UNCOVER HIDDEN
FINANCIAL RISKS:

# How AI Revolutionizes Constructability Reviews for Modern Construction

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## Underdeveloped design sets and quick starts are a fact of life in constructability reviews and risk analysis.

If processes were not so time-constrained, **nearly all major design and construction problems could be caught long before hard hats hit the site.**

However, current practices aren't designed for meticulous issue identification. Instead, teams do the best they can, constrained by time and resource deficiencies. This leaves design clashes and conflicts to be resolved during construction.

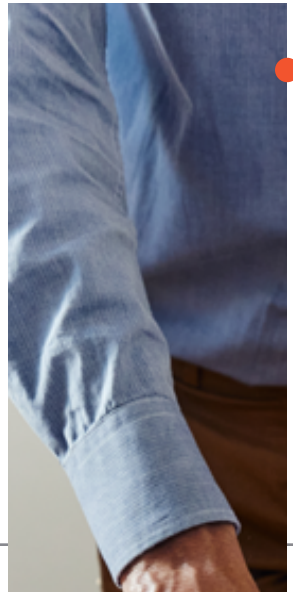
While many factors are to blame for this inefficiency, the primary problem is that reviews are still done manually. Preconstruction teams often follow a lengthy checklist or lead page-turn sessions that consume valuable time.

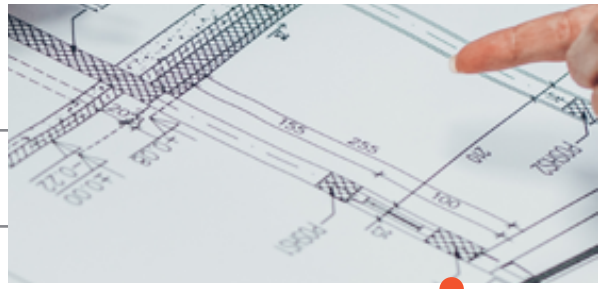
It's time to unwind the old rules of constructability reviews and stop accepting dated processes as "good enough." **The pace of construction — and the financial risk involved — demands it.**

# Risk Management Begins with Better Constructability Reviews

Turning design into reality comes with risk. It's up to general contractors to proactively identify that risk whenever and wherever possible as they review plans for constructability. By doing so, they can:

- Prevent cost overruns
- Promote better safety
- Maintain predictable schedules
- Build better relationships with clients
- Reduce exposure to safety and design issues
- Optimize resource allocation
- Reinforce their reputation

