Tekla®

The Steel Detailer's Guide to

Avoiding the Hidden Dangers to Your Bottom Line

A Guide to Building Efficiencies

Trimble®

INTRODUCTION

What Lurks in the Shadows...

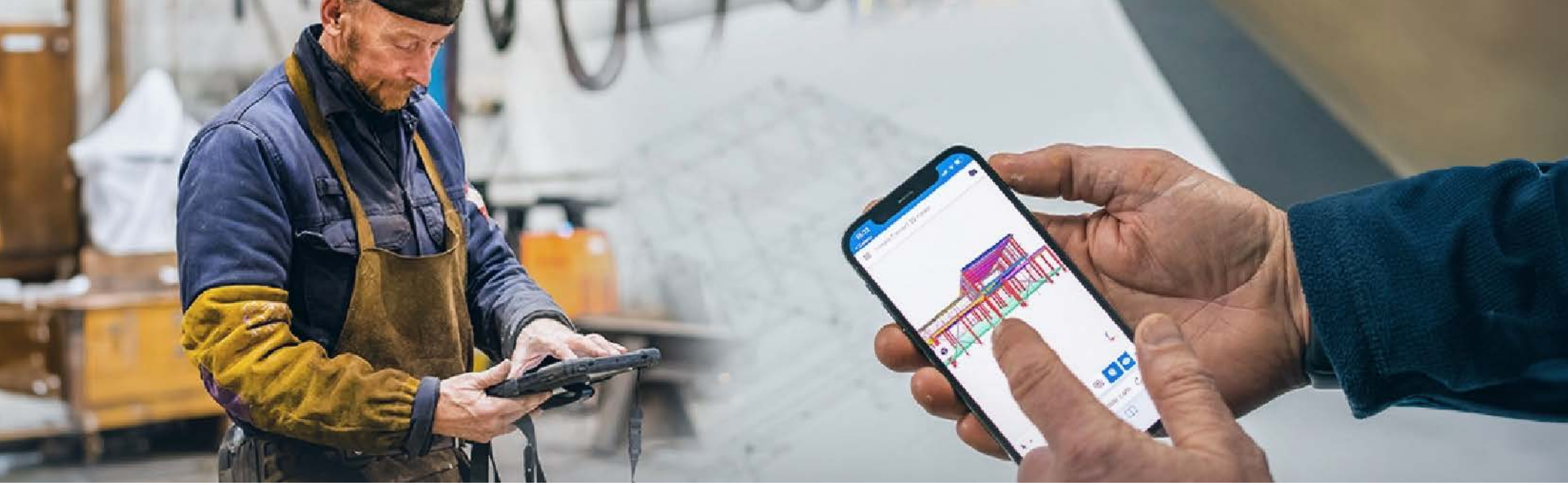
Today the construction industry remains resilient despite ongoing challenges. This same resilience can be seen within structural steel detailing businesses, even with the many pressures that these professionals face. In addition to inflation and cost volatility impacting construction in general, one specific pressure detailers have been dealing with is high turnover rates. Labor shortages are particularly challenging due to the need to hire seasoned professionals versus training new detailers coupled with the retirement rates being at an all-time high.

Another additional pressure on detailers is advances in construction technology. As the adoption of new fabrication software and machinery quickly becomes more widespread to solve for labor shortages —and the need to control costs—detailers are working hard to keep up with increasing demands. While some detailers may be meeting their margins, due to these ongoing challenges, there are 4 hidden dangers lurking due to their workflows.

This ebook explores the facets of these hidden dangers and also highlights the solutions detailers can use to proactively address them and set themselves up for success.

4 Hidden Dangers to Your Bottom Line

1. **Fabricators Adopting New Technology**
2. **Complexity of Modern Buildings**
3. **Suboptimal Tools for Handling Changes**
4. **Being Outbid Due to Outdated Workflows**



HIDDEN DANGER #1

Fabricators Adopting Technology at an Accelerating Rate

The robots are not coming for steel detailing jobs—but they are coming for better steel detailing data, particularly the precise data they need to run today's fabrication workflows. This brings us to our first hidden danger: steel fabricators adopting technology that is difficult to keep up with.

