

CONSTRUCTION[®] BUSINESS OWNER

10 OUTSTANDING WOMEN IN CONSTRUCTION

IN THE OFFICE

How to enhance business
performance through
team well-being

IN THE FIELD

Your guide to
preventing trenching &
excavation disasters

AMBER PAGE,
DEI SPECIALIST,
FORTIS CONSTRUCTION



A large green United Rentals pump and filtration unit is shown at a construction site. The unit has a white pickup truck parked next to it. The background shows a line of trees under a clear sky. The entire scene is framed within a circular cutout on a blue background with white curved lines.

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CBO Editor
Megan Beam

As I write this month's letter, communities across the southeastern U.S. are still working to recover from the devastation of Hurricane Helene. Having spent more than a year in the construction sector, I am now seeing infrastructure damage and envisioning repairs from an entirely new perspective. I think about the multifaceted planning and innovation required for every layer of our industry to rise to the challenge of rebuilding and community recovery. I'm proud to say that our industry is well positioned to meet this challenge head-on. I look forward to seeing how the world is rebuilt because of the minds, hands and efforts of readers like you.

As we approach the final stretch of 2024, I am excited to celebrate the 10 remarkable finalists for our Outstanding Women in Construction (OWIC) spotlight. Beginning on page 22, the profiles for each of these women represent stories of perseverance, innovation and leadership. Their collective contributions are reshaping the construction industry at every level.

It feels especially potent to highlight their contributions and their advice as so many areas of the industry enter a new season of expansive repair. It feels like a reminder that the ideas and observations that can bring about some of the most exciting change can come from the places we often overlook. These women are paving the way for a more inclusive and dynamic future, and we are excited to continue championing their successes.

Thanks for reading,



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Photo Credit: Amber Page, DEI specialist at Fortis Construction

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Photo Credit:
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► Takeuchi Vice Chairman Clay Eubanks Celebrates 40th Anniversary



Clay Eubanks

Clay Eubanks, vice chairman of Takeuchi, is celebrating four decades with the company. In September 1984, Eubanks was a college student who began working part time in Takeuchi's warehouse near Atlanta, cleaning up the facility and pulling parts from inventory. Over the next 40 years, Eubanks honed his knowledge of the equipment industry and rose through the ranks to his current position. After his stint in the warehouse, Eubanks moved into a full-time role as Takeuchi's central region sales manager based in Texas. He later moved back to Atlanta and ran Takeuchi's retail store, then became the company's Southern region manager, eventually promoting to national sales manager, general manager, and finally, president of Takeuchi-US. His current position as vice chairman of the board took him to Takeuchi's global headquarters in Nagano, Japan, where he currently lives and works. "I'm proud to have been a small part of growing two new segments in the construction industry — the compact excavator and the compact track loader — both products that Takeuchi was the first to develop," Eubanks said. "In the early days, no one knew what these machines were, and it was a real thrill traveling the country and demonstrating what they could accomplish. What started out as laughter often turned to amazement." Visit takeuchi-us.com.

► CM Labs Launches Mini Excavator Simulation Training

CM Labs Simulations, a provider of simulation-based training in the utilities and construction industries, announced the launch of the Intellia Mini Excavator Simulator Training Pack. The new training pack features beginner-friendly instruction as well as advanced exercises. Operators can use the training pack to practice walk-around inspections and gain familiarity with the mini excavator's controls, while learning how to handle the

mini excavator's unique tipping risks. The training pack also features advanced exercises for more dangerous and high-risk work. With the Mini Excavator Training Pack, operators can safely practice side loading as well as digging around utility lines above and below ground. Detailed metrics track safety violations and performance, allowing organizations to objectively determine when an operator is ready for the field. The Intellia Mini Excavator Simulator Training Pack joins CM Labs' product line for utilities and construction, which includes the only digger derrick and boom truck simulation training solutions on the market. The Mini Excavator Training Pack can be installed on the following CM Labs simulators: Edge Plus, Edge Max and Advantage. Visit cm-labs.com.

► Track3D Secures \$4.3M Seed Funding

Track3D, a Bay Area-based, artificial intelligence (AI)-first startup building a pioneering reality intelligence platform for the construction industry, announced that it has secured \$4.3 million in venture capital seed funding. The funding will propel the adoption of Track3D's unified reality capture data platform, designed for comprehensive, AI-powered construction progress monitoring. The seed round was led by Endiya Partners, with participation from Shadow Ventures, Monta Vista Capital and others. The funds will be used to expand Track3D's product offerings and bolster its go-to-market efforts. Track3D serves as a central hub for all visual data, transforming reality capture data from a system of record to a system of intelligence. Utilizing visual data from drones, 360 cameras, laser scanners and mobile devices, Track3D provides actionable insights to enhance project oversight and decision-making within a single intuitive system. The company is experiencing robust growth and engagement, having already secured enterprise clients such as Hensel Phelps and Performance Contracting Inc. Visit track3d.ai.

► Diversified Fall Protection Appoints Gabe Galvan as EBM Design Director

Diversified Fall Protection (DFP), a turnkey fall protection integrator in the U.S. for regulatory-driven systems and services, has appointed Gabe Galvan as EBM Design Director. Galvan will play a key role in leveraging the company's newly acquired California SIT (scaffold inspection and testing) license. This license permits DFP to offer inspection, testing and design services related to exterior building maintenance (EBM) and other equipment within the state of California. After helping DFP secure



Gabe Galvan

the license, his role will enhance the company's adherence to California's stringent regulations and ensure the highest standards of compliance for workers in California. Galvan brings 31 years of experience to DFP, with eight years as an SIT surveyor. He has worked in all facets of the industry, from upper management to working side-by-side with field techs. His position ensures that DFP can efficiently manage several critical compliance aspects, including the creation of operating procedures outline sheets (OPOS). These detailed documents provide comprehensive information on roof layout, equipment to be serviced, existing fall protection systems and safety protocols necessary for the compliant execution of work. Galvan will also facilitate the issuance of letters of written assurance for vendors using fall protection equipment, verifying that all equipment has been inspected, and that vendors are properly trained for safe rooftop access. These letters must be produced for each vendor using the equipment on a given building. Visit fallprotect.com.

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ASK THE EXPERTS

What's your go-to software program or app?

// Buildertrend and STACK CT are tied for first place as my favorite software tools. Buildertrend excels at streamlining our project management — simplifying everything from communication and scheduling to budgeting. It keeps our team and clients on the same page, ensuring smooth operations.

STACK CT is equally essential for its fast, accurate estimating and takeoff capabilities. It allows us to stay competitive while maintaining the precision we pride ourselves on.

With both programs, we can truly leverage our expertise, delivering efficient, well-managed projects with a high level of professionalism and care. //

- **Ryan Stryker**, President, Stryker Construction Inc.

// On-Screen Takeoff. //

- **Kelly Carlson**, Estimator, Ethoscapex

// As a new business owner, me and my team searched for weeks for a software that would help us achieve great success and separate us from the rest. This was my first time using a system like STACK, and it has helped us become a much more efficient company. We see how beneficial this software has been in maximizing our GP. If it wasn't for STACK, I would have never dreamed of working with clients such as Verizon, Memorial Hermann, Russo's Pizzeria and much more. I use this system every day and have been teaching my team to use it as well to help save costs when purchasing materials. //

- **Jay Salinas**, CEO, A Plus Construction Services LLC

// Pro Crew Schedule. It's a scheduling platform for my crew and employees. It's to the point and works as it should. It handles our schedules, timecards, time off and photo documentation. //

- **Garrick Revels**, Scheduler, Gator Concrete & Masonry

// My go-to program is CRM (customer relationship management). Before you can dive into estimating, project management, procurement, scheduling or financial apps, you need to secure a signed contract.

The most efficient way to reach that point is through the consistent and strategic use of a CRM system. CRM software is the backbone of proactive business development and marketing processes. It allows one to track client interactions, manage leads and nurture relationships, ensuring that every opportunity is maximized. By maintaining an organized and data-driven approach, a CRM helps turn potential clients into long-term business partners, paving the way for successful projects. It not only helps with building new business but also maintaining business through effective account management.

Until a contract is secured, nothing else happens. //

- **Bobby Darnell**, Managing Principal, Construction Market Consultants Inc.

// Moxo. //

- **Evangelos Spyridakis**, President, Thesis Painting Inc.

New Coach, New Day

An examination of what a new leadership team & the organization can — & should — expect



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As a loyal fan of a certain Southeastern Conference (SEC) college team — that shall remain nameless, but is possibly in search of a coach — I fully acknowledge that I was spoiled. When I joined the faithful many years ago, I was all-in on what that coach said to the public and the team. Most importantly, it translated to victories on the field. Much to friends' chagrin, this increased my arrogance as a fan.

As the years progressed, there were awards, championships, more wins, etc., that further fueled a passionate fan base who thought it would never end. And you know what? It finally did. What seemed like an eternity was about a decade. Unfortunately, that same old ball coach isn't on the field, and I am reflecting back on the good old days like my parents talked about walking up hill in the snow — both ways — to school. Oh, how the mighty have fallen. With each new coach, there appear to be not only the expectation of winning but also a return to an earlier time. "Why can't we run an offense like he did?" "Why can't we recruit that blue-chip star like we did?" "Why can't we ... ?" And there is the rub.

Will the new coach do it exactly like the old coach? Probably not, and we need to be OK with that. Certainly, if the team starts losing over time, then you can question the decision-making, but what got my team from a bygone era

to the promised land might not work in a new era.

The same lessons apply in business. The one inalienable truth of business is that everyone gets older, and more than likely, your team will see or be part of a regime change. Sometimes the change is welcome, particularly if the business has been challenged. If it isn't making money, the team might benefit from a new person at the helm. However, in many privately held construction organizations, the tenure of the leadership/ownership team is usually positioned for a long reign. When that leader or group retires or exits the business, there may be growing pains experienced on both side of the house.

Lessons for the New Leader

First, the new team has to do a whole lot of listening. It seems contrary that the leadership team should have to take a defensive posture, but it is less about subordination and more about empathy. For the most part, people tend to despise change. They've been doing it a certain way for a long time and fear a massive amount of upheaval. It will take some time to get used to the new ideas, new strategies, new tactics or simply the new voice.

Another thing to consider is the rate of change that the new leader(s) will implement. This is not to say that new leaders should be maintaining a

status quo, but they should be thinking strategically about how and when change can be introduced and where the small victories will be. It is important to remember that there is a base camp or existing culture that more than likely will be maintained within the new regime. It might be best to think of this as an evolution rather than a revolution.

One of the stickier issues revolves around the existing team. Harkening back to the coaching conversation, rarely does a team preserve people from the previous coaching staff. I remember saying to myself, “If only they kept the defensive coordinator ...” However, that new coach will want team members they selected and will not necessarily retain the baggage of the previous group. There are certainly exceptions, but the head coach wants to surround themselves with the best talent that they had a say in, versus some arranged marriage.

This does not mean the new CEO or president has to clean house in a construction firm. In fact, this transition will probably be an assimilation and not a hostile takeover. But it is important to realize there may be people loyal to the prior leader who may not make the cut.

There is often a reluctance to separate ties with the “old coaches,” viewing some individuals as a protected class. Meanwhile, the rest of the organization is watching the strife, and it has the potential to act as cancer that only festers the longer it remains. Why isn’t <INSERT LEADER HERE> doing anything about <INSERT SUBORDINATE HERE>? There is a balance from both sides that has to be found. A purge will go over like a lead balloon, but a new leader who acts like a custodian simply keeping the leadership seat warm is not going to be an effective leader.

Lessons for the Team

The first lesson of management succession is that things will be different. Even if this is simply a generational transition with a well-established culture, the new leader is not the previous leader. Even if there is a DNA connection, it will be different. Be cognizant of saying phrases like:

- “Well, <INSERT OLD LEADER HERE> never did that.”
- “That’s not the way we do it at Brand X Construction.”
- “I never had to do that for <INSERT OLD LEADER HERE>.”

Killer phrases undermine the leader and the team’s collective ambition. You may be right that the “old leader” would never do that, but there also may be a compelling reason why he or she should have done it sooner. What if a market is shrinking or a key account is going away, or the organization is losing money? Change may be necessary, even if the old regime wouldn’t have taken that risk. It is fine to ask questions and judge the answers, but the team should rally around the new leader rather than ponder a bygone era.

One of the greatest challenges may lie in associates who were also contenders for that same role. For instance, the new president may have been selected from a small group of internal candidates. Be realistic! The people who weren’t selected will have hard feelings. This doesn’t mean they will revolt or stage a coup, but they are humans with emotions. Throw in the fact that a peer is now driving the bus, and you can easily see how egos and personalities can create an awkward dynamic. This does not mean a team member should stifle their feelings or not feel hurt. However, there may come a time where you ask yourself, “Can I thrive in this environment and be a strong team player, or was this blow too much for me to handle?” Bitter feelings make it hard to drive strategy, and the new leader will need lieutenants who are all in. Both sides should realize that decisions have consequences, and that may mean you will lose a team member at some point.

Transitions should be celebrated. Once the honeymoon is over, the new leader should be graded by how they performed, not held to some unrealistic legacy standard during a different time. The business is about Brand X Construction 2.0, and they will lead this change with a team that is bought in.

In the meantime, if you have any coaching resumes, please send to the University of ... ▲



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Build to Last: Top Concerns & a Checklist for Succession Planning Success

What you need to know before a business transition



JOHN BLAKE, CPA, MBA, is a partner in Marcum LLP's Tax & Business Services division and a member of the firm's Mid-Atlantic Construction Industry Group. He has 20 years of experience providing accounting and tax services to clients, maximizing cash flow through proactive and strategic tax planning. He can be contacted at john.blake@marcumllp.com. Visit marcumllp.com/construction.

Marcum recently published the 2024 edition of its annual construction industry survey. Every year, industry leaders respond to questions on everything from the top issues keeping them up at night to emergent trends. Marcum then collates, analyzes and distributes the results, shedding light on the thought processes of industry leaders.

One standout finding from this year's survey is the investment companies are pouring into their succession planning. When asked, "Which of the following actions are among your company's top priorities?" a staggering 49% of respondents selected succession planning.

Why Now?

For years, succession planning and its

robust cousin, exit planning, have been afterthoughts in construction. Maybe that's because business was moving too fast for leaders to take the time to sit down and think about the future — or perhaps they were too fixated on achieving growth to worry much about these processes for fully realizing company value.

But with the baby boomer generation rapidly approaching retirement, it's no longer possible to ignore the elephant in the room. None of us can work forever, and if we think of a business as part of an enduring legacy, the transition from one generation of leaders to the next must be carefully plotted.

According to Family Enterprise USA's 2023 article summarizing a survey of

family businesses, construction is second only to manufacturing as the industry category with the most family-owned businesses. The same article reports that 66% of its respondents experienced a change in leadership at their organization. It's easy to understand why an industry with so many closely held businesses would want to preserve their structure and protect the interests of beneficiaries, but it's less clear how this is accomplished.