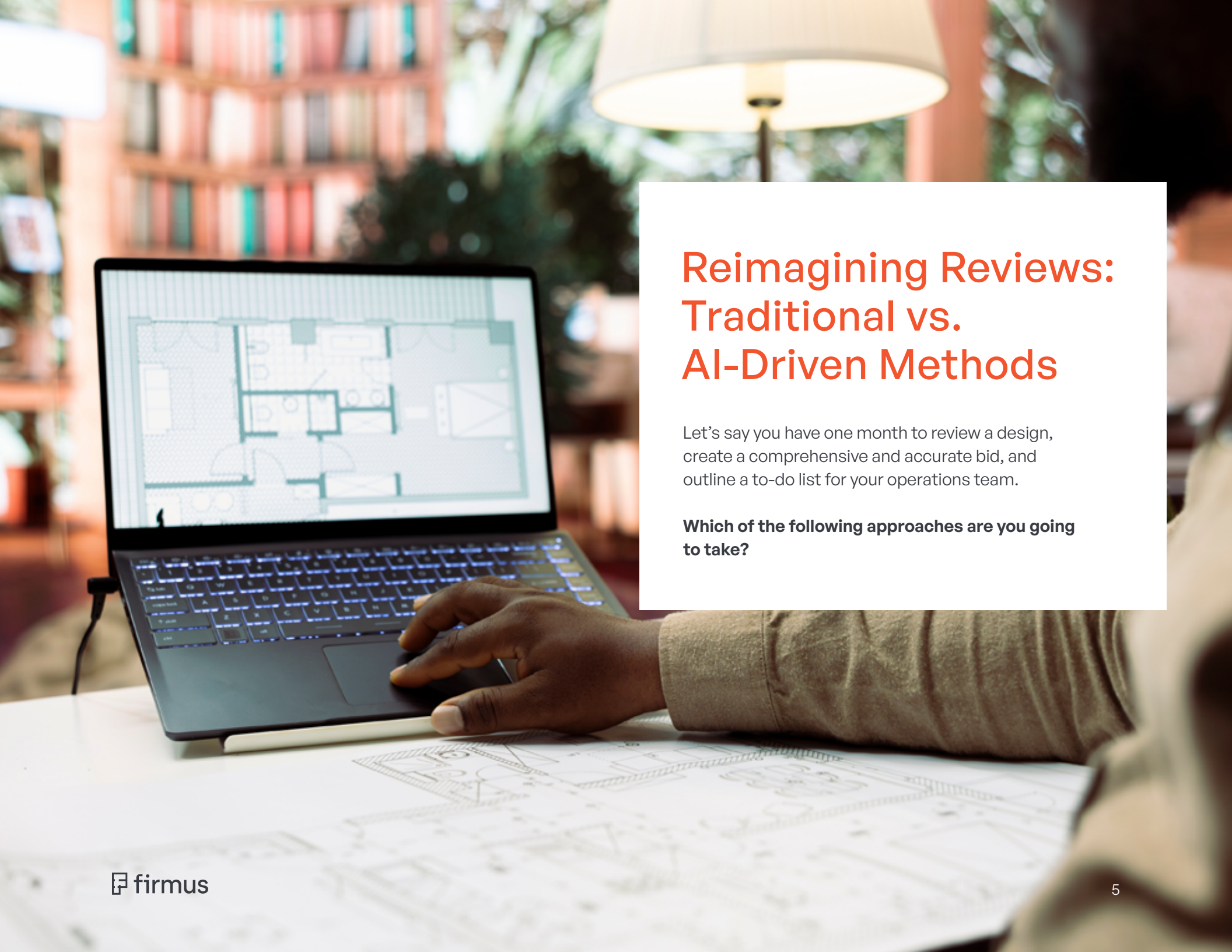




While risk reduction has always been important, it's even more critical today. As margins grow slimmer and labor becomes harder to find and keep, construction projects become increasingly complex and involve more stakeholders. This combination **amplifies the likelihood of design conflicts, scheduling delays, and other unforeseen issues.**

"On top of this, there's so much information GCs don't have when they're preparing to bid on a project," explains Holly Cindell, construction industry veteran and Firmus team member. "For instance, plans may not specify beam sizes or column placements. Routing or space coordination for MEP systems may not be outlined. Gaps like this leave GCs to make assumptions. And assumptions mean increased risk."

So, how can GCs reduce risk during constructability review? While there are many ways, **integrating AI into the mix can transform the process significantly.**



# Reimagining Reviews: Traditional vs. AI-Driven Methods

Let's say you have one month to review a design, create a comprehensive and accurate bid, and outline a to-do list for your operations team.

**Which of the following approaches are you going to take?**

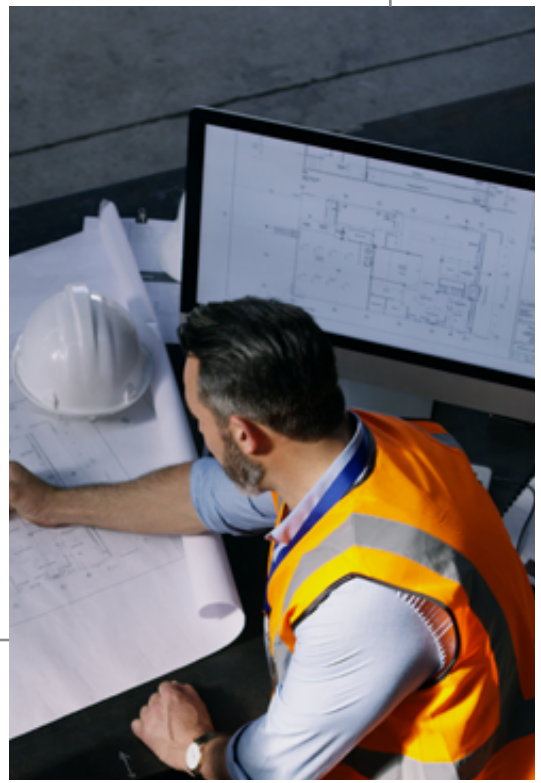
OPTION 1:

