Introduction

Founded as Bond Brothers in 1907, BOND delivers construction services to clients across the Northeastern United States. The firm specializes in construction management, particularly for the higher education and healthcare markets, and self-performs work for the civil and utility market, with a focus on the power and energy sectors. BOND’s commitment to quality has earned the loyalty of its customers, with more than 90 percent of its business coming from repeat clients.

The firm decided to strengthen its ability to deliver quality projects—safely—on time and on budget by adding Autodesk® BIM 360™ Field, a cloud-based service, to its Building Information Modeling (BIM) process. BIM lets teams explore and coordinate projects using a model-based process—before construction even begins. BIM 360 Field helps take the power of BIM into the field via mobile devices. Anthony Bond, a director with BOND, explains, “Autodesk BIM 360 Field gives us a faster and more powerful way to manage construction in the field as it happens. We started using BIM 360 Field on our construction management projects, and adapted it to our civil and utility projects, where it quickly became an invaluable part of the way we support quality and safety.”

The challenge

BOND carries out a wide variety of civil and utility projects. A college may need a few hundred feet of new electrical distribution lines, or a regional utility might need work done on 20 miles of underground electrical lines. Work on older underground lines can be especially challenging because utilities often lack accurate documentation. BOND bases its work plans on the best information it can find, but its team needs to be prepared to work safely and enforce today’s quality standards no matter the conditions they uncover.

Putting safety first—faster

BOND takes BIM into the field to enhance quality and safety on its civil and utility projects

BIM 360 Field helps us save time on projects as we execute our quality and safety program. This helps us deliver in the field on highly complex projects while also allowing us to gain the client’s trust.

— Anthony Bond
Director
BOND

Image courtesy of BOND
Autodesk BIM 360 Field helps firm complete a utility project 25 percent faster

“Safety is a priority on every one of our projects,” says Chris Fogg, virtual design and construction manager for BOND. “When you’re working with live gas and electric lines, there’s no margin for error. We’ve always followed and enforced rigorous standards, but wanted to make it easier and faster for our teams to manage checklists and document issues. Back at the office, our executives wanted more visibility into field quality and safety. Autodesk BIM 360 Field offered a better way to stay on top of work during construction.”

The solution
Autodesk BIM 360 Field software combines mobile technology and cloud-based collaboration and reporting. BOND uses it to help take the power of BIM into the field. Supervisors and inspectors manage safety and quality checklists on Apple® iPad® mobile devices as they monitor progress. When they spot issues, they no longer have to document them on paper and then return to the construction trailer to document them again. They note items on their iPads. The BOND team can also use iPads to access the latest 3D construction models to help support greater accuracy.

“For a typical utility project, we’re tracking about 40 key quality and safety items,” says Bond. “Supervisors use checklists in their iPads to review everything from weld specifications and excavation support materials to pipe locations and diameters. They no longer have to enter items from paper checklists into spreadsheets, which saves about 45 minutes at the end of each workday. BIM 360 Field also makes it easier to communicate and address issues quickly.”

Bond adds, “BIM 360 Field lets us take photos of work and link the images to specific locations on project designs. We take photos of the underground infrastructure as it’s exposed, and on many projects, specific sections of pipe might only be exposed for a day. That’s a huge enhancement to the as-built documentation on an underground project. If there’s ever a problem on the line, the client can see a photo of what’s there in addition to the design, making it easier to resolve the issue quickly.”

Eight days of work in six days
A recent gas pipeline maintenance project for a large gas transmission operator in upstate New York highlights how Autodesk BIM 360 Field helps BOND. The project, which affected more than 1,000 feet of transmission pipe, needed to adhere to its eight-day schedule. That’s because the required shutdown of the line cost the operator as much as US$1 million per day. As the project progressed, the BOND team used BIM 360 Field to document safety and quality, helping to resolve any issues almost instantly.

“We completed the project in six days instead of the scheduled eight. With this earlier completion, our client received millions of dollars in additional revenue because of earlier operation of the utility line,” says Bond. “BIM 360 Field wasn’t the only reason we advanced the schedule by about 25 percent, but it was a notable contributor. Let’s say there’s an issue that needs an engineer’s attention. With support from BIM 360 Field, team collaboration and communication can be accelerated and therefore, time saved.”

Improving quality and safety
As it uses Autodesk BIM 360 Field on its utility, civil, and building projects, BOND is building up a wealth of data about quality, safety, and the performance of subcontractors. The firm’s executives run reports and delve into the data. They examine the data for opportunities to improve future projects.

“We can monitor individual projects from the office or look at data across projects,” explains Bond. “Are there recurring quality or safety issues on certain projects or with specific subs? BIM 360 Field helps us uncover insights that can improve the way we work and collaborate.”

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“Reporting is not just for us,” says Fogg. “We’re more than willing to bring clients into the data generated on their projects. If clients want to, they can run reports, report issues, and close out nonconforming items in BIM 360 Field. Clients, especially our utility customers, appreciate the window into their projects.”

The result
Bond reports that BIM and Autodesk BIM 360 Field are adding to their edge when it comes to winning work. He says, “BIM 360 Field helps us save time on projects as we execute our quality and safety program. This helps us deliver in the field on highly complex projects while also allowing us to gain the client’s trust. Being able to deliver ahead of schedule, as we did on the gas transmission project, with more complete as-built documentation, enhances our advantage even more.”