Any change in leadership has many moving parts to consider, regardless of the business's operations or ownership structure. However, a few key issues stand out when succession planning occurs within the construction industry.

How Succession Planning Goes Wrong

The No. 1 risk of any plan is simply not having one. Succession planning is one aspect of a business where personal circumstances can have a sudden and unexpected impact on the business and its employees. Unexpected developments affecting health can suddenly impede a leader's ability to contribute, and that's one reason having a plan in place is so important. With a route charted, the business will depend less on one leader to steer the ship.

Furthermore, leadership transitions are complex undertakings that can't be improvised or rushed. Anything less than a careful, considerate and thorough plan introduces immense risks, including the loss of essential talent, interruption of business continuity, high legal fees and excessive taxes, among others.

Help Wanted: Master Carpenter & CEO

Many family-owned construction businesses have found success thanks to the literal hands-on contributions of their owners. From days performing specialized

work on-site, they may now spend most of their time in a boardroom. The search for a successor can often overemphasize the importance of a similar career of widely varied experience. Firsthand knowledge of skilled labor undoubtedly adds useful perspective when running a business, including intimate knowledge of the potential pitfalls of on-site work (and how to avoid them) and the ability to create realistic project timelines.

I often see owners hung up on finding candidates with a career trajectory similar to their own. But there aren't many such candidates, and the challenges facing businesses today may benefit more from leaders with a sophisticated understanding of asset financing, sureties and negotiations, among other back-office functions. Succession planning requires owners to keep an open mind. Instead of looking for that one diamond in the rough, perhaps it may be wise to sell to an outside company or to sell the business to a group of employees over time through an employee stock option plan.

The first step in succession planning is to acknowledge that while there may not be a perfect candidate, the business's needs come first. For instance, a business with a high volume of infrastructure contracts should prioritize candidates with experience working with government agencies, even if they don't fit the traditional mold.

When handing over the reins of the business they have built, leaders need not find a mirror image of themselves but be objective about what skills and capabilities will best prepare the business for continuing success.

Transition Timeline & Talent Development

Succession is a complex, time-intensive process. For that reason, it's best to allocate a minimum of five years to

realizing any transition plan. That should allow ample opportunity for identifying and vetting succession candidates and developing potential successors. Your transition plan should be flexible enough to account for unforeseen events, and it might make more sense to think of it as a collection of milestones rather than a strict timetable. Still, most successions I see are accomplished within three to seven years.

The Succession Checklist

Ultimately, any succession plan that best suits your business pursuits will be as unique as the business itself. However, there is a universal path all business owners can use to help ensure a smooth transition beneficial to all parties. The devil is — as always — in the details, but below is a five-phase checklist to guide the creation of an effective succession plan.

1. Begin Succession Planning

- Identify potential successors.
- Implement training and development programs to prepare potential successors.
- Explore transition strategies.

2. Assess the Current Business Situation

- Evaluate business needs and goals.
 - Establish long-term vision and objectives.
- Conduct financial health assessment to produce current financial status and future projections.

3. Create a Transition Plan

- Timeline for transition featuring:
 - Realistic timelines
 - Stages of transition
- Communication strategy
 - Prepare internal and external communications.
 - Manage stakeholder expectations.



4. Legal & Financial Considerations

- Get comfortable with estate planning and taxes.
 - o Understand estate taxes.
 - o Explore strategies for minimizing tax liabilities, such as strategic gifting, trust planning, deferring taxes and evaluating business structure.
- Legal documentation
 - o Create or update wills and trusts.
 - o Create shareholder agreements and buy-sell agreements.

5. Begin the Transition

Implement the plan, and review and update the plan regularly.

Succession Success: A Case Study

To put the importance of succession planning in perspective, consider the following real-world example. A construction company client recently

decided to sell and identified a standout employee as the right leader to carry the business forward. With consistent profits of \$2 million per year and a growth rate of 3% over the past five years, the company was in an enviable position. The sale was planned to be completed in five years.

In the meantime, the employee/future owner was offered an opportunity: Any growth beyond the established annual benchmarks of \$2 million in profits and 3% in growth would benefit the buyer and seller equally in a 50/50 split. That way, the buyer could use their excess earnings to commence the acquisition of the company stock. By the end of the five-year transition runway, the employee owned 17.5% of the company and was able to purchase the remaining 82.5% with financing and a seller note. Post-transaction, the bank, buyer and seller agreed that excess cash would be used to

pay down acquisition debt before the new owner could take profits.

Within another five years following the acquisition, the buyer had paid off their loans, owned 100% of the business, retained key employees and realized further growth objectives. Now, they are considering a similar transaction to transition ownership to another star employee and prospective owner.

Succession planning, like the case study example, enables business continuity, a fair-value exit for owners and the empowerment of new leadership. It is an essential consideration for any business that aims to carry its efforts into the future, and an important aspect of growth planning and value generation.

If you have questions about your succession or exit planning, speak to a qualified industry advisor today. ▲

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Managing Cash Flow During the Slow Season

Implement this advice from a fractional CFO to position your company for success



PAM WISMER is a fractional chief financial officer (CFO) with Ascent CFO Solutions, partnering with leadership teams to give them clear visibility into how to drive growth in their businesses. With more than 35 years of professional finance experience, including nearly 15 years in the construction industry, Wismer truly enjoys helping business leaders overcome financial challenges. Visit ascentcfo.com.

The very mention of fluctuating cash flow can cause anxiety for construction company owners. Without sufficient planning for a slow season, even seasoned businesses may find themselves in a cash crisis from time to time. While weather can be an obvious culprit for mid-sized general contractors — particularly those in nonresidential construction such as commercial, road and highway, or heavy construction — a slow season can also be related to factors such as project life cycles, regional labor shortages, or a poorly quoted or scoped job. In severe circumstances, a company must be strong enough to survive the cash drought without becoming insolvent and remain well-positioned for new projects as the market improves. Consider these tips to financially prepare for and navigate an unexpected slow season.

Even the Best Plans Require Review

A well-managed job-level forecasting model allows a company to anticipate future cash ebbs and flows. Jobs rarely go exactly as planned, often facing unexpected challenges. But there are many factors a company can control: job design, cost adjustment sales contract clauses, pay-when-paid subcontractor contract clauses, site management and supervision, business processes that provide current and accurate information, efficient billing practices, and invoice collection practices are just a few. Investing time and effort into a

well-thought-out forecasting model should be a priority even during the busy season. Waiting until business slows down is too late to implement cash strategies that can mitigate an impending cash crunch.

Consider This Cautionary Note

Without a forecasting model, a company may experience uncontrolled growth. During this phase, companies often envision endless opportunities and ramp up personnel and expenses in anticipation of the continued rise. However, uncontrolled growth can lead to operational inefficiencies and financial strain. The use of forecasting software (much like project management and accounting software) and incorporating input from project managers, the finance team and other key stakeholders can greatly enhance the accuracy and efficiency of forecasting. Creating scenarios — best, worst and most likely — will assist in strategic discussion and decisions. These scenarios provide insight for short, medium and long-term planning. During the chaotic busy season, it may seem unrealistic or counterintuitive to divert attention to processing fundamentals, but having efficiencies in place when the slow season arrives will prove to be time well spent.

Continued Focus & Reaction to Details

A forecasting model remains effective only when using the best available

information of the last updates. As with any forecasting, ongoing maintenance and consistent, accurate updates are necessary to achieve long-term visibility into potential cash flow issues. Even with operational excellence, unplanned changes (change orders, equipment and supply chain delays, subcontractor issues and inflation) need to be evaluated and updated as either critical or noncritical job updates. In addition, unavoidable or surprising delays in customer payments may cause a domino effect. Clear and transparent communication with both customers and vendors about realistic payment expectations is essential for effective planning.

While job costs and estimates are included in the forecasting model, other company costs such as overhead payroll, benefits, business insurance, rent, legal and tax payments need to be addressed as well. It costs money to run a company! While jobs are active, margins are built into contracts to support these additional costs. But what about when jobs are inactive? Preparations and plans need to be developed for gaps in project life cycles. Hoping to land the next big contract may not be enough to eliminate the slow season impact. Data visualization is a fantastic way to take the guesswork out of the massive data available to construction companies. Data visualization techniques are visual representations in the form of charts, graphs and diagrams — usually in an executive dashboard — that allow teams to quickly digest data, trends, key performance indicators (KPIs) and forecasted cash flows to make informed decisions.

Rainy Day Fund

There is little argument over the need for a cash reserve at all companies, in all industries. But how much? Wouldn't cash be better reinvested into the company, used for large asset purchases or placed in

outside investments?

This decision-making can feel like a tightrope, finding balance between investing in the future and saving for a rainy day. In cases where lenders are involved, debt covenants may dictate cash reserve. But for all others, a good rule of thumb is keeping a cash reserve between three and six months of expenses. This reserve may need to hold the company over during the slow season, so it is critical to understand the entire universe of cash inflows and outflows.

Armed with a current forecasting model and data visualization highlights, a company can see the expected excess and shortfall months. It can be tempting to pay cash for large asset or equipment purchases during cash excess months, but often the better choice is financing these purchases and funding the cash reserve. Transfers to the cash reserve account in the cash-excess months (while not jeopardizing the overall cash plan) is one strategy to build and maintain a cash reserve. Alternatively, a percentage of each invoice can be transferred to a cash reserve account, which spreads the transfers out and may feel less painful. The reserve account might be held in a money market or even staggered certificates of deposit (CDs). Consult with a banker or financial advisor for the most lucrative alternatives.

Correcting Course

Another valuable item in the business toolkit is the 13-week rolling cash-flow model. This is particularly useful for companies heading toward or currently experiencing a cash crunch. This very detailed view of cash inflows and outflows allows management to navigate on a daily and weekly basis and identify priorities (and where borrowing funds may



be needed) with ease. By utilizing the current accounts payable and accounts receivable aging, payroll requirements, any debt service payments and automatic bank pulls, a “sources/uses” forecast can be created down to the day. By relying on these three important tools — forecasting model, data visualization highlights and the detailed 13-week model — strategies to extend the cash runway can be implemented.

Operational efficiency is always a great place to start prioritizing improvements with an immediate impact. Possible areas for improvement include processing change orders quickly, negotiating accounts payable/rent/debt payment terms, considering borrowing options, invoice financing, limiting purchases of additional inventory and encouraging early payments with discounts. In addition, an evaluation of employee versus subcontractor status and the pros and cons of maintaining fixed overhead are worthwhile exercises.

Planning for the slow season in the construction industry is not only about survival, but also about positioning the company for long-term success. By implementing forecasting models, maintaining clear communication with stakeholders and building a financial cushion, companies can weather any storm. As challenges arise, the ability to adapt quickly, manage cash flow meticulously and make informed decisions will set the company apart. ▲

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Enhancing Business Performance Through Team Well-Being

Discover how supporting workforce wellness & engagement can improve business performance & growth

BY AMY BRESHEARS

The well-being of team members is not a luxury — it's a necessity. As someone who has spent years in leadership roles in human resources, I've come to understand that our people are our greatest asset. Their health, happiness and overall satisfaction directly impact our company's performance and longevity. It's a simple yet profound truth: When we prioritize the well-being of our team members, we set the stage for sustainable business success.

Why Wellness Initiatives Matter

A recent Gallup study, "State of the Global Workplace 2022 Report," confirms there is a strong link between team member engagement and critical business outcomes like profitability and revenue growth. Companies with high levels of engagement see fewer absentee days, higher productivity and, ultimately, better financial performance.

In the U.S., only 33% of employees report feeling engaged in the workplace, and this disengagement translates to lost productivity amounting to \$300 billion annually. This staggering figure underscores both the financial implications of personnel dissatisfaction and the significant potential savings that can be realized from investing in their well-being.

In fact, companies that prioritize a culture of well-being outperform their peers by a notable margin. More specifically, organizations with engaged workers have members who are up to 57%

more effective and 87% less likely to leave than organizations with low engagement, according to Deloitte.

When team members feel valued, supported and empowered, they're not just more likely to be engaged — they're more likely to go above and beyond in their roles. They contribute positively to company goals, bring innovative ideas to the table, and foster an environment of collaboration and mutual respect. In my experience, the ripple effect of this positive energy is immeasurable; it touches every aspect of the business, from customer satisfaction to operational efficiency. This should inspire us all to create and maintain such a positive work environment.

Putting Team Member Engagement to Work

Although my company, Gutterglove, may not have formal metrics or key performance indicators to track the impact of our well-being programs, we do monitor who uses particular benefits, and we regularly survey our team to see if their needs or wants have changed. This allows us to stay responsive to the evolving needs of our workforce.

One of the most tangible examples of how engagement directly contributes to business outcomes is our House of Innovation program. This initiative invites team members to submit ideas for improving processes, implementing cost savings, enhancing safety measures and even developing new products.

Over the past two years, we've received 139 ideas, of which 81 have been either executed or are in the process of being executed. Each submission is recognized, and the team member responsible receives further acknowledgment when a suggestion is implemented. This program has promoted a spirit of innovation and has led to evidenced improvements in our operations and bottom line.

Why Support Matters

Over the years, my company's approach to supporting team members has evolved markedly. As the workplace changes, so do the expectations of our team. To stay ahead, we've made it a point to consistently request input from our team members on what matters most to them. Their feedback has not only been invaluable in tailoring our team member programs to meet their needs, but it shows them that their voices are heard and respected. For example, we've learned that flexibility and opportunities for growth are key drivers of satisfaction in our company. As a result, we've incorporated flexible working hours and various professional development programs into our strategy.

The mantra we live by is simple: Happy team members are critical to our business strategy. Without them, we don't have a business. When we take care of our team, they take care of our customers. This focus on well-being is not just about creating a pleasant work

atmosphere; it's about building a resilient business that can thrive.

The Impact of Team Member Development Programs

Continuous learning and professional development are vital components of a thriving organization. Companies that invest in their team members' growth are investing in the future of the business. Tailored training programs, workshops and mentorship opportunities cater to the workforce's diverse needs, helping cultivate a culture of continuous improvement and leadership development.

A leadership development program can play a critical role in nurturing the next generation of leaders. These programs often include mentorships, seminars and real-world projects that provide valuable learning experiences. For instance, a technician participating in such a program might develop into a capable leader, ready to take on greater responsibilities and further contribute to the organization's success.

Investing in Health & Wellness

Investing in comprehensive health and wellness initiatives is another crucial aspect of supporting team members. A healthy workforce is productive, and companies that offer a range of programs to promote physical, mental and emotional well-being see the benefits in various ways.

Employee assistance programs are particularly impactful, offering resources beyond mental health support, including financial health tools, legal resources and more. Additionally, perks like discounted gym memberships encourage members to maintain an active lifestyle, contributing to overall well-being.

