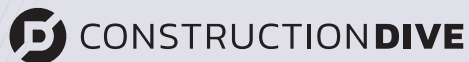




How Connected Construction is

Paving the Way to Higher Profits for Concrete Contractors



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Concrete contractors face an endless array of headwinds threatening to slow project delivery and increase their costs—from labor shortages to rising material costs and demand for accelerated timelines. Siloed data and a lack of visibility across construction project workflows can exacerbate these challenges. The result: incorrect bid amounts, inaccurate takeoffs, miscommunication between the back office, clients and field teams, hours of rework and many more headaches concrete contractors don't need.

Fortunately, connected construction technology is helping concrete contractors address these challenges while allowing them to:

- + **Improve collaboration** *by connecting the field and the office.*
- + **Increase efficiency** *by digitizing workflows and automating processes.*
- + **Make better, more informed decisions** *through enhanced project visibility and data-driven insights.*
- + **Boost profitability** *by minimizing errors and improving project management.*
- + **Enhance client satisfaction** *with timely project delivery, quality assurance and transparent communication.*
- + **Gain scalability and flexibility** *with adaptable technology solutions and customizable workflows.*

In this playbook, we'll examine primary challenges concrete contractors face today when trying to deliver projects on time and on budget. We'll also explore how connected construction technology can help overcome these challenges at three key stages of project development: **estimating and takeoff, design and modeling and project management.**

Project Delays

65%

of firms say **supply chain challenges** have delayed their projects.

61%

say **labor shortages** have delayed their projects.

Associated General Contractors of America
2023 Workforce Survey Analysis



Three primary challenges impacting concrete contractors

Self-perform concrete contractors face a complex landscape of challenges threatening their productivity, profitability and overall project success. Here are three of the most critical challenges they need to overcome:

01. Labor shortages and workforce development

It's no secret: The construction industry has faced persistent labor shortages for decades. This challenge stems primarily from an aging workforce combined with an insufficient influx of younger talent entering the trades. Concrete contractors have been particularly affected by these shortages. The lack of skilled workers for placing, finishing and formwork is contributing to an environment with a greater risk of project delays, rework and escalating labor costs.

This missing generation of skilled talent can also exacerbate the tug-of-war between technology and boots-on-the-ground labor. While younger hires may have the skills to utilize technology solutions because they've grown up in the digital age, they often lack the trade-specific knowledge that previous generations gained over their careers. As older workers retire, construction teams are left with a critical information gap they must overcome to execute projects on time and on budget.

Technology alone can't close this gap.



Joe Botto, self-perform manager at Turner Construction Company, describes how these challenges impact his work: “Labor availability and standardization of processes and quality are two major challenges we face. It’s difficult to find well-rounded, qualified tradespeople,” he says, adding that as technology evolves, it introduces multiple tools and paths for teams to explore. “While innovation is positive, it can lead to confusion or misalignment when teams are pulling in different directions without a unified strategy.”

02. Rising material costs and supply chain instability

Global disruptions and domestic inflation have led to rising material costs, supply chain instability and significant price volatility for cement, aggregates, admixtures and fuel. In its [July 2025 quarterly update](#) on concrete costs, Gordian warns contractors that the current slow price growth may not last. They warn: “Be prepared for a spike in concrete and cement costs, as the U.S. imports a notable volume of these products from Canada. These products are now subject to import tariffs, on top of a steady two-year cost climb.”

Concrete contractors who fail to precisely forecast and control these volatile costs face potential budget shortfalls, mid-project price adjustments and reduced profitability. “The current environment has a multiplier effect on how we estimate, operate and deliver projects,” notes Trent Warner, manager, SMB at Trimble. “Technology will provide the correction needed to get back on track and maximize efficiency.”



03. Compressed schedules and accelerated timelines

Project timelines are increasingly compressed due to owners and general contractors demanding faster project delivery and increased competition during the bidding process. Meeting productivity and quality standards under tighter schedules and faster timelines becomes more difficult.

Concrete contractors are in an especially precarious position, as their work typically happens early in the project timeline; any delays, errors or rework can compound challenges for remaining project stages.

“Time is money. Jobs are getting shorter. Everybody knows it,” Warner explains. “Longstanding project management methods—whiteboards, email threads—aren’t going to cut it.” Teams that will succeed are those rethinking how they organize project information and leverage workflow management technology to dial in their estimates and give real-time updates. “When we model, we know exactly how we’re going to build the foundation for a data center, for example, in 18 days versus 12 weeks.”

“If we apply technology to these three challenges, we could probably fix the majority of other challenges, too.”