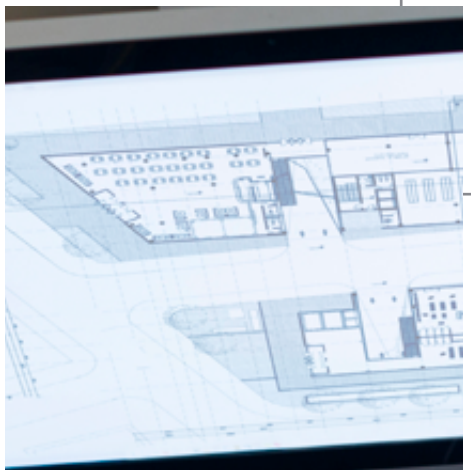
## Manual Constructability Review

"During a manual review, humans will miss things," says Cindell. "Most teams don't have the capacity to look at everything. They review key pieces and hand it off. Everything else is dealt with later."

A manual constructability review can take two to three weeks (or longer), as teams:

- Physically review drawings, specifications, and schedules to pinpoint problems, hazards, and discrepancies
- Conduct meetings to review some documents line by line to ensure alignment
- Ensure material availability
- Coordinate across disciplines to identify clashes between systems
- Flag items that require follow-up or resolution





OPTION 2:

## AI-Powered Constructability Review

When AI enters the picture, this process doesn't disappear — but it can be done better and faster.

Project team members can return to higher-value work while an AI design review and risk analysis tool completes tedious tasks, scanning hundreds of drawing sheets to identify incomplete designs, scope gaps, missing information, and discrepancies.

"AI looks through the minutiae, resulting in the creation of data on what is not in alignment," says Cindell. "Then you decide which issues you care about — and what actions to take. You take the data and findings from AI, add to them the experience and knowledge brought by humans, and you have an accelerated review in a few hours with software. This would take weeks for a person to finish."

Humans are still involved, but they're **decision-makers and problem-solvers, not data processors and box-checkers.**

## A Real Story on Making the Decision to Implement AI

For Michael Thole, Director of Corporate Quality Services at Flintco, the answer to reducing risk during constructability reviews was found in AI. Firmus is one of many tools the general contractor uses to reduce risk.

"Previously, we operated with a manual process that wasn't driven by design releases but by availability of key staff," says Thole. "It was a page-turn review by our Preconstruction team and members of the Operations staff."

To improve the process, Flintco transitioned the leadership and facilitation of constructability reviews to its Quality Assurance department. Within that group, a Design Quality & Constructability sub-team, comprised of subject-matter experts across disciplines, was established to evaluate technical aspects of the design.

"These changes made it a much more collaborative and robust process, but it was still focused on manual effort when it came to reviewing documentation," explains Thole. "We wanted to better understand and mitigate the risks associated with a project before we mobilized in the field. **Changes were occurring too late when they could've been addressed as a design comment during preconstruction.** When we learned about using AI to take care of low-hanging fruit, it was the first step to formalize our constructability review program."

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> *— Michael Thole, Director of Corporate Quality Services, Flintco*

# How AI Can Help You Minimize Risk

During constructability reviews, AI acts as another engineer. It lets you explore potential issues — including those that are often overlooked — earlier than traditional methods allow.

"As a general contractor, our job is to understand how we can manage and mitigate risk not only for us but also for our clients," Thole explains. "Information gathered during constructability reviews puts us in the best position to propose the right control measures and ensure the best outcomes for everyone."

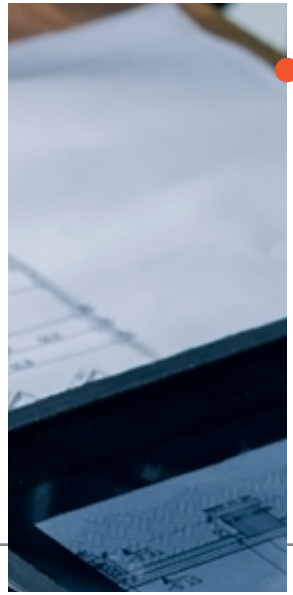
By expanding your reach across critical constructability elements, AI helps manage risks proactively for you — and your clients.

