Bornhorst + Ward Consulting Engineers

Customer Success Story

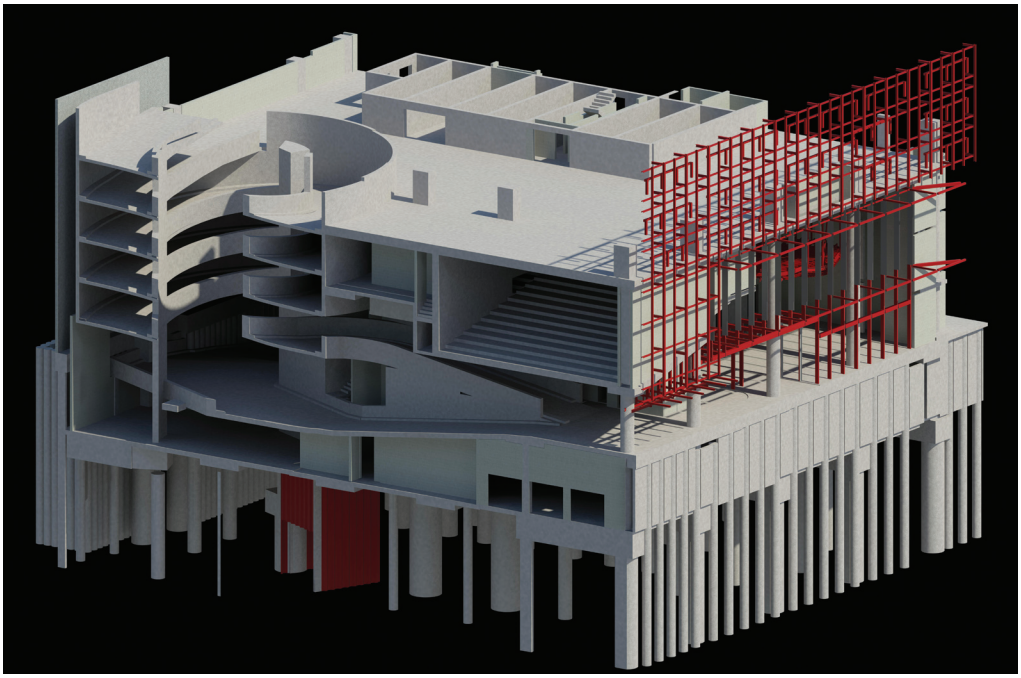
Autodesk® Revit® Structure
Autodesk® Revit® MEP
Autodesk® Design Review
AutoCAD®

Our skill with Revit Structure and BIM has definitely given our company a competitive advantage. We are building all of our processes around Revit Structure and BIM.

—Brett Taylor
Director
Bornhorst + Ward

Improve. Enhance. Impress.

Bornhorst + Ward improves design decisions, enhances project constructability, and gains competitive advantage with BIM.



3D view of building pedestal and helix ramp.
Image courtesy of Bornhorst + Ward Consulting Engineers.

The Firm
Bornhorst + Ward is one of the leading independent engineering consulting firms in Queensland, Australia. Based in Brisbane, the multidisciplinary firm has completed hundreds of projects along the eastern coast of Australia—including numerous hotels, bridges, and high-rise buildings. On many of these projects, the firm relied on AutoCAD® software. Based on that experience, in 2005 the firm took advantage of an opportunity to use Autodesk® Revit® Structure software for Building Information Modeling (BIM) on a complex, 70-story office building. "Some benefits of BIM were immediate," says Brett Taylor, a Director at Bornhorst + Ward. "Once we created the model, we not only had the floor plan, but also all sections, elevations, and quantities. After a few days, we knew that BIM was the way to go." With implementation support from Autodesk Authorized Reseller AEC Systems, Bornhorst + Ward had standardized on Revit Structure for all new structural projects by early 2007.

The Challenge
One of the firm's recent projects with Revit Structure is the 38-story Regent Office Tower, a new 55,000-square-meter building that will rise above the heritage-listed Regent Cinema Complex in downtown Brisbane. The proposed development includes the demolition of an existing building, followed by the construction of a nine-story concrete podium topped by a 29-story steel-framed tower.

Owned by the Industry Superannuation Property Trust (ISPT) and Brookfield Multiplex, this project is part of a larger redevelopment plan that includes a $100-million facelift of the adjacent Wintergarden Shopping Centre. The new podium and tower will include three auditoriums, a shopping complex, and a complex helix ramp that leads automobiles from the ground level to an interior parking facility on the fourth and fifth stories. "The ramp was quite a challenge," says Taylor. "Very early into the design process, we had to confirm that our structural model met strict requirements for ceiling height clearances."

