



3 MAJOR INDUSTRY CHALLENGES CONSTRUCTION TECHNOLOGY IS SOLVING FOR TODAY

In recent years, the promise of time- and cost-saving efficiencies has been the driving force behind the digitalization of traditionally manual processes in construction. It is this type of transformation that helps meet the challenges of an increasingly competitive market. While there are a myriad of applications for such transformative technology, three tend to stand out for all construction professionals, as they are arguably the most pressing. These are supply chain disruptions, labor shortages and attracting new talent. Let's take a look at each one of these areas to understand the challenges they present and how the right technology tools can help meet those challenges.

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SUPPLY CHAIN DISRUPTIONS AND MATERIAL SHORTAGES

The effects of worldwide supply chain challenges on the construction industry have intensified since early 2020. Widely compared to playing whack-a-mole, the analogy would be amusing were it not so accurate a description.

There's been the pandemic that halted production in many areas as COVID-19 temporarily shut down manufacturing facilities. Subsequently, there were shortages of materials from wood to steel that forced construction companies to scramble at different points.

This perfect storm of supply-and-demand circumstances has had a direct effect on the prices of materials and their shipment, and therefore on the cost of doing business. The threat to profit margins, already paper-thin, has grown more pronounced.

Given this instability, how can you best manage material resources to protect your profit margin?

1

Practice a Leaner, More Focused Way To Organize Work. Creating a construction workflow with the right scheduling and planning technology is an effective approach to project management. This not only increases productivity but keeps costs and delays in check. As an early-stage process, design and material options are explored and hammered out via consensus of construction, engineering and procurement. The result is incremental, construction-driven installation “work packages” based on real-world needs of what it takes to build a structural unit.

One of the key deliverables with this approach is a more cost-controlled inventory order list. The benefit of this is two-fold. One, there is less likelihood of over-ordering materials that may be in limited supply, and therefore less wasted expense. And two, there is reduced risk of under-ordering materials that not only could be higher-priced when it’s time to order to make up for the shortfall but could incur possible expedited delivery fees.

A more streamlined work packaging structure seeks to ensure availability of materials — as well as tools, equipment and digital job task details — when and where they’re needed. This eliminates the common constraint of not having enough of those resources. The effects on cost that would normally ding the profit margin are discernable: fewer change orders that can lead to rework requiring extra materials and labor costs, and bypassing the expense of paying site crews for downtime as they wait for resources to arrive.

Your past project performance metrics can play a helpful role in the process. Start by analyzing how cost performance index (CPI) reacted throughout similar builds. What unusual risks or constraints surfaced? What was their cost impact? And how did they affect your profit margin? This analysis will give you an idea of how to remove the factors that can hinder cost performance when creating work packages.

1

Deliver Accuracy and Cost Scenario Understanding via BIM. Building information modeling (BIM) delivers an extremely precise inventory list, though from a different approach based on the takeoff. This 3D modeling process links relevant data — quantities, manufacturer details, cost, etc., — to every element in the model, down to the smallest screw. This data is used in turn for the takeoff, which feeds directly into the creation of that inventory list. Its accuracy means there's far less chance of miscalculation resulting in paying for an unnecessary surplus of materials (and storage) that can dip into the bottom line, and fewer ordering mistakes of incorrect materials.

BIM's value in helping preserve the profit margin goes beyond exacting supply lists. Its precision modeling capability acts like a risk-management tool, cutting down on design errors that inevitably lead to alterations and fixes down the road, and all the extra materials and labor expenses that commonly entails. During the design stage, the BIM model becomes a digital playground, allowing you to experiment with alternative materials to determine the impact of each option on the budget.

This affords you the opportunity to make a data-driven selection of the ones that are more cost effective — in terms of investing in those materials, their maintenance and repair records, and their durability — without compromising the integrity of the structure.

Another way this 3D modeling process helps you stay profitable is prefabrication. BIM is often used to design precise, prefabricated systems and components. It's a more efficient approach that saves on excess material expenses and the associated labor costs for doing on-site construction of those systems from scratch.

2



NAVIGATING THE LABOR SHORTAGE

Currently, the injection of billions into repairing aging, deteriorating infrastructures around the world is a welcome development. But an injection of labor is what industries like construction and manufacturing will need to effectively tackle and succeed at those often-mega-sized projects as the pervasive shortage of both skilled and general labor has tempered some of the excitement for even the most promising opportunities for those industries.