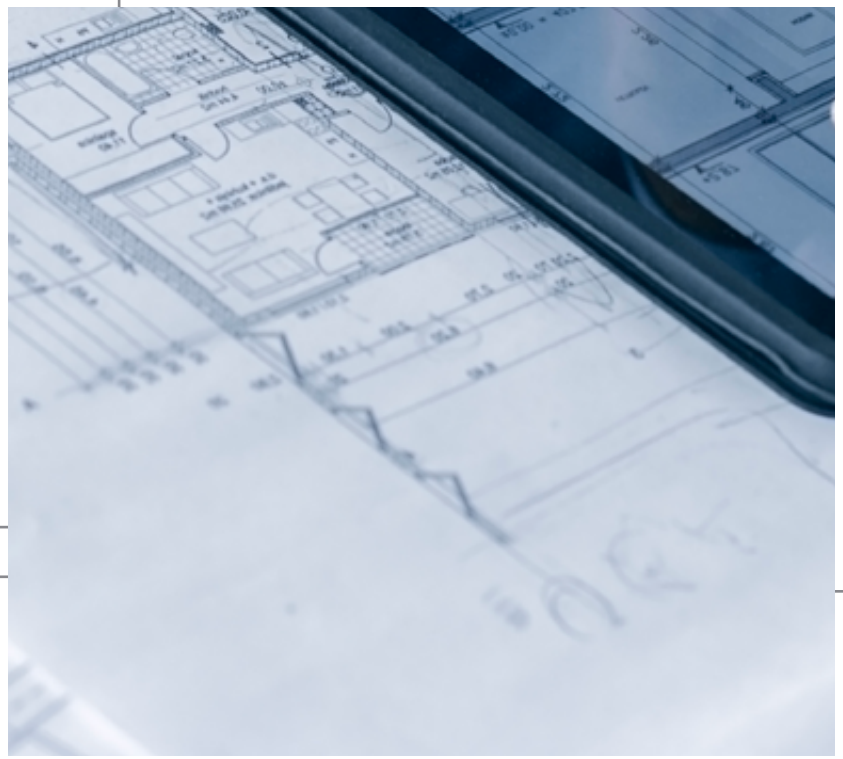
# Move from Low-Value Tasks to High-Impact Work

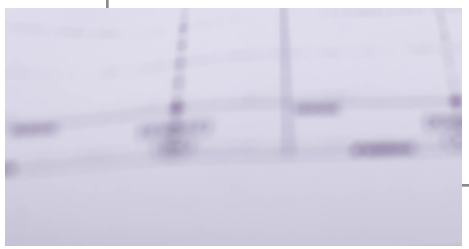
Using AI in preconstruction helps you harness the abilities of your workforce. You can empower your team to **focus on high-value activities like decision-making,** not low-value tasks like data collection. They get to redirect their energy toward tasks that require expertise: refining proposals, collaborating with stakeholders, developing action plans, and solving efficiency issues. This shift not only maximizes productivity but also ensures that their valuable skills are utilized.

### How does this manage risk?

Increasing task throughput makes projects resilient to delays, cost increases, and operational challenges. More buffers can be in place to handle unanticipated disruptions.







## Spot Issues in Hours, Not Weeks

Constructability issues spread across thousands of pages can be detected with AI and presented along with detailed reports that describe potential clashes within hours.Packages can be verified for compliance before submission to minimize the back-and-forth that delays approval.

Case in point: Questions can be answered without RFIs — before the first submittal package comes in. Take doorframes as an example. On a 1,000-door job, assume AI uncovers 100 issues to address.

"Typically, a submittal would be developed with a list of questions that need to be answered," says Cindell. "That takes two to four weeks to develop. If those questions can be answered right away, you get early-delivery items, such as doorframes, to the jobsite on time so you aren't hit with a fee for every doorframe that isn't there when work begins."

**How does this manage risk?**

Saving time creates efficiencies. When AI automates and streamlines critical preconstruction tasks, your team no longer spends valuable hours on manual reviews.