Steel fabricators are automating their processes at an ever increasing rate. This acceleration is largely due to needing a solution for the aforementioned labor shortages, which have especially hit fabrication shops hard. Because one robot can match the productivity of 5-6 people, and shops can't fill positions fast enough, they are turning to adding new technologies. Even smaller shops are starting to push automation.

This also runs parallel with technology now being more cost effective. While robotics are not new to steel fabrication, they have recently made a huge leap in efficacy. They can now handle more processes—and handle them faster, cleaner and more accurately vs. the traditional process of cutting, drilling, or welding.

And to run those robots, shops need precise, reliable data. With fewer fabrication shops running manually, less and less will work with detailers who use 2D software, as taking the time to key in the information is too expensive. One day, detailers might wake up to find that their regular clients have machinery that they can't provide the proper files for. Or, may find that it's difficult to keep pace with what is being demanded by the shop.

But there is a solution to these dangers—by adopting more advanced BIM software, steel detailers can satisfy those hungry robots. With advanced BIM, steel detailers can provide remarkably reliable, up-to-date data that works seamlessly with machinery and robotics, ensuring their firms are invaluable project partners.

> **"Being able to generate CNC files definitely brings more business our way.**
>
> - Mike Attolico
> Owner, West Coast Design

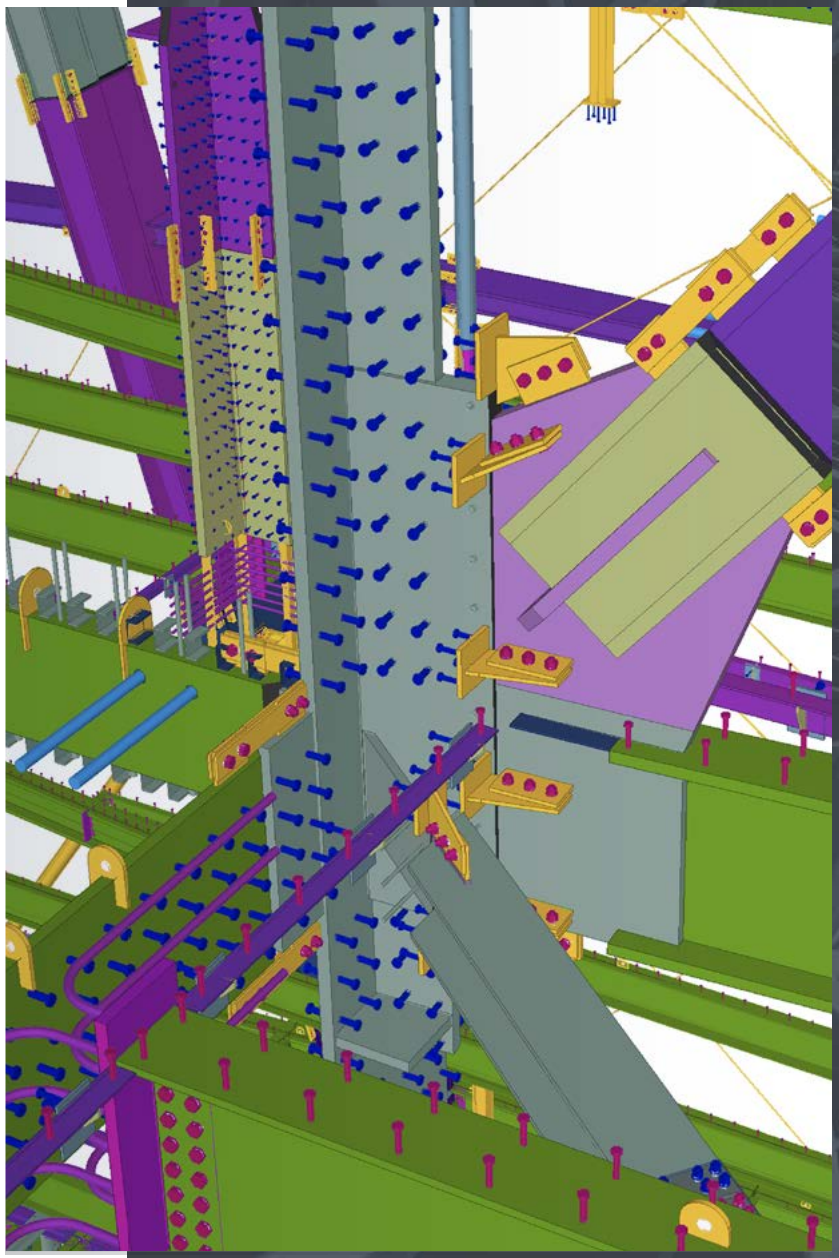
HIDDEN DANGER #2

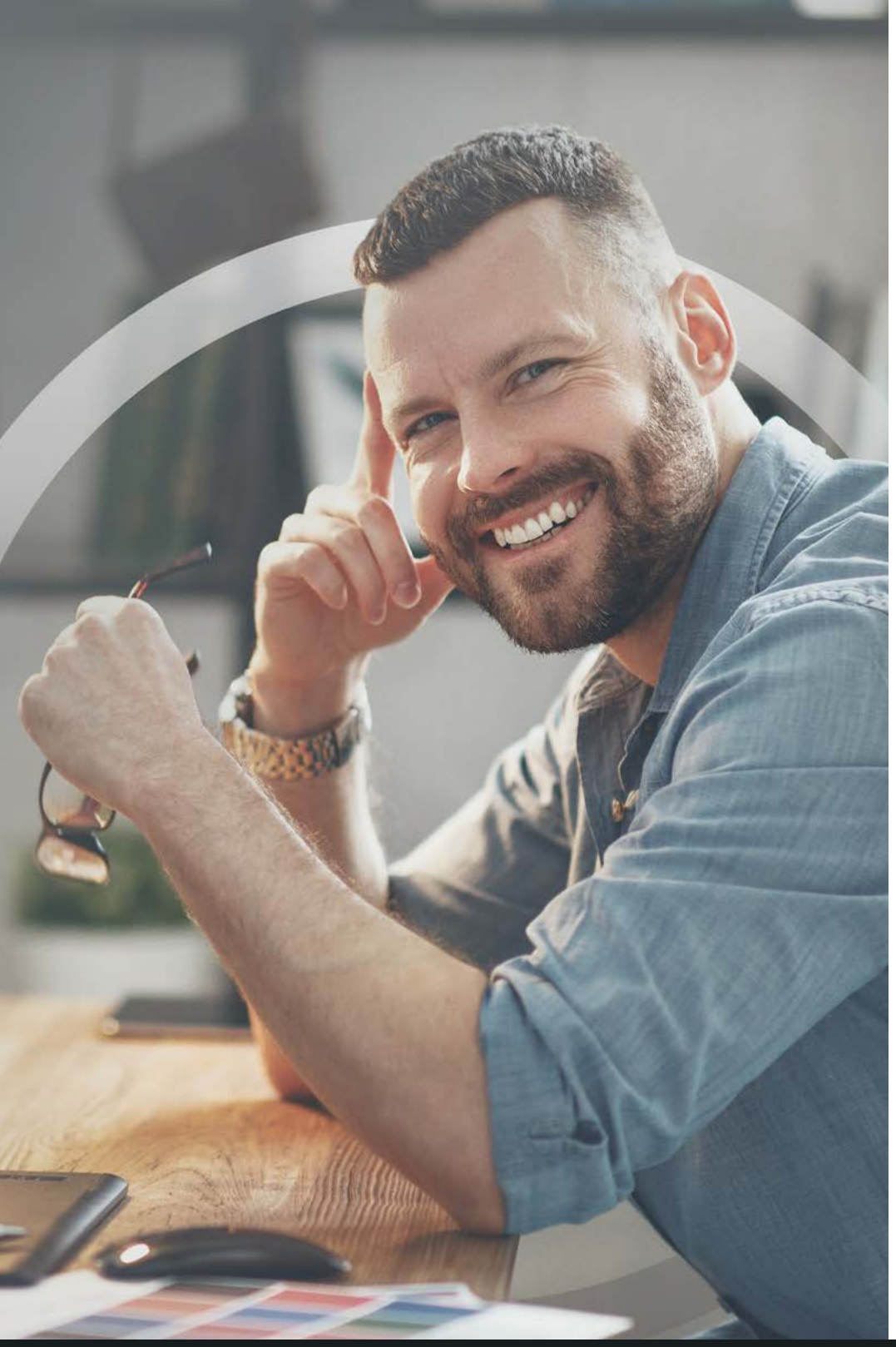
The Growing Complexity of Modern Buildings

