

Software Increases Project Efficiency

Competition for projects is extremely fierce in today's economic climate. This competition has led design and construction professionals to incorporate new technologies into their projects to be more cost-effective and enable them to meet tight schedules.

Bidding on a series of government projects that were tilt-up structures, [Michael Baker Corp.](#), Moon Township, Pa.—a firm providing engineering and consulting services for public and private sector clients worldwide—began the search for a tilt-up specific software design package. "On prior tilt-up projects, we had outsourced the tilt-up portion of the engineering," says Erik Spicker, structural technical manager for Baker and Associates. "However, for these projects, we wanted to keep the complete design in-house to increase our revenue and reduce coordination time."

In the quest to find a software design package, Spicker performed an Internet search and found Tilt-Werks—proprietary software created by Tilt-Up Design Systems LLC, Heathrow, Fla., that allows for faster communication of project information and expedited construction schedules. "We ultimately selected the software solution because of its user friendliness, easy integration, cost effectiveness, and specific use for tilt-up design," says Spicker.

Integrating the software

To begin the integration process, Baker and Associates paired a senior level engineer with an engineer-in-training to oversee the integration and determine an input method. This project involved the design and construction of five government buildings in different locations: two buildings in Oklahoma totaling 80,000 square feet, two buildings that were 45,000 square feet each in Texas, and a 25,000-square-foot building in Puerto Rico. Each of the projects was fast-tracked and had only three and a half to six months from notice to proceed to construction.

"Because the schedule was so tight for these projects, we needed tilt-up design software that was easy to implement and could decrease their turnaround time for panel drawings," says Spicker.

Engineering data and building geometry is input to generate a complete tilt-up design and construction package. For these projects, the engineer-in-training would input the data and the senior engineer double checked for accuracy of the output, based on past projects and known output.

With the software, panels are designed after entering wall geometry and design requirements, and the program automatically generates detailed drawings including panel features, such as reveals and formliners, weld plate locations and details, reinforcing steel drawings, bar cut list with material takeoffs, and much more—all of which can be shared with all project team members. The interface also allows panel costs to be calculated for accurate estimates that take into account the unique requirements of tilt-up projects.

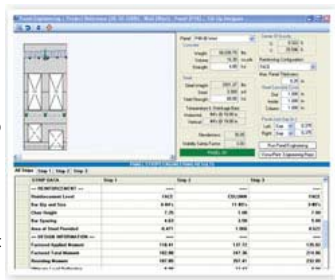
Once the model was created, it was given to the in-house CADD technician to finalize the drawing to meet Baker and Associates's internal standards. The output gave the Baker and Associates team a baseline to complete their detailing.

Evaluating the ROI

Baker and Associates does not apply a direct test of return-on-investment (ROI) to software because of how they price their projects, but they have determined a way to calculate how the software benefited their project. "Once we got past the learning curve and learned the tricks and shortcuts specific to our workflow, Tilt-Werks saves time throughout the project, which increases our profits," says Spicker. "Further, without the software we would not have had any guideline or template to design the tilt-up portion of the project."

Baker and Associates plans to use the tilt-up software product on future projects and would recommend it to firms pursuing tilt-up work. "It allowed us to lower the cost of design and provided new revenue streams, such as providing reinforcing placement drawings, construction shop drawings, and the ability to make changes on fast-track projects on the fly," says Spicker.

Joe Steinbicker, PE, SE, is president for [Tilt-Up Design Systems LLC](#).



With the software, panels are designed after entering wall geometry and design requirements, and the program automatically generates detailed drawings including a wide variety of panel features.