# Detect Hidden Design Flaws Before They Escalate

When teams are pressed for time, they may skip mundane (yet important) tasks. This can come back to haunt them later, creating millions of dollars' worth of delays and rework.

With AI in the picture, **nothing has to be deprioritized.** Minor data points can be reviewed and passed along to operations team members so they can continue to provide value later in the project lifecycle.

### How does this manage risk?

Having details upfront helps you avoid unknowns and minimizes downstream delays and confusion. Teams can prioritize, delegate, and simplify workflows to improve efficiency.

> We saw a multifamily building where architects specified paint in bathrooms while the interior designer specified tile. Because they weren't using AI, it wasn't caught until construction. That's a huge cost in terms of labor, delays, and material procurement.

*— Holly Cindell, Construction Industry Veteran, Firmus Team Member*

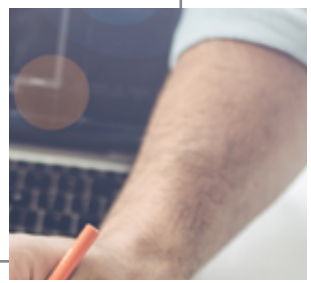
# Use Unbiased Data to Identify Gaps

AI-powered platforms allow preconstruction teams to **batch RFIs with markups** that call attention to what's missing or incorrect. These gaps aren't based on a personal analysis conducted by Bob in the back office but on objective data.

This encourages faster RFI response, especially because the project team recognizes that the information is unbiased. This also allows more people to get involved in this process without being a project manager, construction manager, or architect.

### How does this manage risk?

All decisions and actions are based on data-backed evaluations instead of experiences or assumptions. Because teams are working together, there are fewer errors to contend with.



## Reveal Safety Risks Sooner

Sometimes discrepancies aren't about design clashes — they're about safety.

During a recent remodel of a two-tenant building, the project team planned to retain an existing wall as a load-bearing structure. But Firmus uncovered an item that resulted in the project team reviewing the area and discovering that the wall could not support the load. In other words, **an AI comment on an inconsistency uncovered a major structural issue.**

### How does this manage risk?

Identifying and resolving safety risks early reduces the likelihood of accidents or failures during construction. It also gives you time to adjust plans and reallocate resources to fix problems faster.

## Deliver Reliable and Accurate Bids

With AI, you can be sure that design-phase project documentation is reliable and accurate. Teams can **confidently create cost estimates** without worrying about changes that may require significant updates or corrections later.

"We've also been able to identify and mitigate risks that need to be addressed with trade partners before pricing," says Thole. "We can explain to clients why we're suggesting certain risk controls in our proposal. It becomes a real benefit for us to say, 'This is why these things are included in your estimate.' Before, we didn't have formal documentation to rely on."

**How does this manage risk?**

You and your clients can be sure the bids are realistic and dependable. This prevents errors, miscalculations, and budget overruns.

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> *— Michael Thole, Director of Corporate Quality Services, Flintco*

# AI Is Your Partner, Not Your Replacement

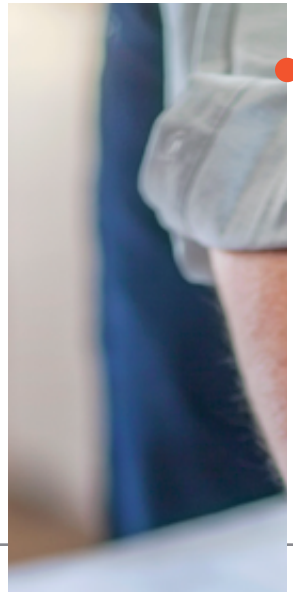
AI is not a replacement for your team members. It's a tool that helps them do their jobs faster. (It's like using a nail gun instead of a hammer.)

"It took awhile for people to adapt to CAD and BIM too, but the industry made the transition," Cindell points out. "People weren't replaced by that technology. They transitioned to another type of role or took on more work. While AI can help you advance, it will never replace your experience."

Change may be scary, but it's also inevitable. At some point, your company will be left with no choice but to pivot. When your team's constructability review drags on for weeks, while your competitors finish theirs in a few days, what will your strategy be?