According to The American Institute of Stress, workplace stress significantly impacts U.S. companies, resulting in

a loss of revenue due to absenteeism, decreased productivity and accidents. The benefits of health and wellness initiatives are clear. A report from the American Psychological Association found that by providing resources that help team members manage stress and maintain their health, companies can reduce absenteeism, increase job satisfaction and improve retention.

Creating a Positive Work Environment

A positive work environment bolsters engagement and productivity among team members. Companies that create an inclusive and supportive workplace are better positioned to attract and retain top talent. Regular feedback through surveys can help organizations identify areas for improvement, ensuring that culture evolves in line with the workforce's needs.

Recognition programs effectively celebrate achievements, making workers feel valued. For example, programs that encourage innovation by inviting team members to submit ideas for improving processes, enhancing safety measures or generating cost savings can empower staff and drive continuous improvement within the company. Establishing a process that allows recognition to come from leadership and peers is also valuable.

Listening is crucial for maintaining a positive work environment. Changes to policies, such as transitioning from separate vacation and sick leave policies to a more flexible paid-time-off policy, can greatly affect satisfaction. This flexibility allows staff to best manage their time off to suit their own lifestyles, leading to higher morale and better work-life balance.

The Value of Community Involvement & Responsibility

Extending support beyond the

workplace through community involvement and social responsibility initiatives is another powerful way to enhance personnel satisfaction. Companies that encourage and facilitate participation in volunteer programs and charity events engender a sense of purpose among the team.

Community involvement not only strengthens relationships with local organizations but also boosts morale. Programs that allow team members to contribute to causes they care about, such as food insecurity, homelessness or children's health, instill pride and fulfillment. Research from the Satell Institute suggests that companies with strong corporate social responsibility programs can reduce turnover rates by 50%.

The correlation between supporting team members and achieving business success is clear and compelling. Companies that invest in development, health and wellness, positive work environments, and community involvement are more likely to see improved business performance and a more engaged, proactive workforce.

As we look to the future, organizations need to recognize and act on the link between team member support and business success. By prioritizing the well-being of team members, companies can build stronger, more resilient businesses that are well-positioned for sustained success. ▲

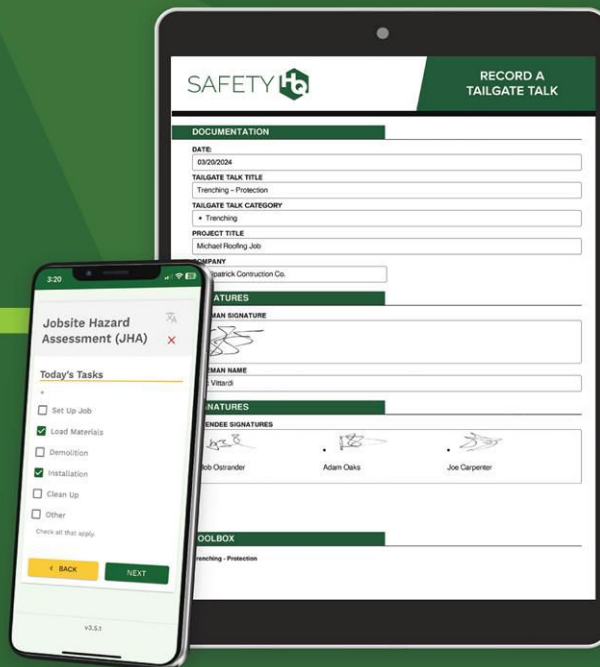
Amy Breshears, director of people operations at Gutterglove, drives company success by investing in team members' well-being. She promotes growth and values team members as the company's most important asset, ensuring that their development aligns with Gutterglove's innovation in home improvement products, programs and technology. Visit gutterglove.com.



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Tackling Construction's Biggest Challenges With Tech & Implementation Experts

How the right partnership can help leverage software to improve operations

BY JOEL HOFFMAN

The construction industry continues to rise to new heights, even in the face of shifting foundations.

The industry is transforming rapidly to support this momentum, driven by technological advancements and evolving market demands. However, this transformation brings unique challenges that construction firms must navigate to remain competitive and efficient. Among the most pressing issues are overcoming the limitations of outdated systems in managing diversifying project portfolios, the complexity of adhering to ever-changing regulatory requirements, and the challenge of attracting and retaining a new generation of tech-savvy talent.

Many construction firms are turning to modern business management solutions that offer enhanced capabilities to streamline operations and create a more attractive work environment for the emerging digital workforce. However, effectively implementing these solutions requires more than just the right technology — it requires the expertise of experienced implementation partners. Implementation partners are specialists who ensure that the chosen technology is effectively integrated and optimized for your business needs. These experts are pivotal in helping firms select the tools best suited to address challenges while adding tangible business value.

Manage Expanding Project Portfolios

As construction firms grow and take on more complex projects, the limitations of legacy project management systems become increasingly apparent. Outdated software can lead to inefficiencies such as fragmented data, communication breakdowns and delays in decision-making. These issues can result in costly overruns and missed deadlines, jeopardizing the success of large-scale projects that firms rely on to meet revenue goals.

Modern project management tools offer a solution by providing real-time collaboration, integrated data systems and advanced analytics that empower project managers to make informed decisions quickly. Features like centralized project tracking, automated workflows and mobile access allow teams to stay connected and responsive, even when working across multiple sites.

Selecting the right project management tool is crucial. An implementation partner can assess a firm's specific needs, recommend the most suitable software and ensure that it integrates seamlessly with existing systems. Doing so, they help construction firms maximize operational efficiency, reduce risks and maintain control over their growing project portfolios.

Investing in the right software can make all the difference in achieving growth and effectively meeting client expectations.

Navigate a Complex Regulatory Environment

Regulatory compliance is a significant challenge for today's construction firms, which must navigate a web of environmental standards, building codes, labor laws and safety regulations. Failure to comply can result in hefty fines, project delays and damage to a firm's reputation.

Modern software solutions are designed to simplify compliance by automating the tracking, documentation and reporting processes. These tools can monitor regulation changes, alert teams to compliance risks and generate the necessary reports to ensure projects adhere to all legal requirements.

Implementation partners are invaluable in this area, as they deeply understand the regulatory landscape. They can customize software solutions to meet specific compliance needs, ensuring construction firms comply with all legal obligations and optimize their operations to prevent costly errors or fines. By partnering with technology experts, firms can stay ahead of regulatory changes and focus on delivering high-quality projects without the burden of compliance.

Attract & Retain Tech-Savvy Talent

McKinsey & Company claims the construction industry faces a talent shortage, particularly among younger workers who prefer a modern, tech-enabled work environment. Productivity issues compound the challenge, threatening a shortfall in construction output of up to \$40 trillion, according to McKinsey. Outdated systems make day-to-day tasks more cumbersome, deterring potential new hires and increasing turnover rates among existing staff.

To attract and retain the next generation of workers and boost productivity, construction firms must embrace modern technology that streamlines operations and enhances collaboration. Cloud-based and artificial intelligence (AI)-enabled solutions, for example, appeal to young talent and automate time-consuming processes. These solutions empower team members to develop new, high-value skills and mitigate the impact of labor shortages.

Implementation partners are vital in ensuring construction firms effectively integrate these tools into workflows and adequately train and prepare their employees to use them. Through comprehensive change management programs, these partners help establish a culture of innovation that appeals to tech-savvy talent, making the firm a more attractive workplace and better equipped to address the industry's productivity challenges.

Ensure Long-Term Success Through Strategic Technology Integration

Given the demands and shifting challenges and obligations facing construction firms today, implementing modern technology is a critical step toward enhancing efficiency and staying

competitive. However, the actual value of these technologies lies in their ability to evolve with the business and continue delivering results as challenges and market demands change.

The ability to adapt and maintain effectiveness over time is where implementation partners become essential — not just as facilitators of initial setup but as long-term collaborators in a firm's success. These partners work alongside construction teams to assess and adapt the technology to help future-proof operations by ensuring that the chosen solutions can scale with the business. Whether integrating new features or expanding to additional project sites, these partners provide ongoing support to ensure that the technology continues to add value over time.

In an industry where the stakes are high and the margin for error is slim, having a trusted partner who can guide your firm through the complexities of technology adoption and help sustain tech benefits is invaluable. When choosing an implementation partner, construction firms should consider the following qualities:

- **Technical expertise** — Your partner should demonstrate the ability to implement and manage technology solutions. This skill set includes not just the installation, but also the partner optimizing technology to meet your business's unique needs. Researching reports from analyst firms can help determine a partner's level of proficiency.
- **Construction industry experience** — Opt for partners who have extensive experience within the construction industry. Their knowledge of specific challenges and regulations can provide targeted and practical solutions. Additionally, ask which verticals, such as commercial, residential or infrastructural

construction, the partner specializes in to ensure their background aligns with that of the firm's.

- **Reputation for customer satisfaction** — Consider the partner's track record for delivering strong customer service and maintaining high satisfaction levels among their clients. Reviewing customer reviews and success stories can help to understand the partner's reputation and credibility.
- **Ongoing support and training** — Successful implementation doesn't stop at deployment. Ensure that the partner offers continuous support and comprehensive training to help your team fully utilize the new systems.
- **Cultural compatibility** — The partner's culture must align well with your company's values and operational style to foster a smooth and productive working relationship.

The construction industry is at an inflection point, facing significant challenges that require innovative solutions. Managing large project portfolios, navigating regulatory complexities and attracting a new generation of workers are all crucial to a firm's success. Modern technology offers powerful tools to address these issues, but effectively leveraging these tools demands the expertise of experienced implementation partners. ▲

Joel Hoffman is the director of product management, construction, field service and property management at Acumatica. He is responsible for product planning, market analysis and launch readiness of Acumatica's construction, field service and property management solutions, particularly the Acumatica Construction Edition. Visit acumatica.com.





RECOGNIZING TODAY'S LEADING CONSTRUCTION PROFESSIONALS

This industry is full of fantastic women leading the way to progress. You may have already met some and not had the opportunity to meet others — but it's important to know about them.

Back for its sixth year, Construction Business Owner's Outstanding Women in Construction celebrates industry-leading women and their skills, achievements and contributions to the construction industry.

This year's contest drew nearly 100 nominations from across the U.S. and many

sectors of construction, including representatives of leading associations and organizations.

In the following pages, you will meet 10 women who are helping to build the industry today and shape the next generation of construction professionals.

These finalists were selected for their everyday dedication to excellence, growth and leadership, as well as their involvement in the industry and their respective companies and communities.

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Amber Page was raised by a carpenter, but she didn't initially enter the construction field.

"I worked in aviation for a number of years and got really burnt out," she said. "I didn't really know what I wanted to do. I started working for Skanska, a construction company. I knew about them because they were building all the airports I was working in."

Page started as the receptionist at Skanska, but she worked and earned her way into the small business outreach coordinator role, which included elements of diversity, equity and inclusion (DEI). Her boss for that position mentored her and encouraged her to run with her ideas for reaching the community and small, minority-owned businesses. That led to a position in DEI compliance for the Portland Port Authority then to her current position as DEI specialist for Fortis Construction.

"I oversee the implementation of

small business development programs that give small businesses tools and educational opportunities to help them succeed on construction contracts," she said. "I also work as the liaison internally to help connect the small businesses to our decision-makers in-house to help them be issued those contracts."

When it comes to DEI efforts at Fortis, and construction more generally, Page views the efforts as making sure there is space for everybody at the table.

"How do we move the pieces to create a better world and take the action one step further than awareness?"

"[The Oregon Association of Minority Entrepreneurs] has a slogan that many of us have adopted, which is 'everybody's in, nobody's out,'" she said. "There is space at the table for everybody, and it doesn't mean that we're taking any plates away. We're just adding chairs to the team."

Fortis is above industry standards with the number of women the company employs, and Page said the company is "working very diligently to create an environment that is conducive to making everybody welcome and comfortable and safe within the construction industry, from

the field to the office."

Page said Fortis is working with other organizations on awareness, education and policy implementation, including Rise Up, which works to advance gender equity and justice, and the Safe From Hate Alliance, which is comprised of people at all levels of the trades who are committed to addressing harmful construction jobsite culture that contributes to the attrition of skilled craft workers from the industry, particularly women and people of color.

"Awareness without action is bullshit," Page said. "I feel like there's a lot of awareness around these systemic issues, but there's not a lot of action. When I look at issues and things that can be corrected or improved, I see things as a puzzle. How do we move the pieces to create a better world and take the action one step further than awareness?"

Page works with local high schools to showcase the construction industry to young people. Several years ago, she hosted a job walk with a school with many students in poverty and a second with Girls Inc., a national leadership program for girls ages six to 18. The job walks enable students to see the full range of job available in construction, from craft workers to project managers to architect to superintendents.

Outside of work, Page said she is "the busiest person I've ever met." She is president of a Vespa club; she found a scooter in a dumpster and fully restored it to be street legal. She loves archaeology and anthropology, which plays into her love of community development. She is also working to complete her bachelor's degree in urban and public affairs.

A portrait of Amber Page, a woman with blonde hair and bangs, wearing glasses and a leopard print top. She has a tattoo on her left arm. The background is a soft-focus indoor setting.

AMBER PAGE

DEI SPECIALIST AT FORTIS CONSTRUCTION

Amy Northcutt, director of education and outreach at Trimble, believes in the adage, "representation matters." As a queer woman in construction, she said she never saw someone like herself in leadership roles at construction firms. She has worked both within and outside of Trimble to increase that representation.

"I think we can do a lot to encourage future generations by continuing to participate and make progress in this space," Northcutt said. "We can show future generations that this is a space for them."

Northcutt has a background as a structural engineer. She was drawn to construction because she loves seeing the creation of new structures and infrastructure. "I find it endlessly fascinating how humans go from a parking lot or an empty field, and the creativity and ingenuity to create these massive, impressive structures," she said. "I've always been excited by the ideas of creating something that enhances and improves people's lives."

She is the cofounder of the Trimble LGBTQ+ Employee Resource Network. During the last four years, she and others in the LGBTQ+ network have worked to develop more inclusive health care benefits (including fertility coverage), created guidance for how employees and managers should navigate coming out as transgender at work and worked to establish gender-neutral bathrooms in all Trimble buildings, Northcutt's nominator said. Nine additional employee resource networks have grown at Trimble since Northcutt established the LGBTQ+ network, each using the framework she and her partners created.

While Northcutt sees continuing cultural and structural barriers to women and other minorities entering the construction industry,

she is hopeful that as more join, the culture will continue to shift.

"As more women join the industry and rise up within the ranks of these companies, I think that we will see a different culture within the overall industry," she said.

Northcutt joined Trimble in 2015 as a technology consultant for the company's construction division, Trimble Structures. She helped customers get the most value from Tekla Structures, the software application she had previously used as a structural engineer. Her early experiences gave her a firsthand understanding of how transformative technology could be for the construction industry, and she became dedicated to expanding access to these tools across the sector.