Increasingly innovative architectural designs and intricate structural systems demand higher levels of expertise and precision. With the complex needs of today's buildings, there are worries that may keep steel detailers up at night. "Did I get those clearances right? Did I get the geometry to close?" This brings us to our second hidden danger: the weakness of 2D processes to match the growing complexity of modern buildings.

Detailers working in a 2D environment face formidable challenges when it comes to dealing with complex geometry. Without the visualization abilities provided by advanced 3D software, detailers are left to interpret and envision complex designs in their minds and through extremely time-consuming layouts. This reliance on spatial reasoning and labor-intensive calculations becomes increasingly impractical as the complexity of buildings continues to evolve.

Compounding this issue is the loss of experienced steel detailers due to retirement. As a new generation of detailers

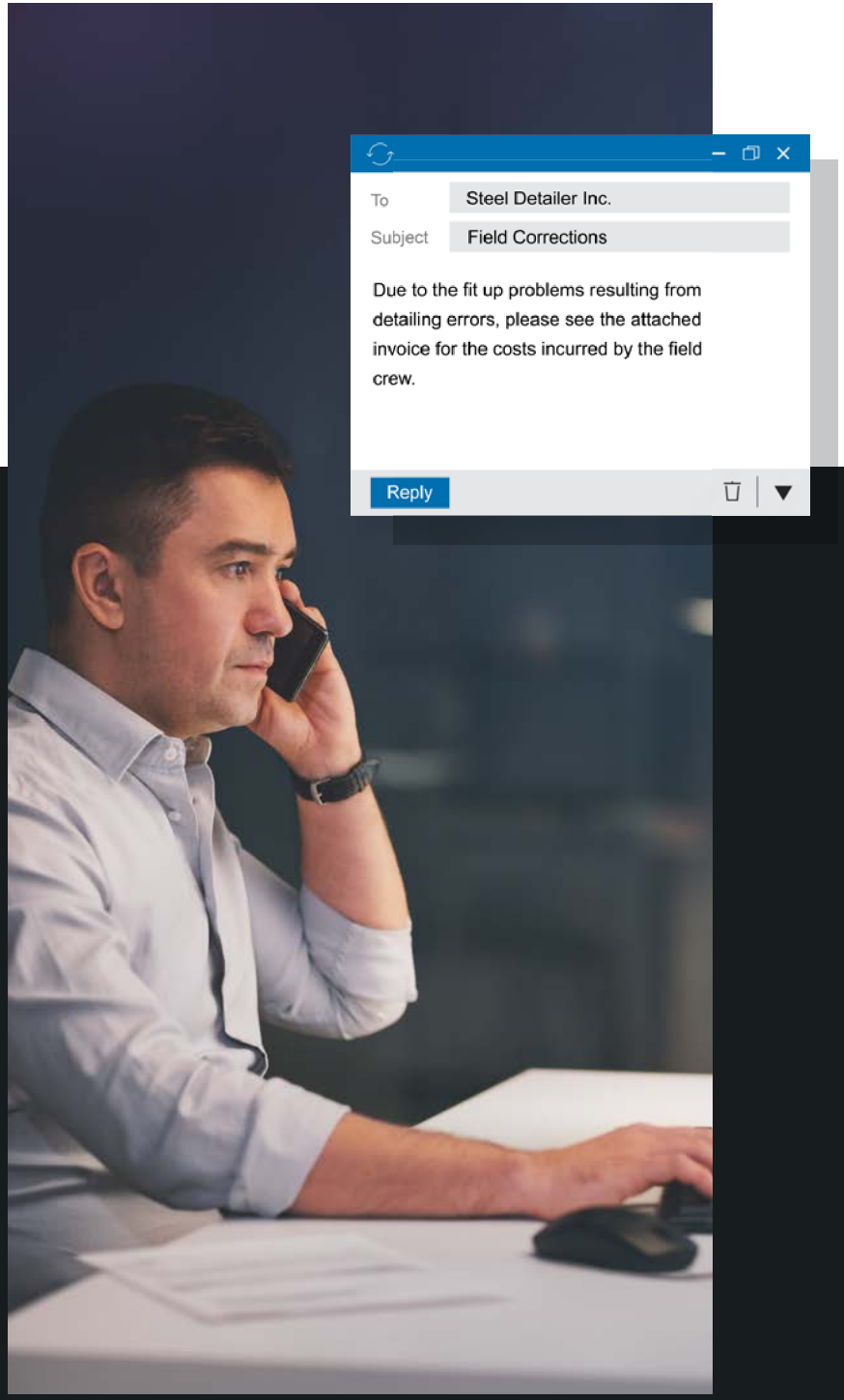




enters the workforce, they generally lack the ability to visualize and comprehend the intricacies of complex geometry. With it being impractical to take the extensive time to teach them that mental skillset, the next best solution is to use the best tools available to avoid these dangers.

Advanced BIM software can help. By bringing on a fully-integrated, 3D BIM solution, it provides detailers with the visualization capabilities necessary to work out complex geometry accurately and reliably without complicated calculations, so that structures can be fabricated and erected without issue. By leveraging the power of these tools, detailers can ensure precise fitup, minimize errors, and meet the demands of modern building complexities.

> **“There’s tremendous peace of mind knowing the structure you’ve designed will go together.**
>
> - Mike Attolico
> Owner, West Coast Design