How can construction companies not only prepare themselves for large future projects, but also meet the challenge with confidence and a brighter outlook? While the anticipated effect of the infrastructure boom on the demand for workers presents a challenge for the construction industry, it also presents an opportunity.

The key to overcoming labor shortages will lie in proactive planning and strategic management. That means it's going to be up to construction companies to have solid labor acquisition, retention and safety strategies in place. The labor shortage may worsen before it gets better, but these strategies can help soften its impact as infrastructure projects gear up.

2

Train and Upskill Current Workers. One strategy is to identify either existing skills gaps or high-demand areas for specific expertise needed on the jobsite and offer worker training in those areas. Provide in-person (on-site or at a local partner school) and online training options where possible, with the understanding that younger workers tend toward online as they're more familiar and comfortable with that format. Why? Because when workers have more than one area of demonstrable knowledge and skill, they become more flexible.

In addition, they're can easily transition to where and when you need them. For example, you may need people skilled in operating excavating equipment at the beginning of an extensive infrastructure project. Or you may find you're short on workers who know how to safely handle waste removal throughout that project. Finding people with those skills could turn into a challenge out on the open market where there could be a pronounced labor shortage for the skills or experience you're looking for. But cross-functional training of workers in more than one skill ensures that even a lean team is nimble enough to keep job tasks progressing.

Another strategy is to upskill those who are either tech-savvy or at least tech-curious in some of the construction technology that is becoming part of the mainstream "tools" of the trade. It could be anything from using mobile checklists to do quality assurance or safety walkthroughs. Or how to access and understand performance metrics via dashboards so they can take more ownership in job progress. In addition, they can be learning how to work with augmented reality wearables to help those in the back office assess progress at different points throughout the jobsite.

Prioritizing skill development of existing employees shows them you're willing to invest in them. And they'll be more likely to stick around when they know they're valued and trusted to take on more.

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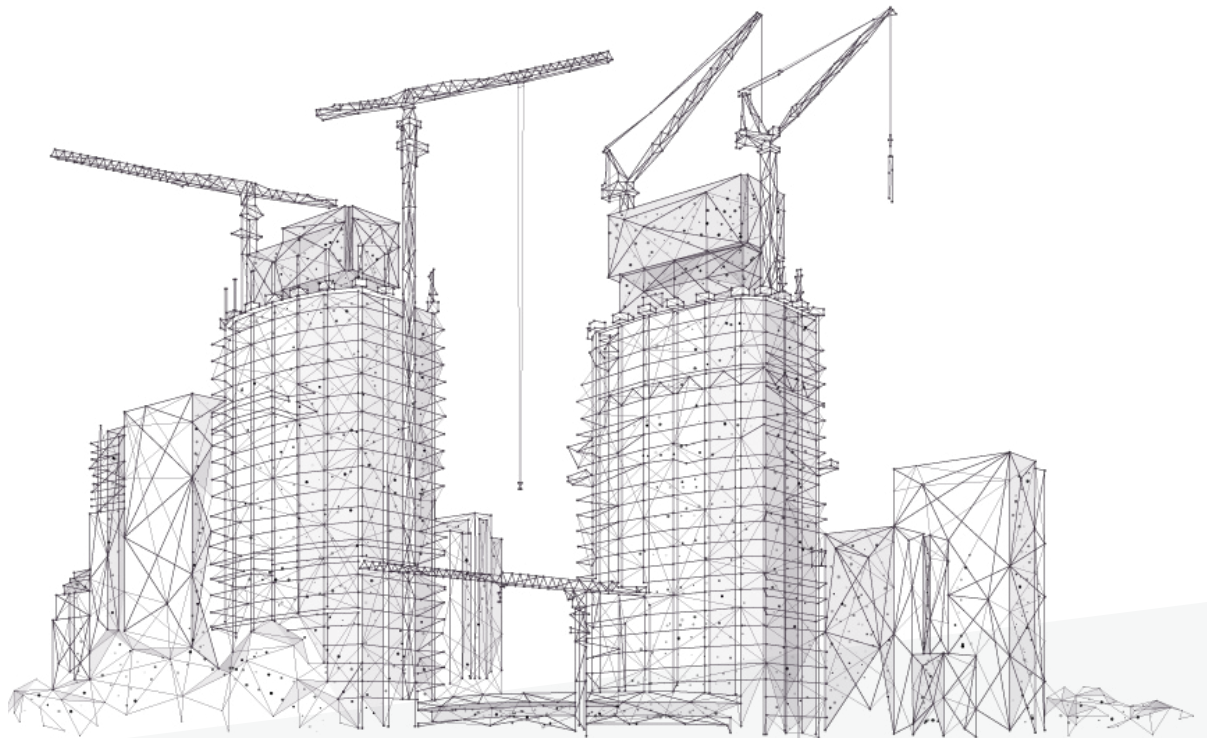
Enforce Jobsite Safety To Reduce Worker Absences. Every worker that winds up as an injury statistic is one less worker on your team. And that contributes to the labor shortage, either temporarily or permanently. Not only does it jeopardize completing a job task on time, but you're left scrambling trying to replace that person on short notice. The goal then is to have safety measures in place to reduce the likelihood of injury. This may take on even more urgency as many infrastructure projects due for retrofitting and repair have already been deemed safety risks. Even more reason to have a strategy in place before sending everyone out on the jobsite.