In 2020, she transitioned to Trimble's education and outreach department, where she took on leadership of the Trimble Technology Lab (TTL) program. TTL gives higher-education teachers and students access to the latest construction hardware and software tools, promoting tech-driven careers and helping make students immediately employable upon graduation. Her leadership saw the program grow from nine to 17 schools within the first 12 months, even during the early days of the pandemic. In just two years, that number grew to 26 schools. Northcutt also spearheaded a grant program designed to support historically Black colleges and universities and minority serving institutions, helping these schools establish tech labs despite resource limitations.

Northcutt's focus on expanding access to technology aligns with her

broader passion for equity. In her current role, she oversees a team of nine professionals. Together, they coordinate several educational initiatives that aim to provide students from K-12 through higher education with access to industry-leading technology solutions. Under her leadership, programs like SketchUp for Schools, which has reached millions of K-12 students worldwide, and Project Spectrum, a 3D-design-training program for students on the autism spectrum, have grown significantly. These efforts are part of a broader goal to give students the technical foundation they need to succeed in their careers.

Her efforts to make the construction industry more inclusive and technologically advanced reflect her personal commitment to both representation and innovation. Whether through leading educational programs that help students develop the skills they need for success or advocating for underrepresented communities within the industry, Northcutt's impact is shaping the future of construction. Today, she continues to drive the industry toward a more inclusive, equitable and technology-forward future for all.

AMY NORTH CUTT

DIRECTOR OF EDUCATION & OUTREACH AT TRIMBLE



Marissa Grimes, commercial construction assistant project manager at Beal Derkenne Construction, took an unconventional path into the industry. Her journey began in personal training on a military base, and she transitioned into construction management through a mix of family responsibilities and sheer determination to get back into the workforce. Grimes helped her sister run their father's concrete business when he fell ill. This experience gave her exposure to construction, though primarily from the office side, and laid the foundation for her eventual career in the field.

In 2016, Grimes joined Beal Derkenne Construction, initially expecting to work as a receptionist. However, her role quickly evolved as she took on more responsibilities, moving from project coordination to field engineering and eventually into project management. Grimes credits her passion for the work to the diverse experiences and challenges she encountered along the way, which fueled her desire to learn as much as possible.

"I just wanted to acquire as much knowledge as I possibly could in all aspects of project management,"

Grimes explained. Her career has been defined by this drive, especially in a field where she started with no formal education in construction. In just eight years, she's progressed through various

roles at Beal Derkenne, solidifying her place as a key member of the team.

One of Grimes' most significant projects was her first major assignment, a \$75 million high-rise project that spanned two buildings. As a project coordinator, she was thrown into a world where she didn't yet know how to navigate the technical aspects of construction, but she quickly adapted by immersing herself in the process. "I didn't know what an RFI was. I didn't know what a submittal was. I had never read any kind of drawing," she admitted. But it was through this trial-by-fire experience that Grimes developed a deep understanding of project management.

"Going through the entire process from start to finish and seeing the project evolve from conception to completion — that's where I learned the most," she reflected. The experience not only helped her hone her organizational skills but also gave her a sense of fulfillment from seeing the physical realization of a project she helped manage. "A lot of people don't stick with it long enough to see the project through to completion, but that's where you learn the most. The mistakes you made you get the chance to correct them on the next project."

Grimes acknowledges that confidence can be a significant barrier for women on the jobsite. She believes many women hesitate to speak up, whether it's to point out a safety issue or question design plans, because they feel they lack the authority to do so. "I felt that way early on. I didn't feel like I could question anyone because you have these really smart engineers and creative architects, and then you've got ownership that wants things done a certain way," Grimes said. Over time, however, she's come to see the value of asking questions and recognizing that attention to detail —

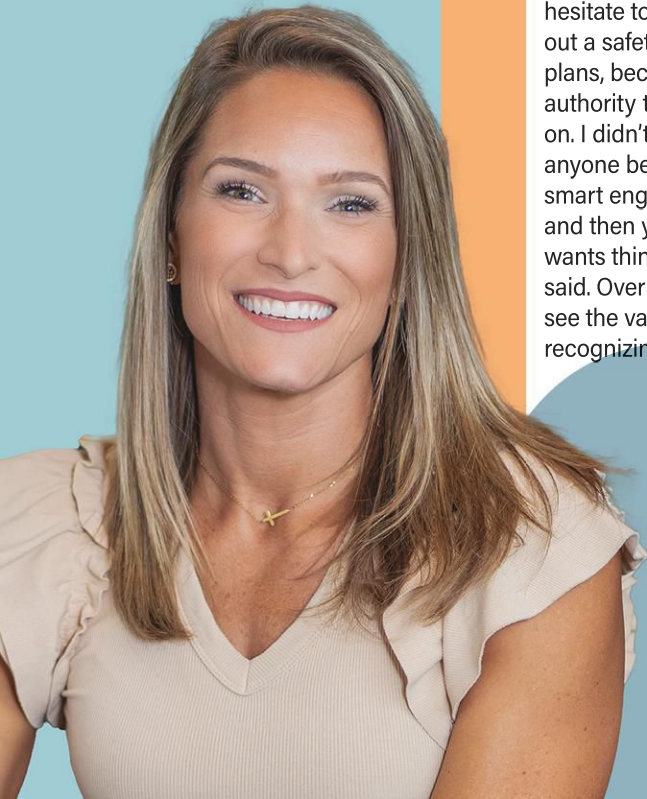
something she believes women excel at — can be a critical asset on the jobsite.

Grimes is passionate about fostering the next generation of women in construction. Over the years, she's had the opportunity to onboard and train several women at Beal Derkenne, taking pride in showing them that they can be just as knowledgeable and capable as any man on the team. "It just takes time and patience," she said, emphasizing the importance of teaching basic organizational skills and technical knowledge to newcomers. She's also keen to get more involved with local high schools to introduce young women to careers in construction, particularly as interest in trade programs grows.

"The more you can involve women, the more power they're going to have, the more information they're going to have," Grimes said. She pointed out that sometimes men in the industry can work in siloes, but women excel at communication and ensuring everyone is on the same page — a vital skill for any successful project.

Outside of work, Grimes is a mother of three and a fitness enthusiast. Working out is her way of maintaining confidence and a mental release from the stresses of work. "It's how I represent myself, whether I'm on a jobsite or at a baseball game with my kids," she said. For Grimes, confidence is key to pushing boundaries and continuing to grow, professionally and personally.

Her advice to her younger self, and to any woman entering the construction field, is simple: "Failing is really the only way you learn." Grimes believes that the ability to learn from mistakes, ask questions and rely on a supportive team is what has allowed her to thrive in a challenging industry. "You're going to fail, but as long as you have the trust of your team, women can do anything."



MARISSA GRIMES

COMMERCIAL CONSTRUCTION ASSISTANT PROJECT
MANAGER AT BEAL DERKENNE CONSTRUCTION

Anna Martin needed a fresh start, one she felt she couldn't get in her role in customer service. She took a pre-apprenticeship class and fell in love with ironworking. When she took her journeyman's exam, she had the highest score of 27 people — and she was the only woman. Her fresh start in construction has led to fresh starts for dozens of other women. Martin is now a pre-apprenticeship program instructor for Oregon's Union Pre-Apprenticeship Construction Training program (U-PACT).

U-PACT offers a 12-week training course to women in custody at the Coffee Creek Correctional Facility. Participants earn their OSHA 10 card and receive training in three trades: ironworking, bricklaying and cement masonry. They also receive life-skills training to prepare them for a future outside of prison. Graduates receive preferred entry into their chosen apprenticeship program and receive tools, tool belts and helmets at no cost, as well as a boot allowance.

"It's amazing," Martin said. "When we do initial interviews, you can tell they're defeated. Then you spend 12 weeks with them, teaching them skills and boosting their self-confidence. We treat them like they are human beings. ... I tell the girls on their first day in class with me that we all have a past. We all have a history. Whatever their past is, it has no impact on their present and their future. ... I've got women that have graduated the program who are out in the field. They're buying their first car ever; they have a two-bedroom apartment. These are things they've never had before."

Martin studied journalism, which has enabled her to craft grant proposals for U-PACT totaling \$875,000 in awards for the program.

"I always wanted to write the great American novel, but that's clearly not my path," she said. "But I'll be damned if I didn't write a few grant proposals. Apparently, mixing up the alphabet a few times got us some money."

Martin is also a Certified Welding Inspector (CWI), one of four in her union and the only woman in the role. Taking the course to become a CWI was like "learning a completely new language," she said.

She credits the relationships she has built within her union, Ironworkers Local 29, to advancing her career. Two mentors, Vicki O'Leary and Lachelle Pierce, have helped Martin through tough days. Pierce encouraged Martin through her apprenticeship when Martin felt like giving up.

"I would call her crying, saying, 'I can't do this! It's so brutal!' She'd remind me that I was a tough woman, and I was an ironworker," Martin said.

Martin said there's a great deal of underestimation of women in construction, halting some women from joining the profession — but she sees the atmosphere improving.

"It's 1,000 times better than it was, and it's happening a lot quicker than I thought it would. It's quite a bit more accepting," she said. "It's still rough; there's still that passive-aggressive sexual harassment, but there are more good company owners, superintendents and [union leadership] that address it."

For companies wanting to hire and retain women in the construction space, Martin advises them to look to programs such as U-PACT for new apprentices. The other big piece is to

provide solid mentorship connections, whether within the company or helping find that connection within the wider community.

"You need to have good, solid mentorship, someone you can call and rage-vent to, who will just listen, someone who will help you problem-solve and help guide you," she said.

Martin shares her contact information with any new apprentices, regardless of gender, when she meets them, offering herself as a mentor. For the graduates of U-PACT, she makes sure they know they can call her when they are released, and she keeps her ear to the ground for good opportunities.

"If I see opportunities, I'll pass them along to people I think would benefit from them," she said. Most recently, this meant alerting a new journeyman that an instructor position was opening in U-PACT for a men's prison. He made the switch and will begin leading pre-apprenticeship classes when the course opens.

ANNA MARTIN

U-PACT OREGON LEAD INSTRUCTOR AT IRONWORKERS
LOCAL 29 APPRENTICESHIP



Brit Fuller, chief operating officer at Nashville, Tennessee-based Building Company Number 7 (Build Co. 7), said she fell into construction by accident. Working for a company that outsourced administrative and marketing tasks for businesses, she landed a construction client, which led to the creation of a new arm of that company.

Build Co. 7 specializes in historic renovations in the East Nashville area, which is what drew Fuller to the company.

"I love the idea of preserving historic value in residences and buildings, especially at a time when it's common to have the double lot, tall and skinny thing. It's nice to be a part of preserving some of that culture and the look in the city," she said.

When Fuller landed at Build Co. 7, she was inspired by the people on the team, setting out to create an employee-centric workplace.

"As much as possible, I like my team to make decisions together," she said.

"Everyone within the company has their own expertise, and sometimes it needs to come down to that person's expertise, and occasionally it needs to come down to some hierarchy of decision-making. But as much as possible, we as a team make decisions together."

Build Co. 7 Owner Matt Millsap has played a pivotal role in advancing Fuller's career. She said he is a great partner, ally and friend.

"He has given me a lot of free rein and trust to do what I do, and to be able to manage my own schedule, workflow and work-life balance," she said. "He has given me a lot of freedom to create and innovate and operate in the ways that work best for me and the team at large."

As a member of the C-suite at Build Co. 7, Fuller has a direct line to helping more women enter the construction industry. Her advice to other leaders and business owners is to talk to women and see what they need.

"Construction can be tough, especially if you're out in the field, if you're a trade worker," she said. "Historically, women have not been treated well. We have been encouraged to take it on the chin. That was a sign of a good woman construction worker, if you could hang with the guys. We're not quite close to being through that. [Leaders should] talk to the women in their lives, talk to the women in the field and see what is working and what is not, and listen to women who take the lead on what needs to change in the industry for women to not only be tolerated and accepted, but valued for the work and insights that we bring to the table."

Fuller works hard to ensure anyone joining the Build Co. 7 team

"Listen to women who take the lead on what needs to change in the industry."

will model respect for everyone, but especially women.

"Whenever I am recruiting talent, I am looking for how I'm being interacted with and spoken to by men," she said. "How is that going to affect the overall team? It's not just about me. I have other women on the team, and there are some people who very obviously do not want to take direction from a woman; that's not going to work out. It's been interesting figuring out creative ways to suss out if someone isn't going to be harmonious with the team."

There are currently five women, including Fuller, on the Build Co. 7 team in a variety of positions, including selections coordinator, project management, house crew worker and executive assistant.

Outside of work, Fuller enjoys hiking and any activity on the water in the Pacific Northwest. But even in her free time, Fuller likes to focus on people and their relationships at work and in their personal lives.

"I like to know what makes people tick, how we operate, why we do the things we do," she said. "I like to know about sociological, anthropological, psychological phenomena in people. As a person with ADHD and who is autistic as well, having learned that about myself later in life, learning how I best operate and what I need, and how other people work, and how we create symbiotic relationships out of that is very, very important and meaningful and interesting."



**BRIT
FULLER**

CHIEF OPERATING OFFICER AT BUILDING COMPANY NUMBER 7

A lot of construction companies start with a dream, but there aren't many that start because of a late-night visit from a deceased relative and a "literal" passing of the torch.

Ebony Jennings owns Wisconsin-based Jennings Asphalt, which was founded by her grandfather in 1984. When her grandfather passed away in 1996, no one in the family stepped up. In 2011, Jennings told family members that she wanted to restart the business.

"I didn't know much, but I just had this feeling that I wanted to get into the road construction business," she said. "My uncle — I'm pretty sure he wasn't trying to — but he planted a negative seed. 'Asphalt is too hard. It's not for women,' he said."

Jennings set aside the plan and wrapped up her college education, going into finance with Northwestern Mutual. But the work was unfulfilling, and when the pandemic sent workers home, her discontent only grew.

And then she had the dream that would change her life.

"I have not seen my grandfather since I was a little girl," she said. "But it was my grandfather walking through a tunnel, and he had this torch in his hand. I was walking behind him, and he passed the torch to me. Jennings Asphalt started two months after that."

Jennings' love for her grandfather jump-started her career in construction, but she stays in the industry because the work challenged her.

"No other job I've had really challenged me and allowed me to grow and to double down on myself," she said. "I risked everything on me. I bet it on myself. And this allowed me to learn different roles and take on different roles within this company."

As the owner/operator of the business, Jennings wears

multiple hats, from estimator to payroll to working the machines in the field. She would love to see more women enter construction and take on similar roles. She rebranded the company from what it had been under her grandfather. Launching on social media has enabled her to connect with more women.

"It really inspired them to either go into this field or double down on themselves and add a new component to their business," she said. "They start their own business. They've been a paver/operator for many years, and they know the ins and outs. That really inspires me, that I can inspire someone else, not just to get to my level, but to go beyond it."

Starting an asphalt business isn't easy, and in 2022, Jennings feared she would lose everything when paving jobs slumped.

