



THE GUIDE TO BIM SOLUTIONS FOR

Structural steel

Connected fabrication

Connected fabrication is a seamless, BIM-based process that connects steel design, fabrication, and construction in a more efficient and accurate way. Steel detailing no longer takes place in a silo, requiring manual processes to bridge gaps. Instead, design and detailing occur on an interoperable platform. With steel detailing more tightly linked to design, fabrication progresses more smoothly and fabricators collaborate more easily with designers and construction partners to enhance overall project quality.

All together now

Perhaps most crucially, connected fabrication represents a business opportunity. Bringing detailing into a collaborative BIM structural steel workflow can:

- Expand business opportunities by scaling detailing capacity
- Help fabricators win new work by offering enhanced design assist services
- Introduce new efficiencies by streamlining the QA/QC process
- Improve service to clients and overall quality through better design, shop, and field coordination

Most BIM-powered projects and project teams are already strikingly close to connected fabrication. The missing link is detailing—and this ebook shows how, by using Autodesk® products, teams can connect to fabrication through detailing and complete the chain, helping to add momentum and quality to the entire BIM workflow for structural steel.

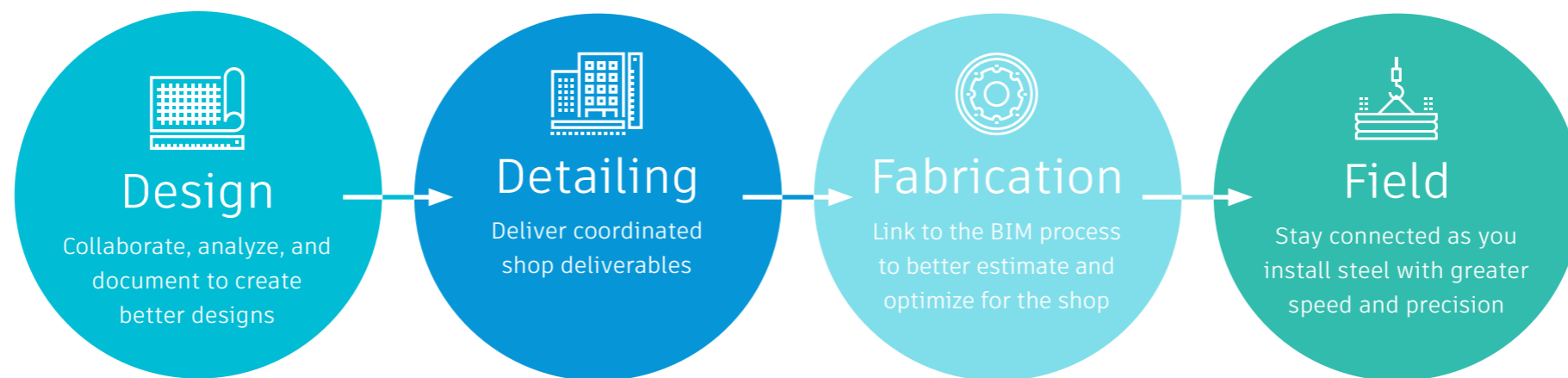
[Watch this video about connected fabrication.](#)



Faster detailing

How much time can connected fabrication help save? Parsons Steel Builders estimated a detailing job at 100 hours. After switching to Autodesk® Advance Steel software, the company completed it in just 25 hours—a time savings of 75% from their estimate.

The seamless BIM workflow for structural steel



As structural steel advances from conceptual design to installation, process participants stay connected. They manage changes and keep designs more tightly coordinated, with less effort, using tightly integrated BIM processes. The result is less rework, lower risk, faster processes—and the possibility of higher profits for all.





Structural design

At the conceptual stage of an expanded, more seamless BIM process, the architect shares initial design models and gets input from the engineers. This leads to a design concept informed by an understanding of structural performance, helping the team plan for smarter steel use and installation from the beginning. The intelligence of BIM tools enables the whole team to generate more and better design alternatives in less time.

Maximize coordination between structural design and documentation

Using BIM-based processes for structural analysis and design, structural engineers keep their design and documentation coordinated and up-to-date as they work. This iterative and dynamic process—enabled by BIM—helps the team work efficiently as they optimize the design. Interoperability between BIM applications enables the engineers to use their preferred analysis tools. The result is consistent, coordinated, and compliant deliverables generated from intelligent models.

Autodesk in the structural design process

Design

Autodesk® Revit®
Dynamo

Analyze

Autodesk® Structural
Analysis for Revit®

Scaling to meet demand

Many BIM design, detailing, and fabrication tools share a common drawback: adding more licenses requires a substantial one-time expense. But what if you just need to accommodate a short burst in activity? Until recently, you had two choices: turn down the work or outsource it. Either way, your profitability takes a hit.

Now there's a better option: subscribe to the BIM design, detailing, and fabrication tools when you need them. When demand surges, you can add capacity without a large one-time purchase—helping to boost profitability while controlling cash flow.

Learn about the [Autodesk collection](#) of BIM tools for architects, engineers, and contractors. Then explore how [Autodesk® Advance Steel](#) enhances that collection.