"To get used to the idea, we focused on the fact that AI simply supplements the constructability review process," says Thole. "From a capacity standpoint, it frees us up to focus on the technical and detailed aspects of design and risk management. We had enthusiastic individuals and innovators on our team, but they weren't always the ones who made the business decision to apply these tools. We had to win those people over."

To accomplish that, engagement and change management strategies work well.



## Understand AI's True Capabilities

Make sure everyone understands what the tool will do (process large datasets, identify risks, and flag potential conflicts) and won't do (provide a final solution). Because it's AI, it will never be perfect. It's in a never-ending cycle of develop-test-improve, getting better over time.

Teams need to learn to **trust but verify**. While the tool delivers insights, humans need to make sure the insights align with the project — and determine the relevancy of the issues identified so a course of action can be taken.

"Even when you do 100% coordination with BIM, you still go out in the field to verify that it's all going to work. The same holds true here," says Cindell.

## Start with Trial Runs

Develop a pilot plan so workers know when, where, and how the tool will be implemented. As success stories roll out, **share the wins internally** so everyone can see the impact.

Build an internal vetting board or advisory group to ensure successful implementation. Members can offer advice on how to tailor the tool for efficiency, offer diverse perspectives on how it can be used, and cultivate buy-in.

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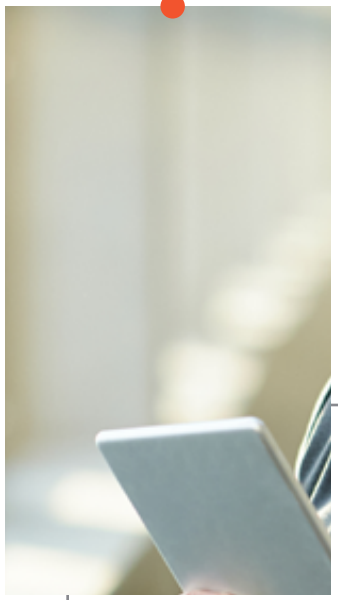
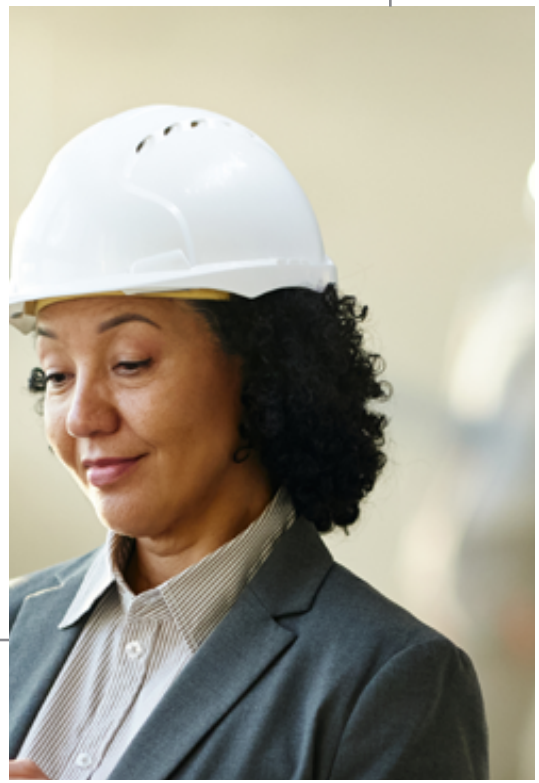
## Don’t Forget About Security

As you bring on AI tools, talk about how you’ll protect your company, your clients, your business partners, and your data. When you choose new partners, **understand how they manage and maintain data** within their platforms. Be comfortable with their process before you come to an agreement.

## Decide When and Where to Use It

Think about where you want to deploy the tool. “**Not every tool will work for every sector** or every type of project,” explains Thole. “We learned that Firmus works best for us on high-rise projects where the floor plan is similar across several stories. There’s lots of iteration that the program can benefit and learn from quickly.”