"I was losing money, it was going down the drain," she said. "Clients, laborers, some of everything was slipping away. I had to rebuild brick by brick. It took a lot out of me, and I had to put my emotions in the back of my mind. It allowed me to become a better business owner, a better leader and to be more innovative and try out new things and actually listen to my crew about the best way to do things."

While Jennings connects with other women through social media and networking events, she attributes much of her success to Karen Eaton, owner of Eaton's Asphalt Service. According to Jennings, she and Eaton are the only two Black women who own and operate asphalt companies in the state of Wisconsin.

"Her father and my

grandfather worked hand-in-hand together," she said. "[When I started this] my father told me, 'If you're serious about this, go find Karen. I'm not going to help you find Karen. And then you get under her and learn from her.' And that's exactly what I did. She has cultivated me into not only the woman I am today, but the businesswoman I am today. She's helped me grow so much in this industry. She took a chance on me."

Jennings wants to see respect for women in construction grow, with more women being welcomed into field-based roles.

"Women in construction are not just limited to being a project manager or an estimator or accounts receivable," she said. "There are women out here who are better truck drivers than men, better paver and roller operators. I want to see more respect overall and to actually show that respect."

Outside of work, Jennings loves to travel and tackle DIY home projects, such as building a dresser for her daughter. When paving season ends in Wisconsin, she spends her time learning new hobbies that allow her to work with her hands, like gardening, room painting and laying flooring.

EBONY JENNINGS

OWNER/OPERATOR AT JENNINGS ASPHALT



"What inspired me was that construction is ever-evolving and changing. It's something you can have a tangible grasp on, whether it be an in-office position or in the field," said Jessica Ramirez, project administration manager at Roers Companies.

Ramirez works with multifamily residential homes. To her, no matter what type of construction it may be, whether it's laying grass or putting in piping, she appreciates seeing an apartment complex start from a concept to a finished product with residents moving into it.

"I think it's pretty great; every day is different. What inspires me is I can actually look back on past experiences and say, 'I was a part of that.'"

Ramirez has been in the construction industry for 10 years. "When I entered construction, I worked for a very prominent single-family homebuilder, D.R. Horton. I entered that sector of construction as compliance, and I was the receptionist as well," Ramirez explained. She noted that having a good mentor in that position, as well as a great division president, was key. "I didn't feel like a number at the time, and having great leadership was essential because that was my gateway into construction, compliance and then the front part of their division office."

Her current role at Roers Companies is important to her: "I'm a project administration manager for all our regions — Tampa, Texas, Minnesota. Having the ability to guide my team really inspires me. They come to me for questions, and if I don't have the answer, [the team] knows I'll eventually get it for us. Having that trust in my peers and my direct reports inspires me daily."

Ramirez observed that women are still the minority in the world of construction: "Men are predominantly looked upon as the people who fit the roles, if we're going to go gender specific. But as far as barriers, I would say since I have been in construction, it has evolved. It has changed."

Open conversations of how women can "get there" are being brought up, and people — including men — aren't afraid to approach one of their peers and ask how they can help, Ramirez noted.

Recently, her company gave out internal awards for specific recognition, called RoCo awards. "I was actually awarded the Above & Beyond, and I was fairly new." It was peer-based voting, and her company, peers and boss recognized her hard work and dedication to her roles. "It was pretty inspiring. Again, I wasn't just a number, and I felt really good. I felt like my work was validated."

For younger women in construction, Ramirez said, "Do it for yourself. Stick to your gut, stick to your morals. Also be mindful of your peers, what the industry needs, and [do] not be afraid to speak up in a room full of men."

In addition to her role at Roers Companies, Ramirez is also a director on the board for National Association of Women in Construction (NAWIC) for the Austin, Texas, chapter. "This is my second

year being a director on the board. That group of women have been instrumental leaders, friends and colleagues, and have been a tremendous asset and organization to be a part of."

If Ramirez had any advice for industry leaders to better support and retain women in the industry, she said to "hear them out, listen to them and not just pacify requests."

Ramirez also helps with community outreach programs: "We have speakers come to schools, and it's not just construction based. We have women as part of our organization who'll help facilitate scholarships for trade specific [functions]. We work with the University of Texas at Austin, and we have a UT Girl Day. We do hands-on workshops, teaching young girls how to work with tools, with their hands. We do a lot of STEM-based projects as well, opening up that avenue."

For Ramirez, you don't have to go down stereotypical avenues when going to school. "There's avenues to be in the construction industry because there's so many different positions and roles, I don't think women and young girls know about once they're in the high-school-ending phase of their life."

Having a good leader recognize you for being a good employee and a team member goes a long way. "I show up to work knowing someone has my back and I know trust is built, and trust is given as well. That sets the foundation and our company's core values. I've been at places it hasn't happened, where they preach about having good leadership, but then obviously the proof isn't in the pudding."

But for Ramirez and Roers Companies that proof is definitely there, and for her, it's a breath of fresh air.



JESSICA RAMIREZ

PROJECT ADMINISTRATION MANAGER AT ROERS COMPANIES

Gail Morelle, vice president at Christa Construction, was inspired by her father's career in the HVAC trade to pursue a path in construction. **"I started my journey working with an electrical contractor and have been in the construction industry ever since,"** she explained. After gaining experience with other contractors, Morelle joined Christa Construction, where she worked directly with the former owner, Dave Christa, and eventually became a partner.

With over 30 years of experience in the industry, Morelle has spent 15 of those years at Christa. In 2020, she and her partners took ownership of the business. Reflecting on the construction field, she remarked, "It's always been predominantly men. I don't think many women consider construction as a career. However, the industry offers many different avenues, whether it's fieldwork, office roles like estimating, compliance management or business development."

Morelle has noticed that women in construction often need to work twice as hard to be recognized. She also believes there is a misconception that construction work is solely about being out in the field. "While we do have female project managers at our sites, there are numerous roles within the industry that don't require fieldwork," she said.

Becoming a partner and vice president at Christa Construction stands out as the most meaningful milestone in Morelle's career. Another significant achievement was her involvement in getting a nonunion apprenticeship program approved by the New York State Department of Labor. This program offers individuals in New York the opportunity to work in the field, alongside additional classroom training, to become construction managers. Graduates receive a

certificate from New York state. So far, two Christa apprentices have completed the program, with two more currently enrolled.

"Visiting jobsites and witnessing the progress of construction projects is what drew me to stay in the field," Morelle reflected. She finds immense satisfaction in transforming vacant land and repurposing buildings for adaptive reuse. Multifamily affordable housing projects are an important sector of business for Christa Construction across New York state. For Morelle, seeing clients finally secure a safe, affordable home is deeply rewarding. "That's probably the most fulfilling part of my work — partnering with developers who focus on affordable housing."

"That's probably the most fulfilling part of my work — partnering with developers who focus on affordable housing."

She recalled a powerful moment when her brother spoke at a ribbon-cutting ceremony, emphasizing the security of having a warm, safe home during their childhood. "I never thought about it that way, but he was

absolutely right," Morelle said. She firmly believes that having a place to call home and knowing there are people who care can change lives. Safe, affordable housing, in her view, can alter the course of a person's future.

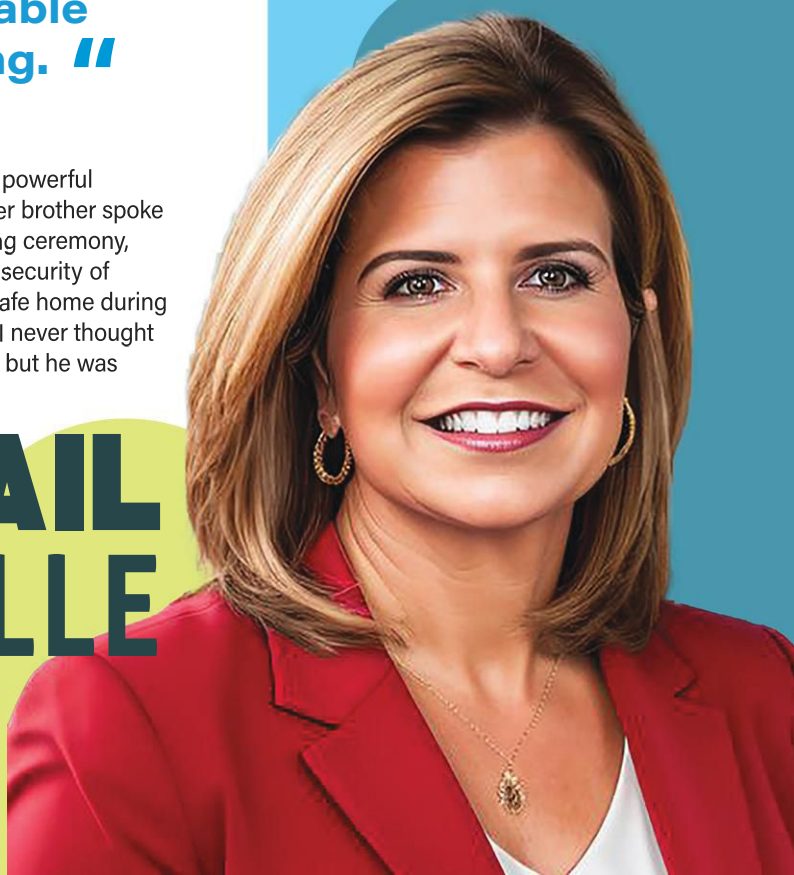
Growing up with four brothers, Morelle was often seen as tough. "We often say, 'No crying in construction.' But I believe you can be a woman in this industry and still succeed," she remarked. Despite spending most of her time working with men, she has found her place and strives to be recognized in an industry that hasn't always been supportive of women.

Active in nonprofit organizations, committees, and various industry groups, Morelle hopes the industry will become more welcoming to women. She also advocates for more women-specific training programs.

Within Christa Construction, Morelle is committed to creating a supportive environment for female staff. "I want them to feel heard and included. We often organize ladies' nights, and we recently participated in a Habitat Women's Build," she shared. "I believe that fostering empowerment among the women at our office is one of the meaningful contributions I've made."

GAIL MORELLE

VICE PRESIDENT AT CHRISTA CONSTRUCTION



"I really got into [construction] because I received the opportunity through a part-time job in the summer [of 2001]," said Tori Terrell, vice president of finance and treasurer at Design Electric Inc. "It was through that summer help and establishing relationships in the office that drew me to want to stay and work through my high school year, and then come back when there was an opening for a full-time position."

Terrell started as "just a summer helper floating around." Then she came back as a full-time receptionist, transitioned to the payables department, and then to the accounting manager role with accounts payable and receivable. From there she grew into the controller, financial controller and then eventually the vice president of finance. She passed her Certified Construction Industry Financial Professional (CCIFP) exam in 2023.

In 2021, she was asked to join the board of directors at Design Electric and was the first woman to do so. For her, that was very exciting.

One of the biggest projects Terrell was involved with was helping her company's leadership team see a need for succession planning. She then brought key

players to the table to assist them internally with that succession plan in terms of the company.

Terrell has assisted Design Electric, a company with around 140 employees, in many ways, including completing their organizational parts and identifying new roles. In addition, she helped with planning how a person could go through various paths in their careers, identifying who may be flight risks or retiring soon, and prioritizing which roles needed to be focused on in succession by the immediate need.

What motivates Terrell is her Charlottesville, Virginia-based company's workforce, with several employees boasting 10-plus years at the company. She added that Design Electric directly impacts many local families. "Our employees help to build and maintain a lot of very important buildings and facilities in our community. This includes the No. 1 trauma hospital in the area at UVA Hospital, as well as all the educational schools on the grounds of the University of Virginia and at James Madison University. We [also] helped with the Martha Jefferson Hospital from 2000 to 2014 — it was one I really enjoyed being a part of from start to finish."

Terrell believes there's still some reluctance of hiring women due to the nature of construction and what it entails. "Sometimes there's a fear of training someone in a position, and then they may leave because they might choose to [start a family]," Terrell said. There may be misunderstandings of what women could be capable of as far as their capacity, like lifting heavy equipment, or being able to easily work on a job. She added that some think women only operate on emotion, which is a big myth.

"When you have a team working to come to a consensus," Terrell stated, "having variety of thoughts, a variety of backgrounds and a variety of experiences is going to only bring wisdom to the table and help the decision be much wiser in nature."

"Anytime you're gathered around the table that make a decision, I'd strongly encourage that you make sure to keep that opportunity open to diverse backgrounds and women, when possible," Terrell said. "When you have someone in a leadership position, don't ever underestimate their ability to pick up on things due to instinct or just scientific differences that can really complement any decision or idea that's being discussed."

Terrell was a was a founding member of the board that created the Blue Ridge Chapter of CFMA and is currently serving as president. "Through my local chapter, we are trying to help give education and networking ability to others."

At her job, Terrell looks for opportunities to help mentor other women in the office. "When I see different programs geared toward women, especially women in leadership or professional empowerment, I reach out, making sure they're aware of it, offering to register [them] so we can attend together. It's really important you make it obvious to your coworkers that you're there to help lift them up and lead them and make sure they have these opportunities."

Terrell imparted a few words of advice: "Don't ever feel you don't deserve a seat at the table or that you don't deserve an opportunity that's given to you. Just take that opportunity, because you never know what it's going to lead to."



TORI TERRELL

VICE PRESIDENT OF FINANCE & TREASURER AT DESIGN ELECTRIC INC.

"For me, construction was kind of an accident," said Kerri Riggio, superintendent at Suffolk Construction. "I came home from college, and a family friend offered me a job for procurement at an infrastructure company. It was a full-time job, and I was the assistant warehouse manager. I helped with purchasing materials we needed for jobs, making sure our warehouse was stocked with general items we needed."

Riggio's introduction to the construction world may have been unplanned, but her passion for the industry was undeniable from the start. Growing up with a father who was a residential contractor, she was familiar with construction in a limited capacity. However, infrastructure—the building blocks of cities—was new to her. "I was very intrigued," she recalled. "We were creating and building structures, changing the landscape of a city or a town. I had to dive more into what we were doing, all the different project details, asking lots of questions, and then eventually I moved into the field just so I could learn more hands-on."

Though Riggio initially went to college to study elementary education, her curiosity and drive pulled her into a career that has spanned over 20 years in construction. In her last three years at Suffolk Construction, Kerri has been instrumental in overseeing major projects, bringing her commitment to building stronger communities to life. Reflecting on the changes she's seen in the industry, she noted, "I think it's changed a lot, especially when it comes to women and diversity in general. It's definitely a welcoming change."

Despite the progress, Riggio acknowledges that challenges remain, especially when it comes to respect. In an industry that has traditionally been male-dominated, earning the

respect of peers can require women to put in extra effort. For Riggio, this is a reality not unique to construction but one shared across many industries.

