



## Project Summary

### Organization:

AECOM Technology Corporation

### Location:

Dallas-Fort Worth Metroplex, Texas

### Project Objective:

- Design 6.5-mile segment of a North Texas Tollway Authority tollway around Dallas-Fort Worth
- Complete major design elements within 15 months of Notice to Proceed
- Manage project team with 12 sub-consultants and 300 employees in 22 offices

### Products Used:

ProjectWise Online  
MicroStation  
GEOPAK

## Fast Facts

- Initiated in 1969, SH 161 (a.k.a. President George Bush Turnpike Western Extension) will complete an 11.5-mile link in the loop circling the DFW metroplex
- AECOM is the lead designer and sub-consultant to the contractor, Prairie Link Constructor, a joint venture between Fluor and Balfour Beatty
- ProjectWise Online provided a managed environment for the distributed project team

## ROI

- ProjectWise saved approximately \$250,000 in CAD management costs
- ProjectWise enabled reviews to be done up to two days ahead of schedule, resulting in an estimated \$600,000 in travel savings

# ProjectWise Online Connects AECOM With 12 Sub-consultants in 22 Offices

NTTA's SH 161 Design-build Project Saves \$850,000 in CAD Administration and Travel Costs

## \$416 Million Project Completes 6.5-mile Highway Link

AECOM Technology Corporation is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water, and government. Prairie Link Constructors retained this *Fortune 500* company to design the Texas State Highway (SH) 161 Phase 4 project. The \$416 million design/build project completes a 6.5-mile link in the loop around Dallas-Fort Worth managed by the North Texas Tollway Authority (NTTA). Through its use of ProjectWise®, Bentley's system of collaboration servers and services for project team work sharing, content reuse, and dynamic review, the firm saved its client \$850,000 in CAD administration and quality-control review costs.

AECOM was challenged to complete the major design elements within 15 months of Notice to Proceed. With the project office in Grand Prairie, Texas, and team members distributed across 22 locations in seven states, AECOM selected ProjectWise Online to provide CAD file management, quality control, and document storage. ProjectWise users accessed one secure, work-sharing platform to create high-quality design documents that were 95 percent compliant with the client's CAD requirements.

Design Manager Brian Dodson, P.E., noted: "The success of this project could not have been accomplished without the use of ProjectWise."

## Design-build Schedule Demands Collaboration

Awarded the \$30 million design contract in December 2009, AECOM had just 15 months from Notice to Proceed to complete the major design elements. Design of the tollway link was complex in scope, with two major interchanges, 45 bridges, more than 1 million square feet of retaining wall, and a tie-in with a new Union Pacific Railroad bridge.

Staying on schedule was crucial to deliver the project by Oct. 31, 2012. To achieve the design schedule, AECOM put together a project team with 12 sub-consultants and 300 employees located throughout the United States. Fostering communication and collaboration was key, but AECOM also

needed an integrated design approach with one quality control system to coordinate so many firms, employees, and offices.

## Managed Solution Centralizes Project Data

Based on two years of experience using Bentley's ProjectWise on other projects, AECOM recommended that a web-based solution be implemented on SH 161 Phase 4. ProjectWise Online provided the team with a reliable and secure infrastructure that would be accessible by team members wherever they are – working from home, in sub-consultant offices, or at the main project office.

Managed by Bentley, the solution allowed users to easily find, update, and share CAD documents, project data, PDF files, spreadsheets, and other office documents without being slowed down by firewall, network, or FTP issues. The core component of the system was the ProjectWise Integration Server, which federates all project data regardless of storage location.

## Caching Servers Distributed Files Locally for Fast, LAN-like Access

Bentley handled system setup and configuration, as well as ProjectWise Administrator training. AECOM set up the ProjectWise Administrator and ProjectWise Explorer options, as well as trained all end users on the project. After an initial learning curve with the new software, working in ProjectWise soon became second nature to the 210 users who had access to the system.

## Easy, Secure Access Speeds Review Cycle

ProjectWise enabled users to create and access project documents with standard configuration settings – as opposed to different settings used by each company at each office. Eight separate CAD file naming conventions were "foolproof," with a wizard to automatically generate files with preset standards. Working in a single online workspace, users had consistent title blocks, attributes, and metadata that could be extracted for the contractor and client.

In the managed environment, there were no worries about who controlled a master file, who was updating it, and who had the latest version; ProjectWise became the shared,

*“One of the biggest benefits has been allowing different users with different requirements to access a common environment to create files in a similar manner with similar names, no matter where they are. ProjectWise allows everyone to create a 95 percent compliant document by the project deadline.”*

— Jeffrey Bernard,  
AECOM CADD Manager

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trusted source of all project information for the collaborative team. Team members had role-based access privileges, with 13 separate design disciplines given write access to specific directories; contractors given read-only access to files for constructability reviews; and the client given read-only access to review submittals. Of the more than 4,600 CAD documents in the system, 95 percent were compliant with the client's CAD standards.



*An aerial view of the Texas State Highway 161 under construction.*

The workflow in the managed environment was accelerated by the ease with which reviewers could download and comment on design documents. A full quality control review of plans could be completed in a matter of hours or days, depending on the complexity of the changes. “The ability of the contractor to request a change in the field, have our project office staff upload comments to ProjectWise, and have anyone, anywhere update as needed has really helped accomplish quick turnarounds on items for the contractor,” Dodson said.

### **ProjectWise Reduces CAD Management and Travel Costs**

The decision to use ProjectWise not only streamlined workflows but also saved \$850,000. Using the ProjectWise

customized workspace eliminated the need for multiple CAD managers to manage separate CAD standards in each office. As a result, staff members from all offices were able to focus on the final deliverable rather than on whether it had the latest CAD standards in place. This saved the project \$250,000.

In addition, based on the results from the 10 early milestone packages conducted in the project office, AECOM found that the decision to utilize ProjectWise and eliminate travel for design review meetings saved the project approximately \$600,000. The techniques implemented on this project will allow this critical piece of infrastructure to be delivered to the Dallas-Fort Worth area on time.

### **Managed Environment Extended to More Projects**

The successful implementation of ProjectWise Online for SH 161 Phase 4 has resulted in the system's selection for use on additional projects. AECOM implemented ProjectWise on eight other projects in North America, with a total of 800 users. Notable projects include:

North Tarrant Expressway West – A \$1.6 billion project to design, build, operate, and maintain a 36-mile High Occupancy Toll facility in Fort Worth, Texas. AECOM completed a due diligence study in preparation of the consortium's proposal and to secure funding for the project, which was completed in 2010.

State Loop 1 Corridor (MOPAC) – A \$110 million, two-phase project covering a 23-mile corridor near Austin, Texas. AECOM is the prime consultant, leading a team of 16 sub-consultants. The Phase 1 Interim Project is expected to be completed by the end of 2012.

Texas State Highway 130 Segments 5 and 6 – A \$1.35 billion project totals 40 miles with two toll lanes in each direction, and 17 miles of non-toll frontage road. Located south of Austin, the project is under construction and scheduled to be open for traffic in 2012.