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SOFTWARE

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Your room is ready—early.

Autodesk BIM solutions help Balfour Beatty complete luxury hotel two months ahead of schedule.

We committed to finishing two months early, which gave the client time to hire staff and actually open early. There's no question that Autodesk BIM solutions helped us avoid delays and gain time throughout the project.

—**Jerret Click**
Senior Project Manager
Balfour Beatty



Project Summary

A leading international infrastructure and building company, Balfour Beatty has operations in more than 80 countries. The City of Dallas, Texas, recently tapped the company's U.S. construction services division, Balfour Beatty Construction, to build a luxury hotel for its convention center. Concerned about missing the economic benefits of large conventions because the convention center lacked an adjacent hotel, the city decided to build the 23-story, 1,001-room Omni Dallas Hotel. Due to the high interest carrying costs of the revenue bonds funding the project, the city wanted the facility constructed as quickly and cost-effectively as possible.

Balfour Beatty Construction relied on Autodesk® Building Information Modeling (BIM) solutions to help keep the hotel project on budget and on schedule. "BIM allowed us to explore multiple options as design decisions were being made," says Steven Belaire, a senior project engineer for Balfour Beatty Construction. "It made it easier for us to coordinate the project, help the client make more informed decisions, and stick to the tight schedule. Thanks in part to the efficiencies of the BIM process, we didn't just stay on schedule—we finished two months early."

The challenge

The City of Dallas chose to engage Balfour Beatty Construction using a design/build project delivery method, which involved both beginning construction well before the completion of the design documents and an aggressive schedule. Balfour Beatty Construction realized early in the process that it needed to avoid issues that can cause delays and unexpected costs on projects, such as interferences between systems, requests for information (RFIs), and slow decision making. The design firms on the project had already started the design using 2D tools, but Balfour Beatty Construction felt that BIM should play a central role in its construction management process. That's because BIM would allow the firm to leverage intelligent 3D models to help keep the project on track.

"We opted to introduce BIM to the project by recreating the 2D designs as 3D models," says Brad Karazsia, a senior project engineer with Balfour Beatty Construction. "Having used BIM before on similar projects, we knew the time investment would be well worth it. BIM delivers benefits to virtually every aspect of a project, but it's worth it even if you only use BIM for clash detection."

BIM helps accelerate construction schedule.

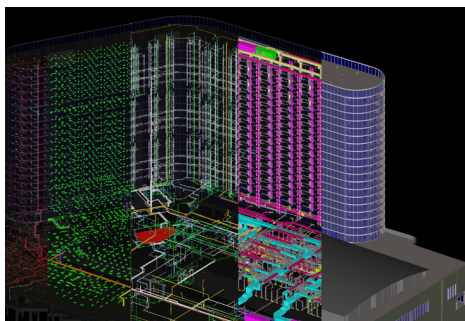
The solution

Balfour Beatty Construction began by developing intelligent 3D models of the building and site using Autodesk® Revit® software. Realizing they did not need one-for-one models of every aspect of the design, the team began by building a basic model of the building, and then focused on the details for more intricate portions of the design, such as the structural systems and ceilings.

Greg Dasher, integrated projects director for Balfour Beatty Construction, explains the process: “Each week, we received the latest designs from the architects and engineers. We used the DWG to compare features within AutoCAD software to help identify changes, and then updated them in the model. We were then able to look for and address any significant coordination issues.”

Early in the project, the team realized ceiling clearance would be an issue in several areas. After optimizing the placement of duct and electrical elements within the model, Balfour Beatty Construction used the model to help show the issues to the client.

“The model allowed us to review the project with the design team and client in 3D,” says Belaire. “Everyone could see the ceiling issues more clearly. We helped avoid potentially time-consuming back-and-forth discussions, and found the best solution. In one instance, we lowered the ceiling just 9 inches. The clients still got high ceilings, and we got the space we needed—but with no more room than was necessary to get the job done.”



Images courtesy of Balfour Beatty
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Better Coordination Leads to Fewer RFIs

As the project moved forward, Balfour Beatty Construction incorporated its subcontractors into its BIM process. The subcontractors developed detailed plans for their portions of the project using their own software applications. For instance, the HVAC and plumbing contractor used Micro Application Packages, and the electrical contractor used AutoCAD. Balfour Beatty Construction aggregated the information into a single project model using Autodesk® Navisworks® Manage software. The whole team then conducted face-to-face and web-enabled coordination meetings. Clash detection tools within Autodesk Navisworks software helped identify interferences.

“We ran through different sections of the project in Navisworks during online meetings,” says Belaire. “After reviewing clashes with one subcontractor, they were often able to address the issues while we focused on another section of the building. At the end of the meeting, we aggregated the modifications into the model. It was a faster, nearly real-time way of resolving issues.”

According to Karazsia, the effort paid off when it came time to build the project. He says, “We eliminated hundreds of clashes per floor before getting into the field. That leads to fewer RFIs. The team estimated we issued 50 percent fewer RFIs than would be typical on a project of this size with much of the reduction being attributed to the BIM effort. Every RFI that doesn’t happen represents real savings in time and cost.”

Seamless Off-Site Fabrication

To accelerate the pace of the project, Balfour Beatty Construction made extensive use of off-site fabrication in building the hotel. The fact that many of the company’s subcontractors already used BIM facilitated the process. Basing their fabrication on coordinated, 3D models, the subcontractors fabricated materials—and in many cases assembled large portions—off-site. They then brought the materials to the site as needed and incorporated them into the building.

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“Off-site fabrication is a great way to speed construction,” says Karazsia. “But there’s often the expectation of a bit of fine-tuning and fitting as materials go into a building. We had very little need for that on this project. In most cases, the materials fabricated and assembled off-site fit exactly—like pieces of a puzzle. BIM added a very high level of precision to the process.”

The result

Balfour Beatty Construction stayed well ahead of the project’s original timeline thanks in part to the BIM process. Scheduled to open in early 2012, the Omni Dallas Hotel began welcoming guests two months early. “We looked at the pace of the project in early 2011, and it was clear we would be able to finish ahead of schedule,” says Jerret Click, senior project manager. “We committed to finishing two months early, which gave the client time to hire staff and actually open early. There’s no question that Autodesk BIM solutions helped us avoid delays and gain time throughout the project.”

Learn More

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