Your Guide to Achieving the Extraordinary with BIM

In your quest to stand out from the competition and win and retain business, BIM (building information modeling) processes can help. BIM tools facilitate data continuity and accuracy, help designers discover optimal designs and unlock new levels of creativity and innovation.

This guide to BIM technologies and workflows can help you use BIM to automate the ordinary and achieve the extraordinary.
A Step Up: How BIM Capabilities Help Engineering Firms Win More Work

Anytime, Anywhere: Connecting Structural Teams with BIM

Connecting Design to Fabrication

Iterating to Optimize Your Structural Design

Communicating Design Intent

Capturing Reality: Incorporating As-Built Data in Structural Models
Increasingly, project owners are making use of building information modeling (BIM) a requirement for working on building projects – with some studies showing that more than four-in-five owners require or encourage BIM use. These requirements and preferences impact the entire building project.

Making the shift from 2D drafting to 3D modeling can help firms to stand out in the bidding process, meet project mandates, and qualify for more projects.

Using model-based workflows also supports design and detailing processes that improve collaboration, reduce design clashes and re-work, optimize structural models, and streamline fabrication. Half of engineering firms cite the ability to maintain repeat business as a top BIM benefit, while more than 40 percent say that BIM capabilities help them market new business and offer new services.

Learn more about how BIM workflows can take structural engineering firms to a new level.

View Workflows >

CUSTOMER SPOTLIGHT

It’s really easy to build big square boxes. But when you have a roof that is elliptical in nature, the geometric challenges are many. The manner in which the steel has to provide a framework for all of the other trades and finishes requires a lot of precision, and it’s more difficult to be precise along an ellipse.

Lance Richardson
COO
Richardson Steel, Inc.
Building project teams are often spread out across different offices, different countries, or even different continents.

With BIM tools, structural engineers, designers, and detailers can work together in a common data model, no matter their location. This helps ensure that all team members have the most up-to-date information – preventing clashes and rework, and even helping firms to meet accelerated deadlines.

Model-based collaboration tools can also improve communication between structural engineers and the extended project team. Sixty percent of contractors cite multi-trade coordination as a top benefit of BIM. Structural trades are ready to improve collaboration with the design team, and are benefiting by better managing design changes that impact their deliverables for the project. It’s clear that BIM collaboration tools help to reduce the impact of design changes on the trades.

Discover how BIM tools enhance collaboration.

---

CUSTOMER SPOTLIGHT

The deadlines were very tight, and several teams—architectural, structural, and MEP engineers—needed to work on the same model at the same time.

Giacomo Bergonzoni
BIM Manager
Open Project

---

Your Guide to Achieving the Extraordinary with BIM
By connecting structural design to detailing design for structural steel, rebar, or precast concrete fabrication, firms can significantly shorten project timelines.

BIM tools not only help to speed up the design and detailing processes, they also provide the ability to store and process data in a centralized structural model – data that can easily be converted into machine files for fabrication.

This streamlined approach can reduce waste and inefficiencies in the shop and on site, helping teams design and detail structural components in less time, with less rework. In fact, around half of architecture, engineering and contracting companies using BIM processes say they’ve seen noticeable reductions in both project schedules and final construction costs.

Learn more about how BIM tools can keep projects on track – from design and detailing, all the way through fabrication and construction.

With Revit, we were able to do everything digitally before the first panel was even produced. It all worked beautifully.

Bryant Luke
VP of Operations
Gate Precast Company
When designing in 2D, structural engineers can be limited by time constraints, and can only explore a handful of different approaches. But 3D BIM tools make it easy to quickly analyze multiple options and arrive at an optimal design in less time.

A rich data model allows engineers to address competing design parameters, quickly test the viability and structural integrity of different options early in the design phase, and easily adjust structural models based on design changes.

With traditional design and detailing workflows, it’s almost impossible for engineers to catch and correct every mistake in real time. And when glitches go unnoticed, they can result in extensive rework or additional expenses. BIM processes can prevent costly and time-consuming errors.

