Transportation (WisDOT), with six more projects currently underway. One of the most significant of the completed projects was an expansion of US 41 in Wisconsin, where it runs through Winnebago County.

The Challenge
This project included the expansion of a 12-mile stretch of highway from four to six lanes and the reconstruction of an overpass and frontage roads where Witzel Avenue crosses US 41. Tasked with completing survey, plats, drainage design, and final plans, specifications and estimates (PS&E), Gremmer & Associates began work on the project in 2003. "At that time, we were still using our legacy software," says Ben Oitzinger, a project engineer at the company.

The company had taken the design documents to 60 percent completion when WisDOT requested a significant change. "As a result of new WisDOT guidance, a feasibility study was conducted and roundabouts were selected, changing the initial design which specified signal lights at the intersection of Witzel Avenue and the US 41 frontage roads," says Oitzinger. "The roundabouts were definitely more complex." In addition, the roundabouts needed to be constructed prior to US 41, therefore their design had to meet the limitations imposed by the adjacent freeway both before and after the expansion. "At that time, we decided to switch to Civil 3D to complete the project."

Autodesk®

Faster design changes keeps project on schedule.

The Solution
To get started, the designers began creating more realistic models of the new intersections. “One consequence of adding roundabouts was that the alignments all changed, forcing us to start many of the intersection components from scratch,” says Oitzinger. With help from Civil 3D, Gremmer & Associates found the process easy. “We were able to superimpose the old alignments and profiles on the new ones and match them up,” Oitzinger recalls.

The model-based approach helped the design team better understand how the finished project would appear and also improved collaboration. “Being able to integrate data from the other companies and other design software and bring them into our own design was definitely very helpful in working out design issues and catching errors,” says Oitzinger. Gremmer & Associates also used pipe networks in Civil 3D to assist with stormwater modeling.

As the project progressed, Gremmer & Associates had to make a variety of design changes to the roundabouts. With help from Civil 3D, the designers were able to make changes on the fly and more easily assess their impact. “That is definitely an advantage,” says Oitzinger. “With Civil 3D, we could evaluate a what-if scenario and make the required changes within hours. That could have taken us up to a day with our legacy software.”

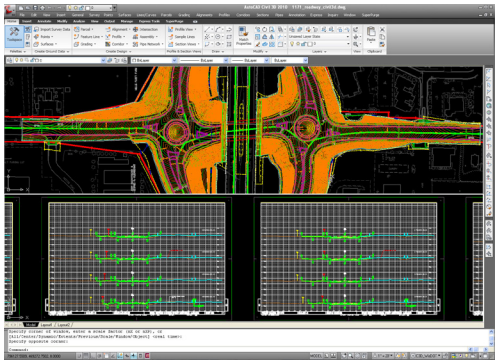
“Due to the complexity of the project, the design was constantly evolving,” says Lanser. “It was really like no other job we’ve ever had. From a manager’s point of view, being able to make design changes more quickly with Civil 3D was instrumental in helping to meet the deadline—especially when you multiply those savings over the lifetime of the project. We can’t begin to measure how much time we saved.”

The Result
Gremmer & Associates delivered a bid package in January 2009. “By using Civil 3D, we achieved our goal of creating a high-quality, more accurate design that required fewer requests for information than are typical on a project of that complexity,” says Oitzinger. “The most important benefit was undoubtedly the software’s ability to more accurately visualize the impact of on-the-fly design changes.” To enhance these capabilities, the firm plans to adopt the Autodesk® Storm and Sanitary Analysis software for stormwater modeling in the future.

“Civil 3D is firmly entrenched as our software of choice for roadway design,” says Lanser. In response to growing demand among architects for model-based design, the firm has also started to use Civil 3D for its private-sector civil design work. “Civil 3D has made us an all-around better, more efficient, and more productive design firm,” says Lanser.

For more information, visit **www.autodesk.com/civil3d**.

Roundabout at intersection of Witzel Avenue and US 41.
Image courtesy of Gremmer & Associates, Inc.



Roundabout design in Civil 3D.
Image courtesy of Gremmer & Associates, Inc.

Overpass at intersection of Witzel Avenue and US 41.
Image courtesy of Gremmer & Associates, Inc.

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