She explains that for her, building

"I was very intrigued. We were creating and building structures, changing the landscape of a city or a town."

relationships with individuals in the field has been key to earning that respect. "It's like a game," Riggio said. "I get to know a little bit about them. I ask about their work. You gain a work friendship, and that helps a lot in gaining their respect, being a woman in this business." These relationships, built on mutual respect and understanding, have helped her navigate the complexities of the field. But Riggio thinks the unconscious gender bias — that the construction industry has traditionally been a man's industry — can be a struggle. "I think they always just steer that way, but I do see a change. I don't think it's always going to be like this. It's definitely changed a lot, and it's going to continue."

Of the many projects Riggio has worked on throughout her career, one in particular stands out — the affordable senior living

housing project in the Bronx. "I started on the project when we were still putting the building up, and I worked through the punch list," she said. The punch list is the stage in a construction project when every detail, from chipped paint to faulty fixtures, is checked and corrected. It's a tedious but crucial process, and Riggio was there through it all.

But this project became about more than just bricks and mortar. As the senior citizens began moving into their new homes, many coming from homeless shelters, the project took on a deeper meaning. "The senior citizens started moving in, and they were so grateful," Riggio recalled. "Some even hugged me, thanking me for giving them a new home." The experience left a lasting impression on her.

While Riggio has accomplished a great deal in her 20 years in the industry, she remains driven by her passion for construction and her commitment to building a more inclusive environment for future generations. She believes that the industry is changing for the better and that women have a bright future in construction.

**KERRI
RIGGIO**

SUPERINTENDENT AT SUFFOLK CONSTRUCTION



Effective Fall Protection Methods for Dynamic Jobsites

6 key factors to ensure safety & compliance

BY PHILIP JACKLIN



Photo Credit: Diversified Fall Protection

Every year, the same hazard reigns supreme as the leading cause of injuries and fatalities in the construction industry: falls from heights. The U.S. Bureau of Labor Statistics reports nearly 450,000 occupational injuries related to falls annually, and those result in about 1,000 deaths. According to the Center for Construction Research & Training (CPWR), subcontractors are nearly three times more likely than general contractors to face fatal fall incidents with their workers.

Managing the risk of falls on a jobsite is easier said than done. From one day to the next, a construction site can look completely different, and the construction process makes it difficult for workers to access consistent fall protection anchorage locations. If anchorage installation is not part of the preplanning process, safety managers can be asked to provide adequate fall protection with very limited time and resources — which can produce less-than-ideal solutions. While the pressures of protecting profits and productivity rates are very real in the construction world, we must not overlook the importance of incorporating fall protection for construction workers throughout the building process. OSHA 1926 requires construction companies to provide fall protection to workers exposed to falls of 6 feet or greater. This article will offer some methods to provide fall protection at any point in the construction process and raise awareness with crews.

Guardrail

It is very common for jobsites to install perimeter guardrail along unprotected edges. Guardrail is an example of a passive fall protection system, which means it requires no user input to operate. Workers simply need to stay behind a guardrail to remain protected. Guardrail ranks highest on the hierarchy of fall protection controls, after hazard elimination, because it actually

prevents falls from occurring. Fall arrest equipment does not prevent falls — it only tries to prevent injury after a fall occurs.

Additionally, guardrails can be constructed right on the jobsite. There is no need to purchase equipment. If a contractor follows the OSHA 1926.502 specifications for guardrail requirements, they will have constructed OSHA-compliant guardrail for their jobsite.

Travel Restraint

Even if a contractor seeks to use guardrail as much as possible to protect their crew, it becomes harder to use as the construction process furthers. When workers are near unprotected edges, utilizing a travel-restraint system can keep the worker in fall prevention equipment. Travel-restraint systems require the user to wear a body harness and connect to a nearby anchorage. If their connection device is a shorter length than the distance to the unprotected edge, the worker is no longer at risk of falling. If they cannot physically reach the edge of their walking working surface, they cannot fall off.

Travel-restraint systems, however, are vulnerable to misuse. If the system is not designed well and a worker is required to reach an area outside of their work zone while connected, they will be tempted to disconnect to finish their job. It is usually in these moments when tragedies occur. The worker would expose the company to an OSHA violation by misusing the system, and could be at risk of falling without any protection equipment. While these systems work excellently in theory, they can prove difficult to ensure users remain compliant.

Overhead Anchorage

If guardrail and travel-restraint options have been exhausted, providing overhead anchorage for tie-off for fall arrest is the next



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recommended method of fall protection. When working in fall arrest, the worker is subject to fall at any time. If they fall, their gear is designed to orient their body upright, decelerate their fall, absorb the fall forces incurred and then fully arrest the worker before hitting the ground. To help accomplish that process, anchorages should be mounted as high as possible. Higher anchorage locations allow self-retracting lifeline (SRL) systems to activate the moment a fall occurs and reduce the amount of free-fall experience with a lanyard. Free fall is the distance during a fall before fall protection equipment activates.

It may be necessary to install multiple anchorages in a given work area. Workers are subject to swing fall if they walk away from their anchor to work. Swing fall is when a worker swings back toward their anchor point during a fall, and they can potentially come in contact with walls or equipment during fall arrest. Workers should try to work directly underneath their anchor or stay within a 15-degree angle to reduce the chances of swing fall. The higher the anchor is installed, the larger the safe working zone underneath it.

Horizontal Lifeline

While providing an overhead anchorage is ideal, anchors must be installed in areas accessible to workers and near their work zone. To cover very large work areas, many contractors set up a horizontal lifeline system. These are linear fall protection systems that allow a worker to walk a wide span while remaining connected to their anchorage and reducing the chance of swing fall.

A horizontal lifeline spans between two anchor points and can provide fall protection for two to four people, typically. As opposed to single-point systems where users have to disconnect and reconnect into several anchor points along a span, the connection on a horizontal lifeline will follow the worker as they walk underneath the lifeline. Horizontal lifelines are quite common for rooftop fall protection because they can be mounted at a worker's foot level as well, as long as the minimum fall clearance specified by the manufacturer is provided.

Leading Edge Equipment

Whenever anchorage systems are mounted at a worker's foot level or anywhere beneath their harness's dorsal D-ring, users will be subject to increased free fall. Fall protection equipment that is rated for foot-level tie-off is commonly known as "leading edge" equipment and will be required for these scenarios.

In August 2023, the ANSI Z359.14-2021 standard came into effect, creating two new classifications for SRLs. Class 1 SRLs give the user one option for tie-off: anywhere above their dorsal D-ring. Class 2 SRLs give the user two options for tie-off: anywhere above their dorsal D-ring, or anywhere above their feet

(technically, no more than 5 feet beneath their dorsal D-ring). Besides a clear labeling difference, there are other physical differences between Class 1 and Class 2 SRLs.

Class 2 SRLs require an additional shock pack between the SRL housing and the snap hook that connects to the user's harness. This additional shock pack exists to absorb the increased forces that the cable lifeline of the SRL will be subject to when the system is pulled over the roof's edge. That amount of force to the cable would potentially sever a lifeline from a Class 1 SRL since Class 1 does not have the additional shock pack. Class 2 SRLs are tested to withstand forces up against steel edges that are 0.005 inches in diameter.

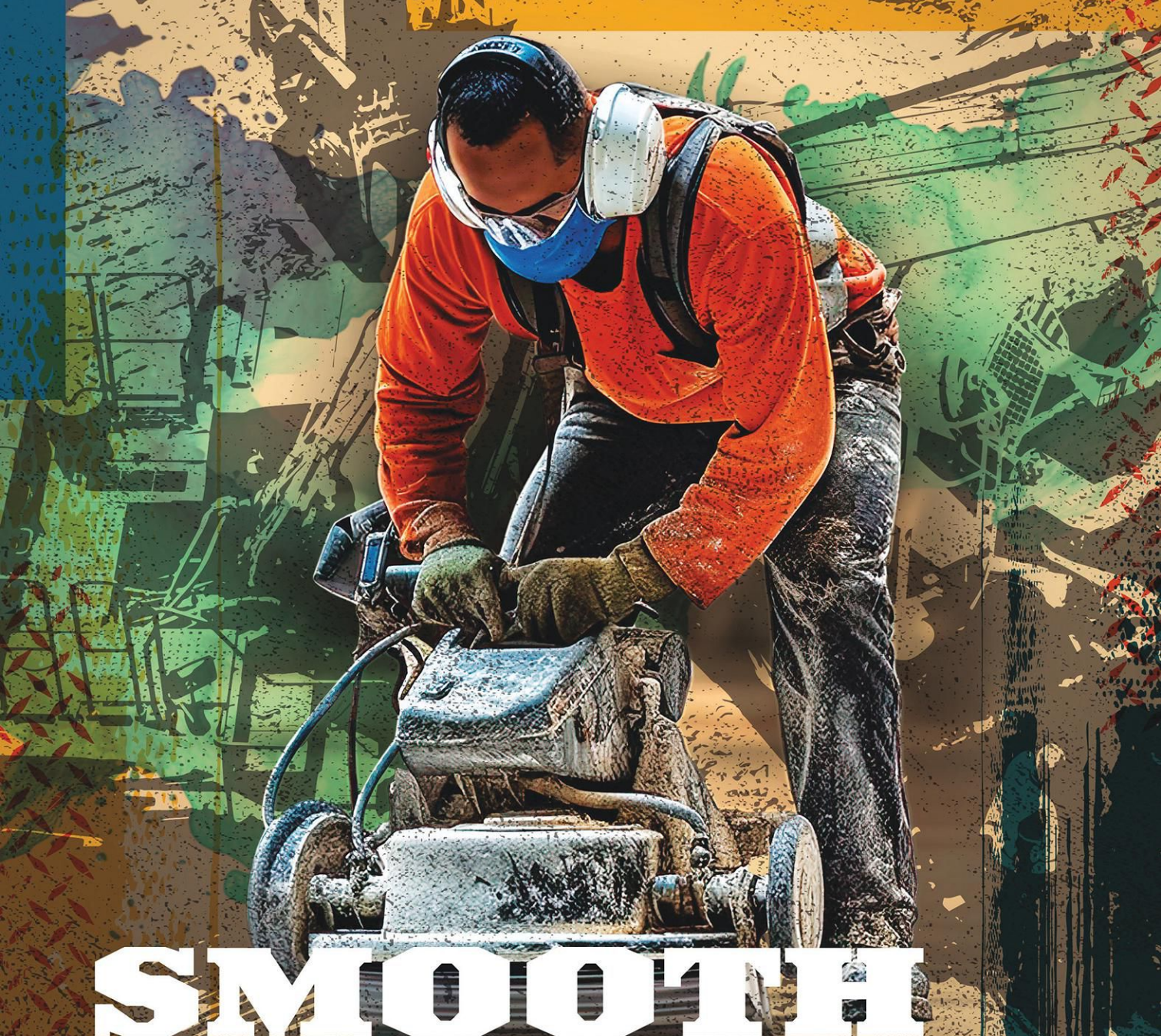
Fall Protection Training

A company's fall protection program will only be as successful as its training program. Workers must be educated on the risks they face while working at heights, and they should also be empowered to follow corporate policies and procedures to ensure their safety and the safety of their coworkers. Employers must prepare crews by educating them on the limitations of their fall protection equipment and provide a rescue plan for workers who succumb to a fall.

Furthermore, OSHA requires fall protection training to be given in a language that the employee can understand. The CPWR estimates that native Spanish speakers are 95% more likely than native English speakers to experience a fatal fall. Providing bilingual training can make sure that everybody on the crew has the same awareness level of the risks of falling during construction.

The old saying goes, "If you fail to plan, you plan to fail," and that sentiment can ring true when it comes to providing fall protection. With proper planning at the beginning of the project, companies can anticipate fall hazards during the construction process and identify solutions to mitigate them along the way. Selecting the right equipment requires safety managers to be aware of minimum OSHA requirements, communicate with crews about unforeseen complications and make decisions that will provide easy-to-use solution for crews. Fall protection companies can help with training employees, providing turnkey solutions for jobsites and maintaining OSHA/ANSI compliance with your fall protection program. ▲

Philip Jacklin is continuing education program manager for Diversified Fall Protection. Since 2018, Jacklin has been training workers nationwide on best practices when using their fall protection and advising safety managers; environmental, health and safety leaders; plant maintenance managers and other safety professionals on how to create more efficient fall protection programs. Visit fallprotect.com.



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How Construction Firms Can Protect Themselves Against Mounting Cybercrime

Digital threats lurk around every corner — do you know how to stay safe?

BY BRIAN J. SCHNESE

Photo Credit: Song_about_summer - stock.adobe.com

For the construction industry — long plagued by lagging productivity — the growing availability and accelerating adoption of technology have been hugely beneficial.

In fact, improved productivity has been only one of the advantages. Construction's tech-driven transformation has been marked by improved safety; better collaboration and communication; cost reductions; smarter and more efficient operations and services; and more cost-effective and sustainable construction practices.

But there has been a distinct downside, too. The digital evolution has left construction firms more vulnerable than ever to cybercrime.

The risk of financial losses is just the tip of the iceberg. This means direct losses stemming from theft, fraud or ransom payments, as well as costs required to deal with and recover from an attack, such as legal fees or remediation. But cyberattacks can also delay and disrupt projects and supply chains, creating financial and reputational havoc. And that reputational damage can have long-term impact on a business's fortunes.

Mitigating the risk requires an organization-wide focus on the worsening problem, backed by a detailed strategy to guard against the risk and respond fast should a breach occur. Here's what construction firm owners and their teams need to know.

Preparedness — or Lack Thereof — Is a Big Issue

Many construction firms aren't well equipped to protect themselves adequately from cyberattacks. They've become vulnerable for several reasons.

One issue is lack of preparedness. Nearly three-fourths of firms haven't prioritized cybersecurity, according to IBM. The result? Construction/real estate was the No. 1 sector breached by bad actors in 2023, with 1.5 billion records compromised, IT Governance USA reported.

Greater use of technology by the industry also has made for a bigger target. The benefits of robotics, Internet of Things (IoT) systems, machine intelligence and drones are inescapable, but all are vulnerable to breaches. Cybersecurity assessments and protective measures become critical.

Further, construction has become an increasingly complex network of interconnected firms and subcontractors, material suppliers and vendors, and other parties. This creates third-party connections tying into different technologies, making for integration challenges and cyber exposures. Safety Detectives reported that construction-related firms have the third-most ransomware attacks in North America, so it has become critical for firms to stay on top of the cybersecurity practices of their third-party partners.

Another vulnerability of construction firms is in their practice of storing massive amounts of personal and sensitive business data. This can span proprietary information to intellectual

property and company/client financials to corporate bank accounts. All are valuable targets prized by cybercriminals.