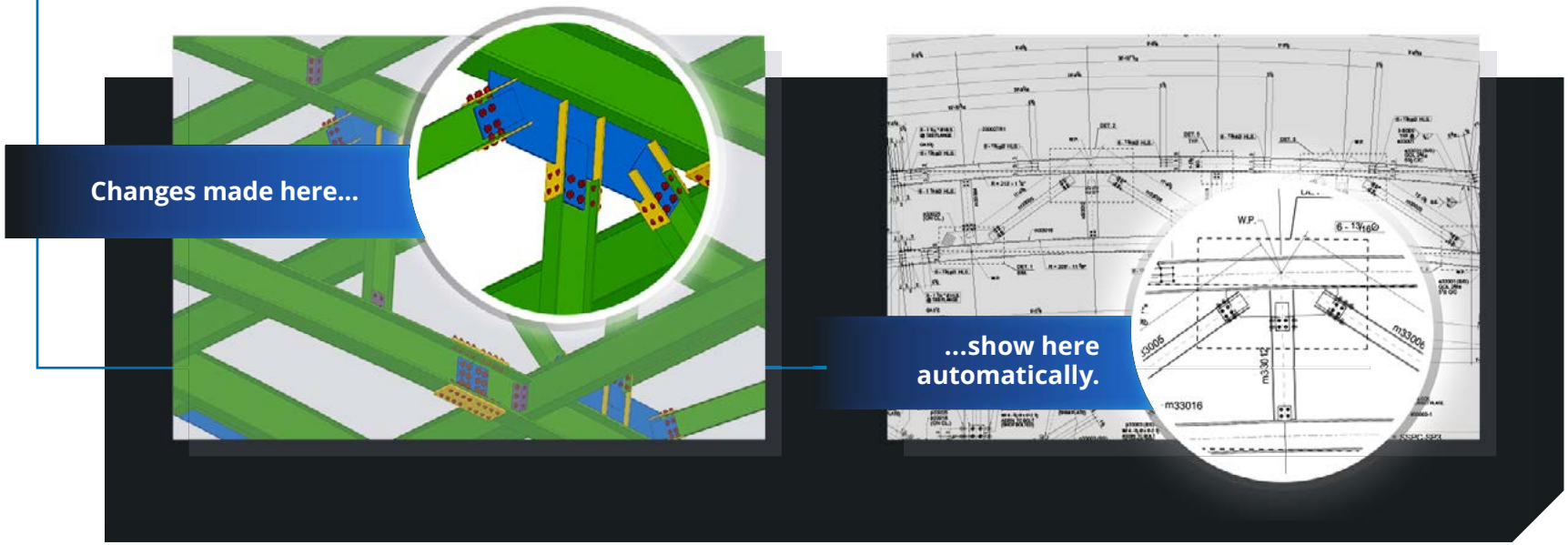
HIDDEN DANGER #3

Using Suboptimal Tools for Handling Changes

Changes are a standard part of any steel detailing project. When they inevitably arrive, the goal is to incorporate everything quickly and thoroughly. But some detailers are not doing this in a way that optimizes their profits. They are using familiar, yet inefficient processes prone to mistakes—hiding dangers to their bottom line.

Using a suboptimal tool affects both accuracy and efficiency. For instance, with some BIM software options, when the construction change orders come in, the drawing or design has to be started over from scratch. This is also the case for a 2D CAD process; and even more significant with 2D, detailers are vulnerable to missing the impacts of changes through all of their deliverables. With 2D, a detailer may make the changes in the detail drawing, but in all of the daily demands, accidentally miss the changes needed on other affected drawings.

DETAILING WITH 3D BIM



At its worst, a detailer can end up with situations like misalignments that are not caught until the structure is being assembled in the field, resulting in an unfortunate call from the fabricator threatening backcharges. (This may also be an unspoken guarantee that they just lost a client.)

With a different system, however, detailers find themselves better equipped to make these changes profitably. With software that is highly efficient, labor is reduced and you can maximize your profit. And if you can manage the changes in a way that catches all of the trickle-down impact through the project, your fabrication shops can rely on your deliverables to always be precise and thorough.

With advanced, 3D BIM software, these optimizations are possible. Make the change in one place in the 3D model, and you can depend on the updates to reflect at every point in your project. So if a change is made to a connection, from the detail and plan drawings to CNC data, those new configurations are reflected. Not only does this reduce the danger of human error, it dramatically improves efficiency. And ultimately, profits.