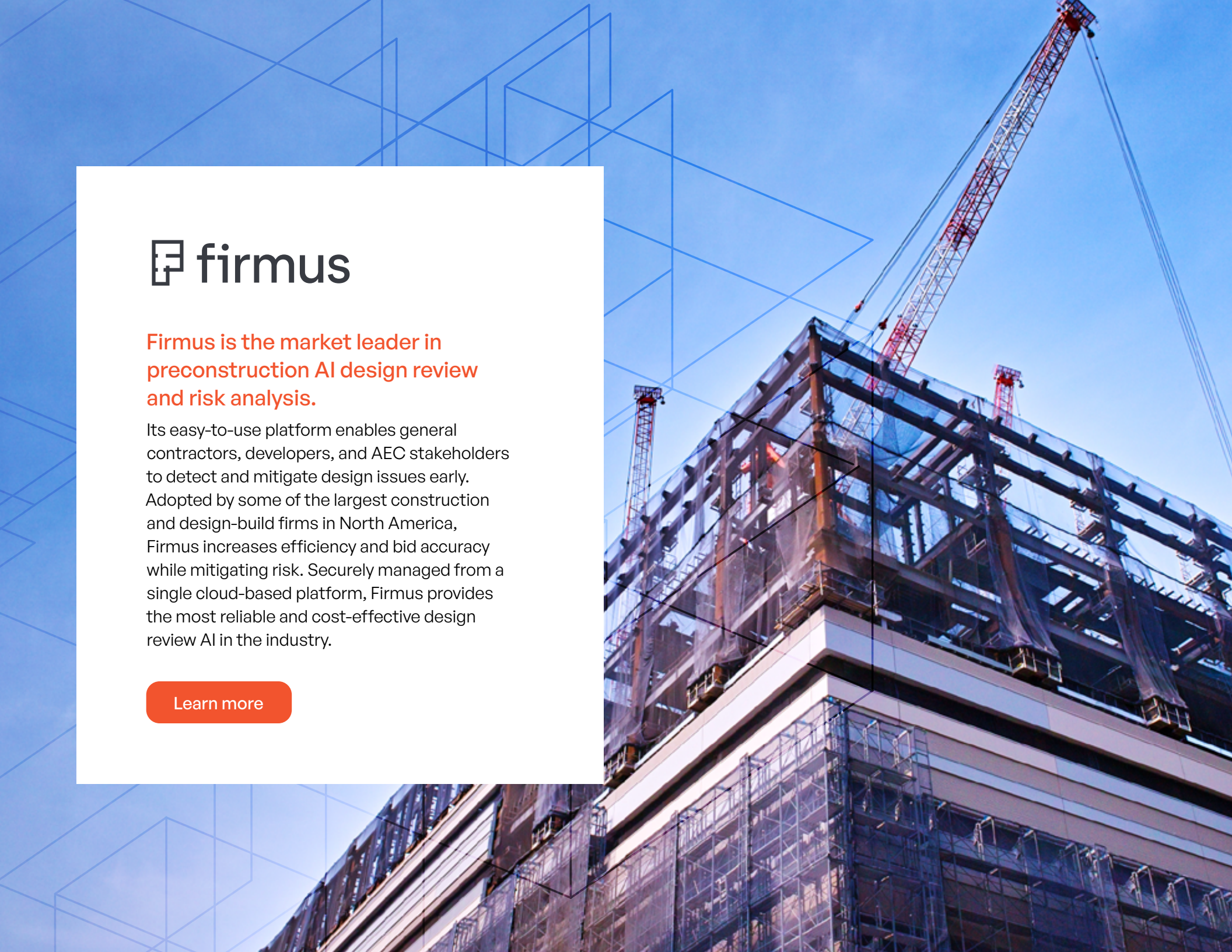




# Will You Help Drive Progress or Stall Growth?

"Regardless of what you believe about working with AI, it's not going away," advises Cindell.

"**You can be part of the process, or you can be a roadblock.** You're better off getting on board to help guide and construct it so it can be the tool you want. It's no different from when the industry put a computer on every engineer's table. This is just a different kind of tool."



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## Firmus is the market leader in preconstruction AI design review and risk analysis.

Its easy-to-use platform enables general contractors, developers, and AEC stakeholders to detect and mitigate design issues early. Adopted by some of the largest construction and design-build firms in North America, Firmus increases efficiency and bid accuracy while mitigating risk. Securely managed from a single cloud-based platform, Firmus provides the most reliable and cost-effective design review AI in the industry.

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