Threats Construction Firms Should Worry About

Any type of cyberattack can harm a construction firm, but the three most common and concerning are listed below:

- **Ransomware attacks:** Ransomware is part of a one-two attack by cybercriminals. The first step is a phishing attack — using fake emails and messages to trick employees into an action like downloading malicious software. Once in the system, that malware encrypts files; they're held for ransom until payment is made to release them. Given construction's heavy reliance on project deadlines and data accessibility, this can be costly, beyond the financial payments. The disruption can delay work, cause cost overruns and quality problems. Plus, potential exposure of business information can also put vendors and clients at risk. There may be an added cost of financial penalties or lawsuits over missed deadlines.
 - **Data theft:** By whatever means it is stolen — say ransomware or social engineering schemes — data theft is a significant issue for the construction industry. Firms often manage confidential intellectual property like design documents, patents and bid strategies that cybercriminals target. Also at risk, though, is social security and credit card information, along with personal information of employees, vendors and customers.
 - **Fraudulent funds transfer:** Substantial funds are transferred via online banking between construction firms and business, customer and vendor accounts. These make for another attractive target for cybercriminals who use emails (like social engineering) or phone calls, preying on human psychology to trick a response from victims. It takes training and awareness for people to avoid becoming victims of these scams.
- **Good cyber hygiene counts.** Fundamental cyber-hygiene practices should be emphasized. One starting point is multifactor authentication, providing an extra security layer for accessing sensitive information — think bank accounts, invoices and legal documents. This is essential for email, the corporate network, privileged system administration accounts and accessing system backups. Strong passwords, regular software updates (including antivirus programs) and properly configured firewalls are also important.
 - **Guard against external exposures.** Many breaches are a function of lax practices by outside partners — software services, subcontractors, or vendors and suppliers. These risks should be evaluated and contractual relationships reviewed to ensure their cybersecurity practices are up to snuff.
 - **Form a response plan.** An incident response plan will enable a swift mobilization if a cyberattack occurs. Have experts lined up and ready to help — IT, incident response teams, insurance brokers and breach response counsel. Knowing what not to do will also help mitigate the damage.
 - **The right insurance matters.** Cyberinsurance has never been more important. What's key, though, is to use the services of insurance professionals who specialize in the construction industry and understand the cyber-coverage particulars that apply to it. ▲

How to Guard Against the Risks

Managers and employees alike become knowledgeable of the types and nature of cybercrimes most common to construction firms. Education, planning and prevention — with ownership and management of these responsibilities assigned to a specific team member — will minimize digital risks and establish a culture of security. Efforts should include the following:

- **Conduct a comprehensive risk assessment.** This is important for identifying and prioritizing the firm's particular vulnerabilities and ensuring sufficient safeguards are in place.
- **Establish a cybersecurity training program.** The

Brian J. Schnese is a senior risk consultant with HUB International's risk services division and a member of the division's organizational resilience consulting team. Schnese has over 15 years of professional experience in regulatory compliance and managing risk in state and federal government agencies, as well as private industry operations including retail, supply chain, transportation, health care, and the financial industry. Visit hubinternational.com.



The Evolution of Environmental Risks

Understanding pollution liabilities, policies & prevention

BY DARREN BERG



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The landscape of environmental concerns confronting business owners has evolved significantly over the decades, beginning with the concept of corporate social responsibility in the 1950s, the triple bottom line framework which includes the three P's of sustainability (people, planet and profit) in the 1990s, and most recently, the emergence of environmental social governance (ESG). These evolving agendas can be confusing, but a fundamental truth persists: Business owners must be diligent and proactive in addressing environmental risks. Creating an environmental risk management strategy for your business starts with a two-pronged approach:

1. Training employees to identify and mitigate potential environmental pollution risks.
2. Understanding environmental liability, including the coverages you may or may not have with your business insurance.

Pollution Prevention Practices

It is important to note that environmental exposures extend beyond businesses engaged in abatement, restoration and remediation activities. Site-based work is one of the most environmentally hazardous settings within the construction sector. Therefore, your team's safety training program should include procedures for identifying potential pollutants encountered on a jobsite, including those brought in by the crew and those transported off-site for disposal. Figure 1, on page 42,

includes common pollution risks to consider.

Establishing protocols for your employees can help prevent accidents from happening. In addition to the exposures in the table above, it is best practice to have procedures for the following:

- Cargo securement
- Good housekeeping
- Loading and unloading
- Responding to spills
- Stockpile management
- Stormwater management
- Solid waste management
- Subcontractor vetting
- Utility locating

Contractors Pollution Liability

Historically, insurance advisors have not extensively addressed environmental risks with their construction clients. This lack of thorough discussion has led many companies to mistakenly believe that their operations are not at risk from environmental hazards. Consequently, contractors may be putting their businesses at risk. Although pollution claims are relatively infrequent, the severity of them can bankrupt a company.

Commercial general liability (CGL) insurance carriers began introducing exclusions on pollution incidents in the 1970s. They started with a "sudden and accidental exclusion," then

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Common Pollution Risks to Consider

Asbestos	Asbestos refers to a group of naturally occurring, fibrous minerals renowned for their high tensile strength and thermal insulating properties. These minerals can disintegrate into microscopic fibers that become airborne upon disturbance. Inhaling these fibers can lead to their deposition in the lungs, where they can cause fatal respiratory diseases such as asbestosis, lung cancer and mesothelioma (a type of cancer affecting the lining of the chest cavity).
Clean Imported Fill	Although clean imported fill indicates that it is free of contaminants and pollutants, it does not guarantee that all contaminants have been removed.
Concrete Truck Washout	Concrete washout water, or wash water, is a slurry that contains toxic metals. It is also caustic and corrosive with a pH close to 12, and it can harm aquatic ecosystems.
Construction and Demolition Debris	Debris may contain asbestos, lead-based paint, polychlorinated biphenyls (PCBs), and chemicals that harm human health and the environment.
Construction Vehicle and Equipment Washing	The process of washing, power washing, or steam cleaning vehicles and equipment produces wastewater that can contain significant amounts of oil and grease, suspended solids, phosphates, heavy metals, organic compounds and pollutants from detergents. If the wastewater is not managed properly, these contaminants can pollute surface water or groundwater, leading to violations of water quality standards. Many of these contaminants are toxic and harmful to living organisms, including fish.
Crystalline Silica	Crystalline silica, a common mineral in numerous naturally occurring substances, is generated through high-energy operations such as cutting, sawing, grinding, drilling and crushing stone, rock, concrete, brick, block and mortar, or when handling industrial sand. There is strong scientific evidence indicating that exposure to respirable crystalline silica can elevate an individual's risk of developing lung cancer.
Erosion and Sedimentation Control	Erosion of soils can result in significant amounts of sediment being transported in stormwater to surface water bodies. Sediments entering surface water bodies can degrade drinking water quality, hurt wildlife, carry nutrients that can cause algae blooms, and lead to flooding.
Fugitive Dust Control	Fugitive dust consists of tiny particles suspended in the air. The main pollutant associated with fugitive dust is PM10, which refers to particulate matter particles with an aerodynamic diameter of 10 micrometers or less. These PM10 particles can penetrate the lungs, cause tissue damage and hinder the lungs' proper functioning.
Hazardous Waste	Various industries produce hazardous waste, which the Environmental Protection Agency (EPA) regulates under the Resource Conservation and Recovery Act (RCRA). RCRA was enacted on Oct. 21, 1976, as the nation's preeminent law governing the disposal of solid and hazardous waste.
Illicit Abandonment	Illicit abandonment refers to the unauthorized dumping of waste in both private and public areas, rather than utilizing proper recycling methods or safe and legal disposal techniques.

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Attributes	Value
Height	3 ft
TOTAL TON	53.12 ton

Measurements	Value
Volume	1,216.52 cuyd

	Value
4" THICK SOG - CONCRETE SLAB (SLOPE 2%)	658.45
4" THICK SOG - CONCRETE...	7864.65

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Lead-Based Paint	Due to its durability, lead-based paint was widely used in the U.S. before it was banned for residential use in 1978. Lead is a highly toxic metal that can cause various health issues, especially in young children.
Mold	Leaks, condensation and poor ventilation are the most common causes of mold and mildew problems. According to the EPA, the key to preventing mold and mildew growth is to control the moisture level in each area.
Paints	Certain types of paint, paint thinners and strippers contain hazardous ingredients that pose potential risks to humans, animals, groundwater and the environment.
Petroleum Products	Common petroleum products many industries use include fuels such as gasoline and diesel fuel, as well as oils, including lubricating, hydraulic, engine, etc. Spills or leaks of these products can contaminate soil, groundwater, soil vapor or surface water. Natural resource damages can occur due to contamination of drinking water sources, wetlands or other beneficial wildlife habitats.
Solvents	Solvents are chemicals used to dilute, dissolve, extract or disperse other substances to form a solution. Some solvents are flammable materials, and some are toxic. Solvents such as benzene, carbon tetrachloride and trichloroethylene are known human carcinogens.
Vandalism	Vandalism can result in environmental exposure for a property owner. Vandals can damage equipment, tanks, piping or other systems, releasing chemicals or wastes.



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moved to the “absolute pollution exclusion” in the 1980s, and the “total pollution exclusion” in the 1990s, which remains today. Some carriers offer givebacks for pollution coverage with an endorsement; however, those givebacks typically only provide bodily injury or property damage resulting from a pollution event. Most pollution claims also include extensive cleanup, as well as transportation or disposal expenses, which wouldn’t be covered.

It is also important to note that CGL policies are capped at a specific limit, representing the maximum amount the policy will cover on behalf of the insured. Should a contractor opt to add a pollution endorsement to their CGL policy, the coverage limits are often shared with the CGL policy. Any other claims would reduce

what is available for a pollution claim.

A separate contractors pollution liability (CPL) policy provides comprehensive coverage for third-party bodily injury, property damage, defense expenses and cleanup costs associated with pollution incidents that arise from covered contracting operations. Figure 2 compares a CGL pollution endorsement and CPL policy.

Procurement & Subcontractor Vetting

Hiring clients rely on certificates of insurance to verify that contractors have active insurance policies. Unfortunately, the information provided in the majority of certificates of insurance falls short when it comes to pollution insurance. Standardized certificates like the Association for Cooperative Operations Research and Development (ACORD) forms were established in the 1970s; it is nearly impossible to determine from an ACORD what type of pollution coverage is available. Therefore, it is crucial to thoroughly screen contracts and subcontractors to prevent bearing the costs of a potential pollution event. ▲

Darren Berg is president of Environmental Risk Professionals LLC, an environmental consulting firm that works with business owners to identify and mitigate their environmental risks and minimize costly pollution claims. During his 26-year career in consulting, he has worked with federal, state and private clients. His team administers Certified Environmentally Responsible Contractor (CERC) certifications. Visit envriskpros.com.



CGL Pollution Endorsement Compared to a CPL Policy

Coverage	Description	CGL ENDORSEMENT	CPL
Cleanup Costs	Retributions to pay for cleanup and monitoring costs of pollution incidents are sought out by affected parties and often required by the government.	Limited to bodily injury and property damage	Included
Natural Resource Damage	A pollution incident may result in the destruction of plants, fish or wildlife, harming natural resources. "Natural resource damage" may not fit the traditional definition of "property damage" covered by a commercial general liability policy.	Generally not included	Included
Nonowned Disposal Sites	A location owned by a third party that is used by a waste generator for the treatment, storage or disposal of waste or materials. The RCRA established a system to regulate hazardous substances from the moment they are generated through transportation to treatment, storage and disposal ("cradle to grave").	Generally not included	Included
Time Element	Most CGL policies have a limited time element, which limits the discovery time frame (usually to 72 hours), so any pollution that goes undiscovered, migrates or increases in size would be excluded. CPL can cover gradual and sudden releases.	Limited	Included
Transportation Pollution	Over-the-road accidents, leakage from containers on the trucks and/or trailers, and pollution incidents during the loading or unloading operations. Some contractors elect to add the CA 9948 endorsement to their auto policy, but this coverage only applies to first-party exposure; it limits pollution coverage to upset/overturn and does not apply to vehicles at rest, vandalism or gradual leaks.	Not included or limited	Included

Figure 2. CGL pollution endorsement compared to a CPL policy.

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SCAN QR

Investing in Risk Management Is Essential in the Construction Industry

Strengthen your safety programs & build a workplace employees trust

BY PAUL ALDRICH



Photo Credit: natali_mis - stock.adobe.com

Risk management has emerged as a vital pillar for success in the unpredictable world of construction. With countless hazards and uncertainties, companies must navigate these threats quickly and effectively. It's already difficult to stay safe on construction sites, but with tight deadlines, budget constraints and lack of training, the risk only increases.

According to the U.S. Bureau of Labor Statistics, nearly one in five workplace deaths occurred on a construction site, making construction the most fatal industry. The most common of these injuries are from slips, trips and falls. These injuries are expensive and detrimental to employee morale — but, most importantly, they're preventable. The best way to reduce accidents and injuries is through a robust risk management department.

The Risk Management Process

Effective risk management involves identifying, assessing and mitigating potential risks. It shouldn't be viewed as a step-by-step process but rather a continuous journey of observation, evaluation, and actively searching for ways to prevent workplace accidents and injuries.

When it comes to managing risk and safety, education is key. By teaching your employees how to avoid potential dangers in the workplace, you're arming them with the tools and knowledge needed to navigate the risks and uncertainties of working on a construction site. Risk management is more than just managing workers' compensation claims; it's ultimately protecting your most valuable asset: your employees.

Benefits of Investing in Risk Management

Prioritizing risk management in your organization has various benefits. Investing in risk management is crucial for organizations

to mitigate potential threats, safeguard assets and protect their reputation. By implementing risk management strategies, businesses can help employees make informed decisions that increase success, safety and sustainability.

Talent Retention & Attraction

Workers who trust their employers to keep them safe and healthy have a greater sense of loyalty and devotion to an organization and are more likely to stay. According to a recent survey by AlertMedia, 46% of employees stated that if their employer genuinely cared about their safety, they would be more likely to stay long-term. Hosting monthly safety training, consistently communicating with employees or developing a customized safety manual are great ways to show employees you care and are committed to their well-being.

A business that cultivates an employee-first and safety mindset fosters a greater sense of loyalty and dedication. Potential employees are also more likely to apply if they see that your company invests in proper gear and equipment, follows safety protocols and provides continuous training. A safe workplace attracts potential applicants and shows them that their well-being is prioritized.

Improve Your Bottom Line

A strong risk management department can protect your employees and improve your bottom line. Implementing proper safety policies and procedures reduces potential accidents and injuries, which can lower the number and severity of workers' compensation claims. According to the National Council on Compensation Insurance (NCCI) data, the average cost for a workers' compensation claim is \$41,757. Although the overall cost

of the claim depends on the type of injury, its severity and the type of treatment received, a claim can quickly become very expensive.

Suppose a business owner invests in preventive measures such as conducting a job hazard analysis, hosting monthly hazard training or scheduling workplace safety inspections. By doing this, they can prevent future accidents, saving them money in the long run. Additionally, by ensuring your workplace complies with federal and state safety regulations, you can save on potential noncompliance fines or fees given by the Occupational Safety and Health Administration (OSHA).