Steel design to detailing with connected fabrication

As a design moves toward completion, the fabricator plays an increasing role and BIM helps keep the project moving. Pulling design models into construction estimation, planning and management tools gives a deeper understanding of materials and required construction processes. This in turn supports fast, accurate estimating—making it easier for the design team to address any budget concerns that might arise and reducing the risk of late-stage cost overages.

Upon completion of the design phase and the steel fabricator being selected, detailing begins—and the intelligent BIM process continues. The detailer brings the model into an interoperable BIM tool that streamlines development of coordinated shop drawings, keeping rework to a minimum. Links to the design model make it easy to account for late design changes, and reduces the time the detailer must spend on manual coordination.

More automated shop drawings

Built-in intelligence of the 3D model helps the detailer automatically generate shop drawings from ready-to-use templates. This accelerates the completion of all the structural steel deliverables, including the structural steel frame along with miscellaneous steel work, and even sheet-metal and folded-plate work. Engineers and detailers can perform connection design with access to a library of AISC and EC3 design codes. The detailer can also preset all the needed fabrication modeling, drawings, reports and NC file standards for the fabricator, and reuse those standards on the next project.

Autodesk in the detailing process

Detail

Autodesk® Advance Steel connects detailing more directly to the BIM process.

Eight benefits of detailing with a streamlined BIM process

If you're still using disconnected BIM or 2D tools for detailing, you're missing out on these benefits of a streamlined BIM process:

1. **LESS REWORK.** Connected import or export data flows eliminate duplicate information.
2. **FEWER ERRORS.** Bidirectional links to the design model reduce the risk of missing design changes.
3. **TIME SAVINGS.** Intelligent data helps automate and speed key aspects of the detailing process.
4. **MORE THOROUGH QA/QC PROCESSES.** Direct links to the design process reduce the need to comb shop deliverables for data entry and reduces coordination errors.
5. **NEW BUSINESS OPPORTUNITIES.** Use of common design and construction tools help you develop more competitive bids and streamline the detailing process.
6. **MORE SEAMLESS COLLABORATION.** Ask more informed questions, and contribute your expertise to the design and construction process more easily.
7. **BETTER SHOP DELIVERABLES.** Model-driven shop deliverables, including NC files, ensure smoother fabrication and installation.
8. **HIGHER-QUALITY WORK.** Coordination, collaboration, and automation processes of connected BIM that shows up in your output.



Connect detailing to fabrication with BIM

With detailing complete, it's time to fabricate—but not before you undertake thorough QA/QC to ensure that detailed designs conform to the model. After all, fabrication errors cost time and money. The link between BIM detailing and design tools makes it far less likely you'll miss any coordination issues, speeding the QA/QC process.

Saving time with automation

Connected fabrication extends the BIM process directly to fabrication tools; you automatically create the data needed to drive CNC machines. Take advantage of interoperability, exporting your 3D model into management information software (MIS) in KISS, XML, DTSV or IFC format. Update external BOMs and NC files automatically when design modifications occur. And if you're using welding robots, you can export assemblies to the XML files used to drive them.

Open tools for speed and flexibility

BIM tools can connect detailing with fabrication processes. When detailing tools employ OpenBIM® standards, you streamline working with fabrication, optimization, or code checking solutions from software vendors that use those standards.

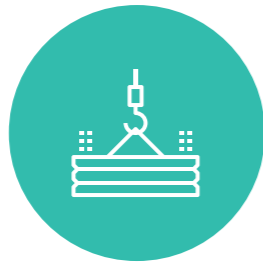
Why Advance Steel?

- Enhance accuracy
- Minimize rework
- Faster detailing
- Use familiar tools

What happened when a steel fabricator turned to Advance Steel for a hospital project?

“The interoperability between Advance Steel and Revit, which is the design tool of choice with many of the structural firms we work with, is excellent. And on this project, the structural model was outstanding, so with the click of a button, we could quickly start detailing. The Advance Steel software’s ease of use, speed of modeling and connection design, and integrated design checks on the fly—combined with the ability to reuse the structural engineer’s Revit model—helped us reduce our anticipated schedule time by approximately 20 percent.”

Adrian Betts
TSI Structures



Connect fabrication to field with BIM

In the connected fabrication workflow, your steel arrives at the worksite ready to be installed; coordinated design-to-detailing processes help reduce the risk of errors in the field. But you're not done with using data from your model—you use it to stay connected to the extended project team, and to accelerate accurate installation. Project managers, field engineers and the steel trades can view, comment and share all the pertinent project information, both models and documentation, using a centralized project-centric data source that is up-to-date and easily accessible by the jobsite.

Staying together in the field

Construction planning begins with linking the schedule to the 3D model, giving everyone a 4D project view (the fourth dimension is time). The team gets a visual model of construction timing, along with precision tools for scheduling materials arrival, streamlining site management and reducing onsite storage needs. Steel and installation teams arrive when needed, helping you use the talents of highly skilled workers more efficiently.