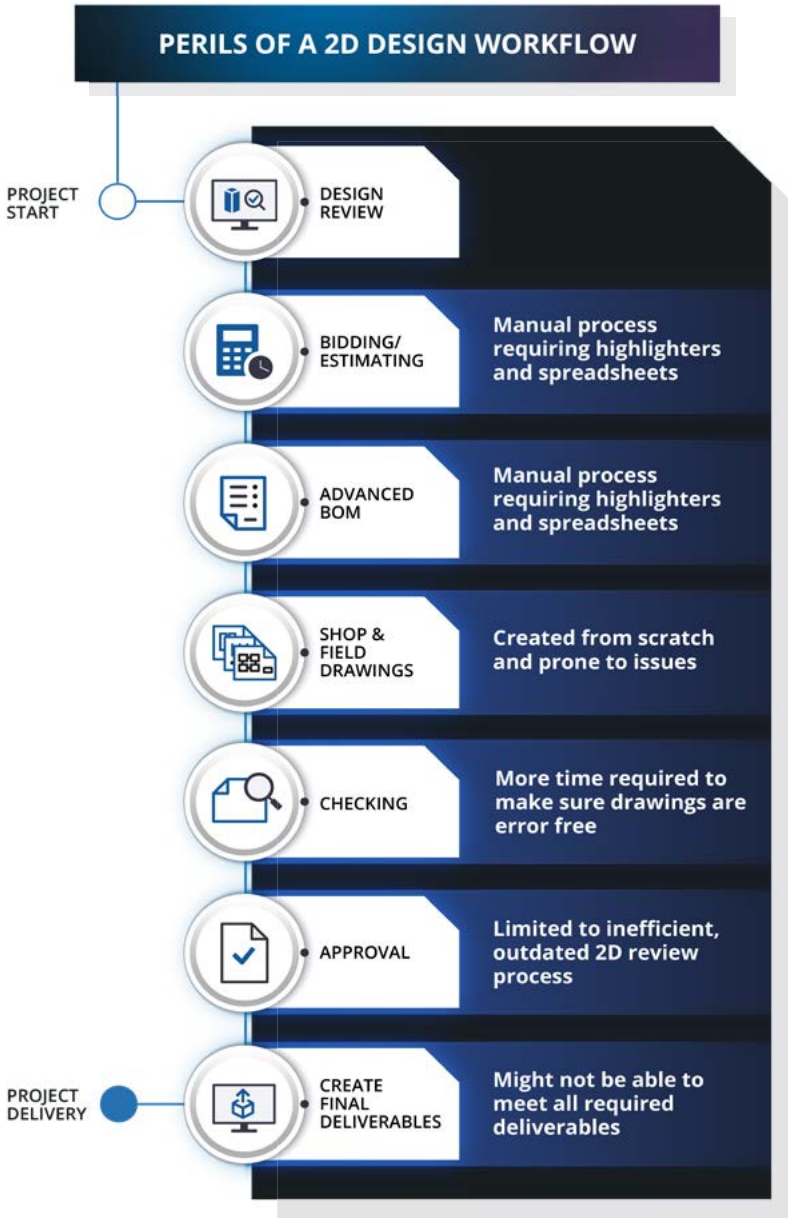
HIDDEN DANGER #4

Being Outbid Due to Outdated Workflows

Right now steel detailers who are using older tools may be meeting the schedules that clients need. But with the increasing demands of construction projects, and the aforementioned acceleration of technology, timelines are predicted to shorten as well. This brings us to our fourth and final hidden danger to beware of: being outbid because your current workflow is slower than the competition's.

The increasing need for efficiency is paramount in construction, driving the adoption of shop technologies and even AI. It is also much more efficient for engineers to review 3D models. Given all these pressures, a broader shift is coming for detailers. Actions like shipping paper drawings or printing PDFs will become less optimal, and most stakeholders involved in projects will want to save the time and money that new technology allows.

Detailers run the risk of being outbid by the competition across town that uses a fully-integrated, 3D model-based process and can deliver a project in a fraction of the time of a traditional, 2D workflow. By continuing to use more time-consuming processes, detailers face the risk of losing business



because they can't meet the new accelerated timetables. Thankfully, truly-integrated, 3D BIM solutions are available and more accessible than ever, now due to lower-cost-to-entry subscription models. And with the additional onboarding support that they offer, there is less friction involved in integrating the new processes, making detailers more streamlined and efficient, faster. They can avoid the hidden danger of an outdated process by staying competitive, meeting, and even exceeding, project deadlines; delivering more cost-effective solutions to their clients.