Learn more about how BIM tools are helping structural engineering firms to optimize their designs.

**CUSTOMER SPOTLIGHT**

There is a definite advantage in being able to cycle through design iterations and produce information that can be used very quickly by the rest of the team.

**Cristobal Correa**  
Associate Principal  
Buro Happold
2D drawings can seem indecipherable, and often prevent project owners from fully understanding structural engineers’ work. This can cause confusion that can lead to delays and change orders late in the design process.

BIM tools bring project designs to life in 3D, giving all stakeholders the ability to visualize the intent of designers’ and engineers’ work. This clarity is also important in the field when construction teams are working from structural plans to erect steel, precast concrete, or place rebar on site.

More than 90 percent of project owners say that BIM models increase their ability to understand designs, and 70 percent say BIM tools improve their ability to plan construction.

Discover how BIM capabilities help structural engineers clearly communicate their design intent.

View Workflows >
For teams creating a structural model for retrofit and renovation projects, accurate data on current site conditions is essential. But manual documentation and traditional survey methods are tedious, time-consuming, and prone to error.

By incorporating reality capture tools such as light detection and ranging (LiDAR), teams can capture point clouds that provide comprehensive information about existing built and environmental features. By incorporating this data into BIM tools, structural engineers can create models to perfectly fit the project site.

Discover how reality capture and BIM tools can help structural engineers incorporate accurate as-built data into their models.
Discover how the Autodesk Architecture, Engineering, and Construction Collection equips you to meet any project challenge – now and in the future. Use powerful BIM and CAD workflows enabled by a comprehensive set of software and services to deliver your best work and stay competitive. **Move from 2D to BIM** and **extend your Revit workflows** with the AEC Collection.

<table>
<thead>
<tr>
<th>ARCHITECTURE</th>
<th>MEP</th>
<th>STRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revit</strong></td>
<td><strong>Navisworks Manage</strong></td>
<td><strong>Revit</strong></td>
</tr>
<tr>
<td>Software for building information modeling</td>
<td>Project review software with 5D analysis and design</td>
<td>Software for building information modeling</td>
</tr>
<tr>
<td><a href="#">DOWNLOAD TRIAL</a></td>
<td><a href="#">DOWNLOAD TRIAL</a></td>
<td><a href="#">DOWNLOAD TRIAL</a></td>
</tr>
<tr>
<td><strong>Revit Live</strong></td>
<td><strong>Dynamo Studio</strong></td>
<td><strong>Advance Steel</strong></td>
</tr>
<tr>
<td>Service that turns Revit models into immersive experience</td>
<td>Programming environment that lets designers create visual logic to design workflows and automate tasks</td>
<td>3D modeling software for steel detailing</td>
</tr>
<tr>
<td><a href="#">DOWNLOAD TRIAL</a></td>
<td><a href="#">DOWNLOAD TRIAL</a></td>
<td><a href="#">DOWNLOAD TRIAL</a></td>
</tr>
<tr>
<td><strong>ReCap Pro</strong></td>
<td><strong>Navisworks Manage</strong></td>
<td><strong>Robot Structural Analysis Professional</strong></td>
</tr>
<tr>
<td>Reality capture and 3D scanning software and services</td>
<td>Project review software with 5D analysis and design simulation</td>
<td>Advanced BIM-integrated structural analysis and code compliance verification tool</td>
</tr>
<tr>
<td><a href="#">DOWNLOAD TRIAL</a></td>
<td><a href="#">DOWNLOAD TRIAL</a></td>
<td><a href="#">DOWNLOAD TRIAL</a></td>
</tr>
<tr>
<td></td>
<td><strong>Fabrication CADmep</strong></td>
<td><strong>Navisworks Manage</strong></td>
</tr>
<tr>
<td></td>
<td>MEP detailing and documentation software</td>
<td>Project review software with 5D analysis and design simulation</td>
</tr>
<tr>
<td></td>
<td><a href="#">DOWNLOAD TRIAL</a></td>
<td><a href="#">DOWNLOAD TRIAL</a></td>
</tr>
</tbody>
</table>