– **Trent Warner**, manager, SMB at Trimble





Better collaboration and control, from estimation to execution

While concrete contractors do face notable headwinds, the tools they need to address these challenges are within their reach. Improved collaboration and control, from estimation to project execution, is possible with **connected construction technology**: a comprehensive suite of digital tools designed to enhance construction businesses' efficiency, collaboration and decision-making capabilities by using technology and data to connect people, processes and tools within a single source of truth.

Botto describes how his organization has improved its processes by embracing connected construction workflows. "We start modeling in preconstruction primarily to understand the project and develop accurate quantity takeoffs," he says. "Once awarded, we enhance the model with more detail, incorporating trade coordination and producing lift drawings for field crews. This alignment from estimating through execution helps ensure continuity, reduces surprises and improves both productivity and quality."

Connected construction technology holds significant promise for contractors. Read on to learn more about three areas where it can make a critical impact:

- + Estimating and takeoff
- + Design and modeling
- + Project management



Connected Construction

Using technology and data to connect people, processes and tools such as the Internet of Things (IoT), cloud computing, mobile devices and Building Information Modeling (BIM). Integrating these technologies enables real-time communication, collaboration and data sharing between all stakeholders.





Estimating & Takeoff

Manual estimating and takeoff workflows using spreadsheets and 2D digital takeoff tools are not only time-consuming but also error-prone and lead to inaccuracies that eat away at already thin profit margins. One all-too-common example is when changes made during the bidding process aren't captured in a place where the project team members can easily see the update as they proceed with the work. This siloed workflow often leads to project costs that exceed bid amounts.

Reducing the number of times information has to be manually input into different systems saves time and reduces the likelihood of these types of errors, yet many crews are stuck using manual tracking methods. Nearly two-thirds (62%) of companies rely on spreadsheets instead of software for estimating and over a quarter (27%) rely on them for takeoff, [according to JBKnowledge data](#).

Connected estimating solutions like [Trimble WinEst](#) integrate with digital design and digital takeoff tools to:



Improve speed and accuracy in quantity takeoff, as estimators don't have to count items by hand or second-guess a spreadsheet formula.



Reduce data entry errors with digital takeoff tools that pull precise quantities straight from 2D or 3D plans.



Ensure smooth handoffs to project teams as a connected workflow keeps all estimates, markups and notes in one place so everyone is working from a single source of truth.



Connected workflows allow contractors to feed job cost and production data into the estimating system, closing the loop between the field and the office. That feedback helps validate estimates and improve accuracy for future bids. Warner explains the tangible impact of this approach: “We get more accurate quantification of the materials required to do the job because we have a true representation of exactly what the field is going to build, without anyone having to apply knowledge to it, make guesses on what items are or get confused between pages of a drawing.”

“We rely on a combination of digital tools and field expertise to ensure that what’s modeled and estimated translates into precise, executable work in the field. That direct link between the office and field helps prevent rework and improves schedule performance.”

– **Joe Botto**, self-perform manager at Turner Construction Company



3D Design and Modeling

Design teams deserve flexible solutions for creating conceptual, structural and constructible models that help them fully understand and visualize the project.

3D modeling software such as Tekla Structures allows for better project visualization at the start of the project, increasing visibility and transparency across the project team. It brings information from various sources into a single source of truth for project data, enabling all stakeholders to understand requirements, extract precise quantities, identify clashes and ultimately know what they're accountable for.

What's more, 3D models can be used to help guide decision-making as the project evolves. That visibility extends into operations and management, ensuring building owners and operators can maximize the building's performance and proactively approach maintenance throughout its lifecycle. This level of long-term visibility is something project teams can convey during the bidding process to gain a competitive advantage.

Do contractors have the right tech?

According to the 2024 Dodge Data and Analytics report, Not by Design: The True Cost of Poor Collaboration, just 11% of field personnel reported that they could access the information needed on what and where to build projects. Yet the survey also found that 75% of field personnel were using BIM for layout, and reported increased accuracy, productivity, ability to maintain schedules and coordination with other contractors.

THE TAKEAWAY

Many project teams have technology available to them for managing construction workflows, but their existing solutions are most likely not integrated and do not provide a single source of project information and activity.





Project Management

From managing pour sequencing and curing cycles to coordinating formwork systems to dealing with unpredictable weather and schedule shifts, close workflow management is critical to avoiding the kinds of miscommunications and delays that contribute to cost overruns.

By centralizing project data in a single system like [ProjectSight](#), all stakeholders gain unparalleled visibility into every aspect of the construction process, from which trades and subs will be on site and when, to which project phases are underway and the status of the project budget. “When everything is documented in a project management system, it breaks down the barriers between what happens in the field, impact events and the decision-making of executives and project managers,” Warner says.