> **"A few years ago we started losing out on business opportunities because we didn't have 3D detailing capabilities.**

- Doug Malm
  Owner, Steel Detailing Services

Set Your Business Up for the Future

Our entire world is changing rapidly, especially as it relates to the impacts of technology on all aspects of business. While this is understandably frustrating at times, especially as it relates to changing processes that are working relatively well, the reality is that technology will continue to expand, and what is new and advanced today will soon become the industry standard. This makes the universal danger not looking ahead and proactively making changes in your processes while your business is satisfactory.

So while the hidden dangers that we've outlined—fabricators adopting newer technology, the growing complexity of modern buildings, using suboptimal tools for changes, and being outbid due to your workflow—lurk in the shadows of an uncertain future, we hope that with this guide, you now have a framework to feel confident in how to avoid them. With advanced software, specifically Tekla Structures steel detailing software, you are supported by a process that optimizes your structural workflows with truly constructible design, detailing and information management. Whether you're new to 3D modeling or use another solution, we invite you to schedule a demo with one of our specialists to answer your specific questions about how Tekla Structures can help you to succeed with confidence.

About Tekla Software

Tekla software, part of Trimble Inc., empowers the construction industry by providing technology that drives efficiencies, mitigates the risk of costly errors, promotes greater collaboration and ultimately delivers a measurable, competitive advantage to our users.

Trimble®