The sooner hazards are detected, the more quickly they can be addressed. Start by implementing the processes that uncover them — rolling punch lists, safety inspection checklists and commissioning walkthroughs — at the beginning of the projects. Especially for complex infrastructure projects, shifting the timeline shifts the intent from reactive repair to proactive prevention, identifying any structural or jobsite safety hazards that can physically hurt and sideline anyone on the jobsite.

Take advantage of today's field technologies that can reduce exposure to physical and environmental hazards and potential injuries. These could be drones that conduct inspections of multistory buildings and difficult-to-access places that would otherwise put human inspectors in harm's way. Think, too, of "smart" technology in the form of wearables or jobsite sensors that alert workers to nearby hazards or when unfavorable health-impacting environmental conditions develop.

2

Recruit for Both on and off the Jobsite. By nature, people tend not to gravitate toward places or positions where they haven't seen themselves represented. Proactively breaking the mold of the typical construction worker stereotype, which has been predominantly male, can help change this. In other words, grow and diversify your workforce by embracing diversity. Actively recruiting people of different races, cultures, genders and ethnicities invites their unique perspectives and fresh ideas on how to solve problems, collaborate and find consensus.



3



ATTRACTING A NEW GENERATION OF TALENT

Evolving an aging workforce into younger workers who can make construction a lifelong profession has proven to be a challenge. One key tactic: first go where your future workforce spends most of their time.

This means visiting high school and trade school career fairs, which are prime opportunities to reach many prospective job candidates in person. Because they're already attending with the mindset of learning about career options, you'll be able to meet and talk with young adults about opportunities within your construction company. It'll be your chance to share what working in the industry is really like. With trade schools enjoying a resurgence in popularity, now's the time to reach out to this motivated audience.

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Meet Them Where They Are Tech-Wise. If your company has invested heavily in software technology, don't overlook the tech- and STEM-based schools and their campus groups where you can find students who may be attracted to construction tech. Many may not have thought of the industry as an area of interest for them nor considered the application of modern software and field technologies to construction projects. This is your chance to pique interest in the opportunities to get in on the ground-floor efforts of an industry that is not only exploring all that tech can do, but is looking to the tech-savvy younger generation to help guide them.

For Gen Z, social media is an ingrained part of their world. Because the younger set relies more heavily on online information, it's natural to think of reaching out to them there. So, professional social media platforms like Tallo or LinkedIn are preferable.



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Offer the Freedom of Mobility. It's remarkable how connected new workforces are to technology, whether through smartphones or tablets. Far from being merely a convenience, mobile-friendly technology enables them to do more in less time and with less effort. So how mobile-friendly is your technology? Think of the software you currently use for your projects. You may have scheduling, commissioning, or document management. Ideally, they have a mobile component.

Why? Because it helps keep things moving on the jobsite where most of the action is, and where much of your project's data is generated and captured. So, to attract your future workforce to the construction site, show that you embrace mobile technology. They'll feel more confident and relevant when they can use their innate tech skills to capture the data used to track project progress and performance. Remember, today's construction talent sees mobile devices as valuable a construction tool as power drills and jackhammers.

