

Bond Wolfe Architects  
BRIC Partnership  
Larson Engineering  
S. M. Wilson & Co.

Customer Success Story

Autodesk® Revit® Architecture  
Autodesk® Revit® MEP  
Autodesk® Revit® Structure  
Autodesk® Navisworks® Manage

From material arrivals to any on-site fabrication, we knew where and when things needed to happen. Navisworks helped us to model the end-to-end project.

—Corey Bell  
BIM Implementation Manager  
S. M. Wilson

# Learning on the fast track.

## The new Ladue Early Childhood Education Center is completed early and under budget with help from BIM.



Image courtesy of Bond Wolfe Architects.

### Project Summary

Completed in August 2011, the Ladue Early Childhood Education Center provides a stimulating environment for the education and development of the young children of Ladue, Missouri, and the surrounding communities within the Ladue School District. The 50,000-square-foot building features engaging play areas, a teaching kitchen, colorful classrooms, and parents-as-teachers workspaces. Replacing a facility constructed in 1936, the building better supports the space needs of the school's dedicated teachers—and helps children gain a solid foundation for a lifetime of intellectual, social, and physical development.

Eager to begin using the much-needed facility as soon as possible, the Ladue School District chose to design and build the school as a fast-track project. The district tapped Bond Wolfe Architects to design the building and S. M. Wilson & Co., a general contractor and construction services company, to help manage the project. Larson Engineering and BRIC Partnership provided engineering services.

Knowing that this was going to be a complex project to pull off, the team turned to a suite of Autodesk® Building Information Modeling (BIM) solutions to get the job done. The team used Autodesk® Revit® software products and Autodesk® Navisworks® Manage software, which helped them connect and collaborate. "BIM allowed us to work from intelligent models and gave the big picture of the project from the beginning," says Mary Beth Oberlin, the project architect for Bond Wolfe. "We stayed ahead of the planning, coordination, and

constructability issues that can throw accelerated project schedules off track."

### The Challenge

The site selected for the Ladue Early Childhood Education Center presented a pressing design and construction challenge: It was occupied by a school that would be operating during most of the construction process. The plan was to build next to the existing school, which served students in grades seven through 12, and then demolish a portion of it after completion of the new children's center, with one wing to be renovated later in the project.

"We had to design a building that could be constructed without interfering with the existing school," says Susan Pruchnicki, a principal with Bond Wolfe. "At the same time, we did not want to compromise the new building's design due to a temporary site condition."

"The existing building would be as close as 14 feet to the new one," says Dan Behler, a project manager with S. M. Wilson. "We wanted to really understand the construction sequence so we could minimize any impact on the current tenant. From a logistics perspective, staging the site was challenging. An operating school is more than just buildings. Students and faculty fill the parking lot every day. You have to account for the usual fire truck access requirements associated with any construction site, plus the requirements of an operating school."

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# Stay ahead of coordination, schedule, and budget issues with BIM.

## The Solution

From the beginning, the architects at Bond Wolfe relied on Autodesk® Revit® Architecture software to support their BIM process. They developed a preliminary site model in Revit Architecture, exploring basic building concepts that worked for the site. A two-story building soon emerged as a leading option, although one-story buildings are more typical for schools that are intended for young children.

"We began sharing our initial models with our client contacts," explains Oberlin. "They liked the idea of students using stairs to move between floors because it can help promote physical development. The model showed that a two-story concept could work with the site and provide the good sightlines teachers want when supervising young children. Working from a model helps us and the client understand how to get the most out of the space available during and after construction."

## Controlling Costs

Working closely with the architects, the team from S. M. Wilson helped make sure design decisions took costs into consideration. Bond Wolfe shared models of different design options developed in Autodesk Revit Architecture, and S. M. Wilson then did material takeoffs and analyzed the cost implications.

"The automated material tracking capabilities within Revit Architecture made it easier to account for costs," explains Corey Bell, BIM implementation manager for S. M. Wilson. "Within a couple of days of getting the models, we had better insight into material and construction costs for every option. Doing cost analysis using the more traditional manual method simply isn't as fast or precise."

## Aligning Engineering

When the structural engineers at Larson Engineering joined the project, they hit the ground running. They had to—the fast-track schedule only

allowed them eight weeks to develop the structural designs. Turning to Autodesk® Revit® Structure software for BIM, the engineers were able to model the structural components to align with the architectural model.

Mike Goeden, a project manager with Larson and the engineer of record on the project, explains how BIM helped the team stay on track: "As we worked, we were able to share the models with the architects and the client. It helped everyone to see earlier in the process how structural choices can influence the design as a whole. With fast-track projects, there is risk that changes late in the game will significantly impact the structure. BIM helped us avoid that."

The mechanical, electrical, and plumbing (MEP) engineers at BRIC Partnership used Autodesk® Revit® MEP software for BIM to design their portion of the project. "We aligned the building systems with the structural and architectural Revit models," says Randy Blankenship, BIM leader for BRIC Partnership. "Much of the duct system was a tight fit, so coordinating from the beginning made it easier to avoid time-consuming changes close to construction."

## Coordinating as a Team

As the design came together, S. M. Wilson aggregated the models in Autodesk Navisworks Manage software. The clash detection feature helped the team identify and address interferences between systems early in the process. All the contractors on the project were required to participate in the BIM process too; as they developed detailed models of their portions of the project, S. M. Wilson kept aggregating new information into Navisworks.

"There's no question that Navisworks helped to keep everyone on the same page," says Behler.

"Some of the contractors were reluctant to embrace the BIM process. But by the end, the doubters were true believers. They saw that BIM helped reduce the risk of errors and delays for everyone."

## Site Planning

Autodesk Navisworks Manage and Autodesk Revit Architecture software also played a key role in site planning. S. M. Wilson developed several potential site models within Revit Architecture and aggregated the models with the building designs in Navisworks. By sequencing the construction within Navisworks, the team developed a site layout that accounted for space requirements and materials staging throughout the project.

"By planning every aspect of the site in advance, we were able to minimize inconvenience for the existing school," says Bell. "From material arrivals to any on-site fabrication, we knew where and when things needed to happen. Navisworks helped us to model the end-to-end project."

## The Result

Ladue Early Childhood Education Center welcomed students as scheduled for the 2011-2012 school year. According to Susan Dielmann, director of communications for the school district, the project was a complete success: "The students, parents, and teachers love the new facility. Almost as important, the building was completed three weeks early and under budget. There's still another phase of the project involving demolishing part of the old school and renovating a wing of the old building. Thanks to the efficient construction phase, we have more resources available to make the renovation just as successful."

## Learn More

Learn more about **construction software** and **BIM**.

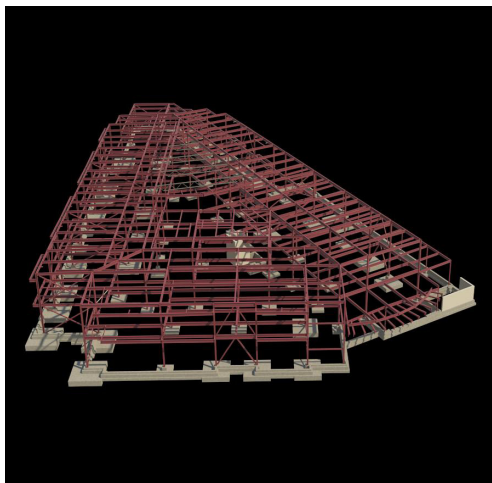


Image courtesy of Larson Engineering.

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