Collaborative tools for document and field management, drawings, budget and change orders allow project management teams to:

- + Efficiently track and bill for completed work.
- + Identify issues and risks early.
- + Provide real-time project health insights.

Centralized project data can also help in the event of a contract fulfillment question or concern. Warner notes, “Technology provides the power to make accurate decisions and avoid contract non-compliance, which not only costs you money on the job, but can cost you your company.”

“When quantifications are correct, we’re able to boost productivity and quality control. We enter another level of accuracy that makes not only estimators, but field personnel and management more accurate.”

- **Trent Warner**, manager, SMB at Trimble



CASE STUDY

Contractor makes the jump from 2D to 3D modeling

Turner Construction Company evolved from using 2D to 3D modeling with Tekla Structures. The company's self-perform manager, Joe Botto, explains how they worked with the platform on a large data center project in Columbus, Ohio:

"I started using SketchUp several years ago to communicate complex field conditions visually, both with designers during the RFI process and with our field crews. It became a great tool for quick problem-solving and on-the-fly visualization.

However, as our projects grew in scale and complexity, I connected with our Seattle business unit, which had already adopted Tekla Structures. Seeing how they used the platform to enhance quantity takeoffs and leverage concrete-specific modeling tools opened my eyes to its broader benefits.

On a recent data center project in Columbus, Ohio, we began using Tekla Structures during preconstruction and carried it through execution. It allowed us to better coordinate with other trades, fine-tune details earlier and create reliable lift drawings for the field.

While Tekla Structures brings tremendous value for large, complex projects, we still use SketchUp when we need a fast, lightweight tool for immediate field issues or early planning where the power of Tekla Structures isn't required."



Rendering of Turner's Waverly project.



A rendering of Turner's Seattle Aquarium project



Breaking down information silos to improve project outcomes

For successful project execution, self-perform concrete contractors must align data from the model to the estimate to the field and freely share information between field ops, estimators, project managers and technology teams.

However, version control and information flow across project documentation are often challenging. Field teams, in particular, frequently don't have real-time access to the most current, updated technical specifications. Drawing revisions and requests for information (RFIs) can create bottlenecks when not properly communicated. And without immediate and clear access to a unified system, RFIs often languish without timely responses, creating project delays.

Botto agrees, "Internally, we've faced challenges in cascading information, like quality standards, production goals and safety protocols, to field teams effectively. Keeping engineering and field teams up to date with drawing revisions or RFIs has historically been a pain point. Externally, timely and clear communication with design teams, especially around RFIs and pricing changes, has also been difficult."

Adding to the complexity, pricing changes—whether due to material cost fluctuations, scope modifications or timeline adjustments—require transparent and immediate communication to maintain client trust and prevent budget disputes.

These challenges and communication gaps highlight the need for a streamlined information system to bridge the divide between office and field operations while facilitating clearer external partnerships.



Connected construction technology can help bridge these gaps for project teams working in the field. For example, construction managers and on-site workers can access up-to-date drawings in real time. Field supervisors and subcontractors can tag RFIs directly to drawings, saving valuable time and reducing costly errors that typically result from miscommunication. These digital solutions allow construction teams to maintain continuity and accuracy throughout the building process, even when working across multiple locations or shifts.

Additionally, connected 3D modeling tools enable designers and field crews to create, combine, manage and share information-rich, accurate 3D models more easily. “Positioning and layout are fundamental to driving project execution,” Botto says. “An accurate layout sets the tone for productivity and precision downstream.”

Without alignment and information sharing across teams, contractors risk:

- + Inaccurate estimates
- + Poor coordination
- + Rework
- + Increased costs
- + Delayed project delivery





Unifying project teams with connected construction

Concrete contractors who embrace connected construction technology can gain a significant competitive advantage. By implementing integrated digital solutions that connect estimating, design and field operations, contractors can overcome today's most pressing challenges—from labor shortages and material volatility to compressed schedules and communication gaps. The result: project teams that can work smarter, not harder, leading to smooth delivery, happy clients and higher profits.

“Adopting digital tools has enabled us to have a more coordinated approach across teams. We’ve seen gains in efficiency that allow our engineers and superintendents to focus more on execution and client-facing priorities. This alignment across estimating, modeling and field operations helps reduce rework and supports stronger project outcomes.”

— **Joe Botto**, self-perform manager at Turner Construction Company





About Trimble Construction One

Trimble Construction One is a complete construction technology suite designed for concrete contractors. It optimizes efficiency and facilitates collaboration between departmental teams and project stakeholders. These benefits collectively reduce risk and increase profitability for concrete contractors, making Trimble Construction One an invaluable tool for modern construction businesses.

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