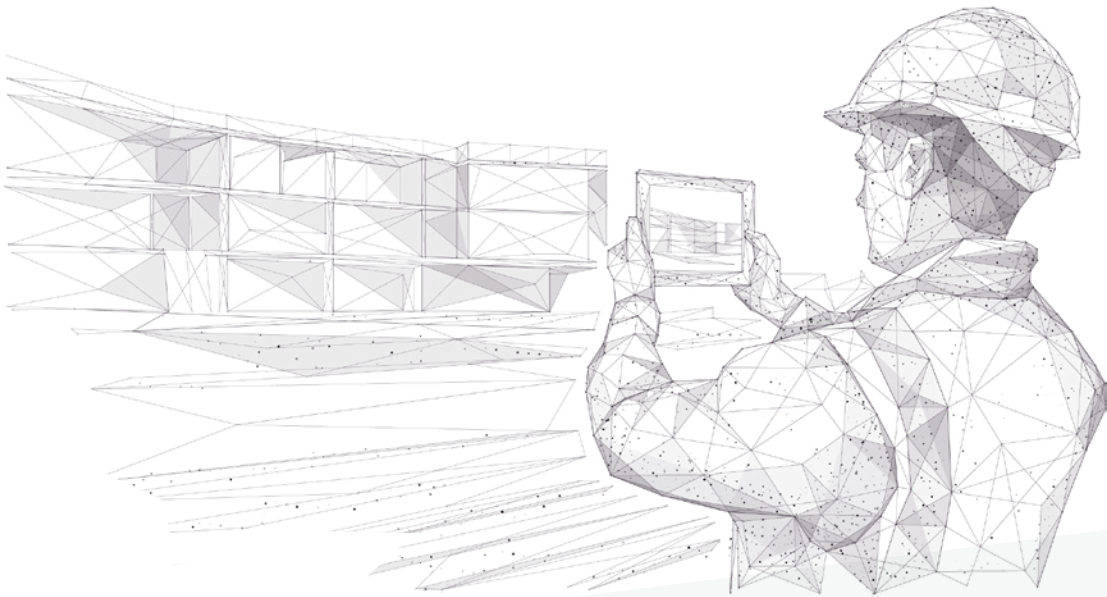
Eliminate Paper-Based Daily Logs. Want to further win over the incoming workforce? Eliminate paper. Gen Z, even more so than millennials, tend to be environmentally conscious. They prefer to work for companies that are actively part of the solution to excessive paper waste, not contributing to landfills. It might be a challenge for some construction companies to make an immediate leap to near-100% virtual documentation. But one place to start is with the daily logs, or daily reports. They require collecting job details that will serve as an ongoing log, not just for the current project, but as reference for future ones. With capital projects lasting as long as several years, that documentation can really add up. Not to mention, it's quite labor-intensive.

What kind of solutions will appeal to the tech-oriented? Apps with daily log capability. They efficiently and quickly allow you to record and store photos, videos, screenshots and notes — essentially everything that documents each day's activities to better manage the project. This solution not only reduces the impact on the environment but introduces time and effort efficiencies the younger generations have come to expect of technology.

3

More Accurately Track Quantity Claiming. It's difficult to know what your actual project productivity is on the jobsite if it isn't accurately quantified and tracked against established benchmarks. This is what quantity claiming is meant to do. Traditionally, spreadsheet printouts have been used by the front line to claim quantities of work performed. Aside from the inherent risks of dealing with manually updating hard copy spreadsheets, it's often cumbersome translating completed work into more easily trackable performance metrics.

This is another opportunity for construction companies to set themselves apart from those who continue to rely on these traditional processes. Leveraging technology here is not only a way to be more productive, but to track just how productive the work is in relation to the benchmarks. Using software that can execute claiming schemes on a mobile device — with quantifying options to choose from — introduces more accurate, real-time insight into project performance. It's another way to further differentiate your company in the eyes of the tech-savvy construction talent you want to attract.



3

Enhance Communication Between the Back Office and the Field. For most if not all of their lives, the Millennial and Gen Z generations have been using technology to stay connected and communicate. The more advanced construction software platforms provide an open channel for real-time interaction between the field and the back office — something the tech-savvy would expect and even respect.

And when it comes to construction projects, access to project team members is as important as access to project data, ranging from drawings and daily logs to schedules and performance metrics. Using software that houses all that data within a single, cloud-based repository paves the way for real-time collaboration and decision-making among project teams who can simultaneously reference the same data. And it may even help close the gap between the younger workers' tech skills and the veteran workers' real-world experience.

Time and cost-saving efficiencies are the driving force behind the digitalization of traditionally manual processes in construction, helping to meet the challenges of an increasingly competitive market.

Overcoming the “old-school” perception of our industry by incorporating more construction software technology will help you meet and take full advantage of the new wave of construction professionals' tech demands. As a result, you will successfully navigate labor shortages as well as deal with supply shortages and surprises for more project wins, now and into a decidedly bright future.

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