Autodesk®

With help from Revit Structure, Bornhorst + Ward proved that connections made up only 5 percent of steel tonnage—not 15.

The Solution

"BIM helped everyone make better decisions early in the design process," says Taylor. "Using Revit Structure, our engineers could spin the model and more quickly visualize the appearance of the completed project and all of its components." This capability was particularly valuable on hard-to-model areas, such as the helix ramp. "We met all required clearances and believe this approach will minimize construction problems."

The model proved equally valuable in improving collaboration with the mechanical, electrical, and plumbing (MEP) engineers from The Hastie Group—who used Autodesk® Revit® MEP software—and Brookfield Multiplex. "BIM and the 3D model helped us get owner sign-off very quickly," says Taylor.

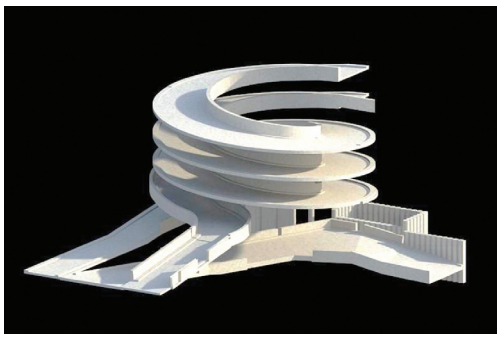
BIM also improved communication with Brookfield Multiplex's construction manager. "Within an hour, he learned more about key constructability issues than he did in two days looking at 2D drawings." Bornhorst + Ward used Autodesk® Design Review software to produce detailed section cuts that further illustrated building complexity.

In the early schematic design and design development phases, BIM helped Bornhorst + Ward to more accurately determine the cost impact of different design options. "The quantity surveyor estimated project steel tonnages with the assumption that connections accounted for 15 percent of the total," says Taylor. With assistance from Revit Structure, Bornhorst + Ward showed that the connections accounted for only 5 percent, helping the team identify the best design option very quickly.

To meet sustainability goals, the firm had to maintain an overall concrete-fly-ash content of 20 percent. The engineers used Revit Structure software to insert a fly-ash parameter in every model element, thereby facilitating the creation of more accurate fly-ash schedules, as well as high-quality, multicolored 3D views illustrating fly-ash content throughout the project.

The Result

Bornhorst + Ward completed construction documentation in late 2010. "Our clients are very happy with our work on this project," says Taylor. "They loved the 3D model and really appreciate how it helped them better understand constructability issues." Construction is scheduled to begin in 2011.

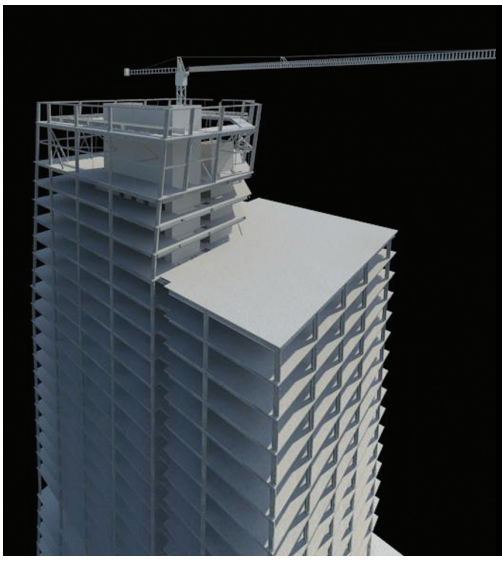


3D view of helix ramp.
Image courtesy of Bornhorst + Ward Consulting Engineers.

Competitive Advantage

"Our skill with Revit Structure and BIM has definitely given our company a competitive advantage," says Taylor. "We are building all of our processes around Revit Structure and BIM. The 3D modeling, visualization, and quantity takeoff capabilities have helped us to produce truly high-quality drawings. Our next goal is to use the information contained within the model in other processes, such as analysis. That's where the industry—and our firm—is really headed."

For more information, visit www.autodesk.com/BIM, www.autodesk.com/revitstructure, and www.autodesk.com/revitmep.



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The Regent Office Tower.
Image courtesy of Bornhorst + Ward Consulting Engineers.

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