Autodesk BIM solutions in the field

Planning

Autodesk® Navisworks®
Manage

Connect your steel workflows with Autodesk



Steel design

- Autodesk Revit supports a BIM design process with smoother information flow between architects and engineers.
- Dynamo speeds design by automating tasks.
- Autodesk Structural Analysis for Revit integrates structural insight into the design process.



Fabricating steel

- Autodesk Advance Steel helps automate shop drawing generation, create data for CNC machines, and export models to MIS software.
- Partner solutions enable the use of third-party tools for code checking, optimization, or fabrication.



Steel detailing

- Autodesk Advance Steel, built on the familiar AutoCAD® platform, helps accelerate steel detailing and link it to the BIM design process.



Installing in the field

- Autodesk Navisworks Manage delivers advanced construction planning and analysis.

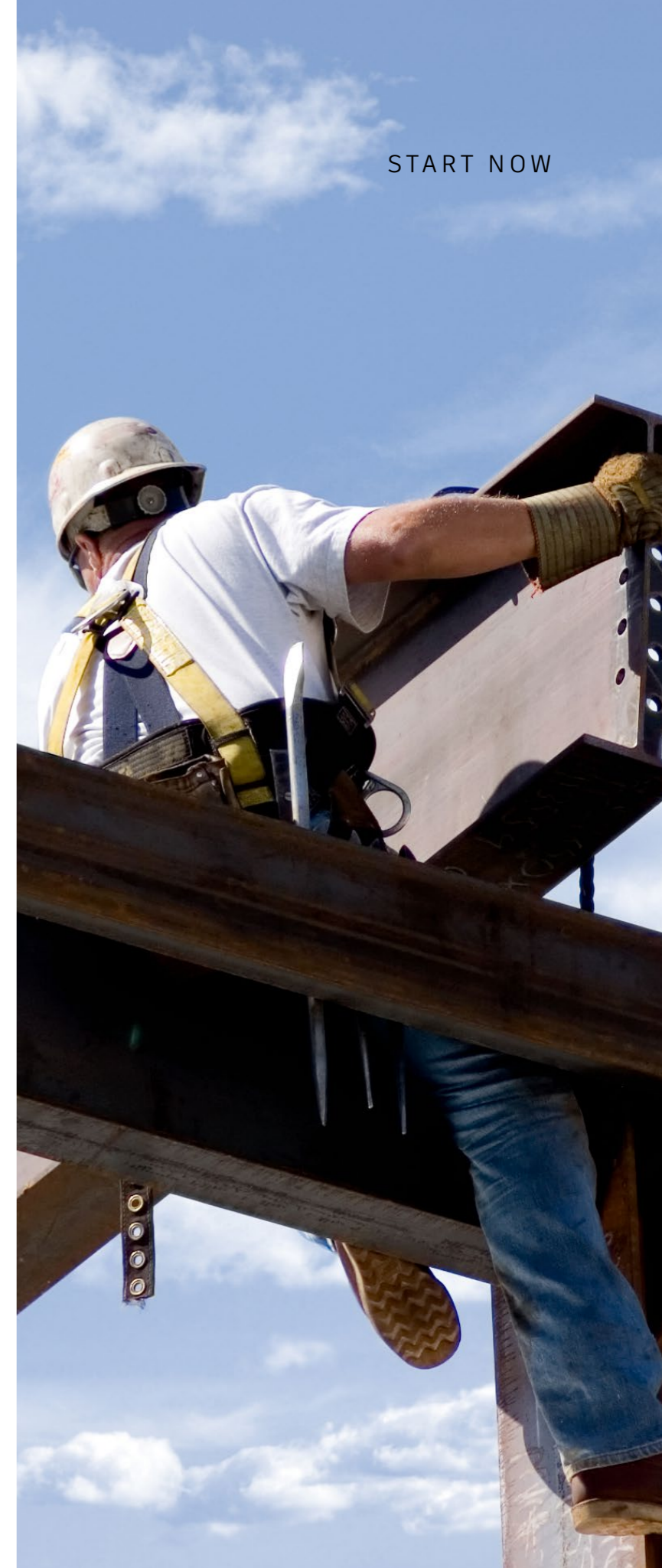
Get connected

There are different approaches to BIM. Different disciplines can work in isolation, coming together occasionally to coordinate—a method that can reduce clashes and improve visualization. That's good. But BIM truly blossoms when the entire team works from shared models, from design through installation. This approach makes collaboration rapid, and constant—saving time and helping reduce the risk of errors.

Even as multidisciplinary project teams expand their use of BIM, however, too often detailing happens in isolation, relying on disconnected BIM or even 2D tools. The result is time-consuming rework, increased risk of errors, and lost time. Autodesk Advance Steel links the detailing process to design and construction, helping to turn fabrication into a fundamental part of the BIM workflow. That makes detailing faster, more automated, and less prone to error.

Learn more

Start on the path to connected fabrication with Autodesk Advance Steel detailing software today. Advance Steel brings detailing and fabrication closer to designs created with Revit. The connected process then flows more seamlessly into Autodesk BIM construction tools including Navisworks Manage. [Learn more](#) now.





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