Operational Efficiency

A construction company can improve its organization and efficiency with a proper risk management department. For example, utilizing and developing detailed risk assessments can lead to better project planning and resource allocation. By identifying risks early, companies can develop proactive strategies to mitigate or avoid them, preventing cost overruns, surprises or delays. For example, an emergency action plan can limit confusion and save time during an emergency. When you stay on top of claims and injuries, you can also help manage the claim the moment the injury occurs and throughout recovery. Understanding the injured individual's limitations can help you create a return-to-work program that will help ease them back into their position and, hopefully, return to work quicker.

Company Reputation & Compliance

Risk management ensures compliance with health and safety regulations as well as federal, state and local laws. By properly documenting inspection dates, accidents and injuries, and providing proper and timely training on potential hazards, you're more likely to avoid costly fines and legal liabilities. Continuing to be compliant can also improve your company's reputation.

Managing your company in a safe and compliant manner will help you grow your company and improve your reputation. Complying with federal regulations puts you in strong standing with governmental organizations. It can also attract potential partnerships, shareholders and job applicants.

How to Improve Your Risk Management

Risk management is essential for any business and should not be put on the back burner. While prevention can be a substantial expense, it's nothing compared to the expenses you'll incur in workers' compensation claims or lawsuits. While you may not be a safety expert, there are various ways to strengthen your risk management department.

Buy-In

The most important aspect of a strong risk management

department is buy-in. Buy-in is the acceptance of and willingness to participate in something, such as a proposed new plan or policy. Leadership must believe in the importance of safety and compliance and practice what they preach. Practicing open communication with your employees, following proper accident protocol and correctly wearing protective gear are great ways to showcase your dedication to worker safety and exemplify how you want your employees to act. If you emphasize safety and share the reasoning behind why you are implementing these policies, employees will understand, feel safer and follow your lead.

Build a Foundation

To have a safe workplace, a strong safety foundation is vital. Writing a safety manual, developing an emergency action plan for various incidents and consistently training your workforce are great first steps. To ensure safety and compliance, it's essential to understand and stay current on the specific laws and regulations you need to comply with.

Documentation

Proper documentation is an important aspect of risk management and can help business owners in the long run. If you properly document recent incidents, such as the date of your last inspection or hazard training, you'll have organized proof to help dispute claims or lawsuits that are filed.

Outsourcing

Managing a risk management department can be overwhelming. If you don't feel confident in your ability to manage risk effectively, consider outsourcing. There are organizations that can help ensure you stay compliant, develop your company safety program, conduct safety audits and more.

Risk Management Is Critical for Success

Risk management is necessary for long-term business success and growth. By implementing a comprehensive risk management strategy, companies can anticipate, prevent and respond to potential risks, protect their reputation, attract and retain top talent, save money and comply with regulatory requirements. Ultimately, effective risk management leads to a happier, healthier and more successful company. ▲

Paul Aldrich is dedicated to reducing injuries through education and training and is currently the director of safety at Group Management Services (GMS). GMS is a professional employer organization that helps small to midsize business owners manage their human resources, risk management, payroll, benefits and more. Visit groupmgmt.com.



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Prior to GCPay, Nick held product and marketing leadership positions with Fleetcor, LP Building Products, and Verifone. Understanding the unique payment needs of the transportation and construction industry has become Nick's specialty throughout his career. Nick attended the University of Missouri for his undergraduate studies and also holds an MBA from the University of Wisconsin.

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Dozer Grade Control Improves Productivity

Learn how 2D and 3D systems can help you make the grade

BY BRANDON CROCKETT

Grade control systems for dozers are game-changers on construction jobsites.

Choose between a basic two-dimensional (2D) grade control system or a more sophisticated three-dimensional (3D) grade control system. These technologies can help you improve your accuracy, efficiency and productivity on rough- or fine-grading projects.

These advanced systems leverage sensors, GPS and digital models to

ensure that grading is executed to exact specifications. Use them to streamline operations, prevent project delays and ensure that grading meets your jobsite requirements.

Let's discuss how 2D and 3D grade control systems work, as well as their benefits and how they contribute to achieving superior grading results.

2D vs. 3D

2D grade control systems for dozers use

simple height and angle measurements, typically achieved with lasers, although 2D systems can also be used without lasers. They allow you to work off a single plane — either flat, single or dual-slope — by helping to ensure that the blade is at the correct height and angle for the job.

2D is ideal for projects where general depth and slope are needed, such as grading a road or leveling a site. However, since it only measures two dimensions (height and angle), it doesn't account for

the overall terrain or changes in elevation over the entire site.

In contrast, 3D grade control uses GPS or other positioning systems to track the dozer's exact position on the site and compares it to a digital model of the project. Grade control systems use information gathered from global navigation satellite systems (GNSS), GPS, laser, sonic or total station technology. This allows for adjustments in real time based on both height and the entire terrain's layout.

A 3D system can be useful for more complex projects where precise work is needed, like elevation, slope and terrain. A 3D system is ideal for tasks such as grading for road and highway construction or earthmoving projects.

For both 2D and 3D systems, an additional monitor may be required in the dozer's cab to provide vital

information about grade and slope. Some 2D grade control systems, including those without lasers, use the standard monitor in the dozer.

Increased Efficiency

Both systems help improve the planning and execution of complex grading tasks. Using 2D or 3D grade control significantly reduces the need for rework on jobsites by enhancing grading accuracy and efficiency.

These systems allow for precise control over blade elevation and angle, minimizing inconsistent grading. In a 2D system, automatic adjustments based on sensor data ensure that the blade maintains the correct height and slope throughout the grading process.

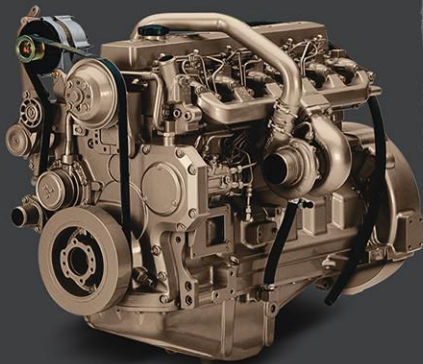
3D grade control systems integrate GPS technology and digital terrain models (DTMs). By comparing the dozer's position

and blade settings to a detailed 3D model of the site, these systems ensure that grading aligns accurately with design specifications. This real-time feedback and automatic adjustment capability mean that the grading can be completed to the required standards in fewer passes. As a result, you can avoid the need for extensive rework.

Improved Safety

Minimizing potential hazards associated with uneven or incorrect grading is important on the jobsite. A 2D system's ability to autonomously adjust the blade's height and angle reduces the risk of error, ensuring consistent and accurate grading. Real-time feedback can alert you to any issues with the desired grade, allowing you to make immediate corrections and prevent unsafe conditions.

3D grade control systems improve



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Dalton Rasch is a third-generation family member who works for Rasch Construction in Fort Dodge, Iowa. He knows firsthand how 3D grade technology can be a valuable investment and how it's paving the way in the industry. He uses a Trimble Earthworks 3D grade control system on his Develon DD100 dozer.

"To be able to put a full jobsite in a machine, so you know where you're at on the site, and your cut fills, and what's the best way to attack a dirt job that way," he said. "It definitely pays for itself in time with efficiency of getting projects done. When I was growing up, we didn't have GPS grade control. So it's cool to see the new technologies and the way things are changing."

safety using advanced technologies such as GPS and geofencing. GPS tracks the dozer's precise location, while geofencing establishes boundaries to prevent the equipment from entering restricted or hazardous areas. This helps avoid accidents and ensures that the dozer operates within safe parameters.

Collision avoidance systems, which are often integrated into 3D systems, detect potential obstacles and provide alerts. The use of DTMs gives you detailed site information, allowing you to navigate complex terrains safely and avoid dangerous areas.

Real-time data monitoring in 3D systems continuously tracks the dozer's position and settings. Warnings and alerts, such as audible and visual signals, keep you informed of any immediate concerns, further enhancing your awareness and safety.

Training Is Key

The biggest adjustment when using 2D or 3D grade control is understanding how to operate these systems. You'll need to learn how to set up and calibrate these components, as well as how to adjust

the blade's height and angle to achieve the desired grade. Instruction typically includes both manual and automatic modes and how to switch between them.

Training is more complex for 3D grade control systems due to the integration of GPS technology and DTMs. You'll need to know how to interpret and use DTMs to guide grading operations, as well as how to utilize GPS data to track the dozer's position. Training includes managing and updating software, understanding how to input and adjust project parameters and interpreting real-time data to make informed decisions.

The learning curve varies depending on the technology, but spending two hours a day for two weeks will give you a general understanding of how 2D and 3D grade control systems work and how they can benefit your operation.

Regular Maintenance

For 2D grade control systems, regular maintenance involves checking and calibrating sensors and lasers. Clean and properly align sensors to ensure accurate measurements. Lasers require periodic calibration to maintain precise



grade control. Inspect the mechanical components of the system, such as the blade and hydraulic controls, to ensure they are functioning correctly and free of wear or damage.

For 3D grade control systems, inspect the GPS receivers and antennas for signal integrity and connectivity, as

any issues can affect positional accuracy. The software that manages DTMs and provides real-time data also requires regular updates to make sure it operates effectively and integrates correctly with

the hardware. The system's sensors and electronics should be cleaned and tested regularly. Any signs of wear or malfunction should be addressed

promptly.

Keeping detailed maintenance records can help track the system's performance over time and identify any issues.

Remember that once installed, a 2D or 3D system is likely to stay on your dozer for its useful life. If you decide to add a grade control system to your dozer, work with your local dealer and a technology expert from the company that developed the system. They can help you properly install the components on your dozer, provide training and make sure everything is working correctly before you transport your machine to the jobsite. ▲



Brandon Crockett is the product manager for articulated dump trucks and dozers at Develon. He has 20-plus years of construction equipment experience in product management, sales management and marketing. Visit na.develon-ce.com/en.



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The Rental Equipment Business Model Demands Transparency & Automation

Why modernizing processes can benefit business owners

BY ANSSI KUUTTI

The construction equipment rental business model offers many benefits for all involved, including the rental companies themselves — which stand to make a lot of money in this lucrative, fast-growing industry — and the companies actually renting equipment, because they can avoid heavy outlays and capital expenses. On-site workers can also benefit from gaining easy, more immediate access to the most up-to-date tools and equipment they need to do their jobs.

Moreover, when a construction business owner rents equipment, they don't have to worry about long-term storage, repairs, or the logistics and costs of transportation. In most cases, the rental company takes care of that, which frees up time and money for the owner. Even though there's a big convenience factor with renting, one of the major reasons contractors choose to rent is the cost. A mini excavator, for example, can cost over \$40,000, while renting one for a week usually costs less than \$1,000.

However, making the decision to rent versus buy equipment does come with some drawbacks. For one, business owners need to balance the convenience and

short-term cost-efficiencies of renting versus losing valuable investment money in the long run. But even more significant is the fact that business owners take a bit of a gamble in that they do not know for sure if the equipment they need will be available precisely when they need it. This is especially true for construction companies building highways, bridges and other structures that are susceptible to unpredictable natural disasters. In these scenarios, it's nearly impossible to predetermine what, when and where equipment will be needed.

The ability to track rental company equipment availability can vary from business to business, depending on how well-developed and automated their asset management systems and processes are.

In many cases, however, these systems and processes are not well-developed and automated. Compared to other industries, construction has been slow to embrace technology. Hammers haven't evolved much in a few hundred years, so what's the point of changing from paper spreadsheets to a more advanced digital system, one might ask — not

understanding the time-saving benefits that greater efficiency brings.

Even for construction companies that are sophisticated technologically, on actual construction sites, equipment and tool tracking is usually a struggle and can accumulate for a big loss of work time. Incrementally, this time lost can lead to a big hit on overall project performance. This can have a very negative impact on both the rental company — which may be overseeing the renting of equipment to hundreds of thousands of construction business owners at once — and the owner, not to mention on-site workers who depend heavily on having the right equipment when needed. String together many bouts of lost time on projects, and this can be a contributing factor to financial difficulties and the high overall failure rate of construction companies.

In the technology-averse construction industry, if any party in the chain is heavily dependent on error-prone spreadsheets, it's easy to see how this can lead to blunders, misplacements and misunderstandings. There are no construction projects which are not

time-sensitive, and any misstep can mean significant setbacks that cost both time and money. Due to the high stakes, there is no such thing as a “small mistake”: Even the tiniest error can rapidly snowball into a much larger issue.

A comprehensive equipment management platform can be the key to ensuring transparency. This platform should be available to all stakeholders (rental company, owner and on-site workers); integrate with stakeholders’ key platforms like e-commerce and financial management; give total transparency to equipment and tools’ location, usage, expense and efficiency; and ultimately, smooth out the entire journey for all the parties involved — rental companies, business owners and on-site workers.

In addition to transparency, automation is also important. Owners, particularly those who may not be the most ardent

technology adopters, need to elucidate, simplify and automate the process of making equipment and tools available for their on-site workers. A big part of this can be ordering of tools and equipment for major construction sites prior to construction. For example, the ordering process for on-site workers can be simplified because the equipment that was budgeted can be ordered from the e-commerce system with a few clicks via automated basket collection.

Reducing friction points and eliminating unnecessary steps is also key to a successful digital approach, as the “time is money” mantra remains valid as soon as a project clock starts ticking. There will always be a need for verification features, and security should also be top of mind. But once a user is engaging with any digital system, the fewer places they have to access to complete a request

for equipment, document the usage of machinery or submit a request for support, the better.

Transparency is needed for the success of any rental arrangement, including cars, tools, real estate and more. The construction equipment rental business is no different. While it is poised for tremendous growth, there is still a lot of room for misunderstandings and for things to go wrong. A shared, comprehensive equipment management platform can serve as the basis for much-needed transparency and automation — and be the key to ensuring that all parties realize the maximum benefits. ▲

Anssi Kuutti is chief commercial officer at Vincit USA. He has worked at Vincit since 2010 in multiple different roles such as head of talent & delivery, software engineer, project lead, account manager, sales executive and business director. Visit vincit.com.



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Shore Up Safety: Prevent Trenching & Excavation Disasters

Keeping employees safe will also help keep your projects on track

BY RANDY DOMBROWSKI

From my perspective as a director of safety services, trenching and excavation incidents are no accident. They result from failing to recognize — and take necessary precautions to guard against — the danger trenches pose to workers. Yet each year as construction projects ramp up, we see an uptick in

trench-related injuries and deaths.

Just two years ago, 39 people died doing trench or excavation work in the U.S. — a number so alarming that the Occupational Safety and Health Administration (OSHA) launched an outreach campaign to work directly with employers and agencies to reduce and prevent incidents. They

increased on-site inspections, and some states passed laws that increased fines for employers who failed to follow required safety protocols.

Today, trenching and excavation safety remains an issue that demands our immediate attention. The construction industry is booming, and with busier

schedules, corners can sometimes get cut. But here's the sobering reality: a single misstep in trench safety can have devastating consequences for your employees and your bottom line.

Just one cubic yard of soil weighs about as much as a car; imagine that burying a worker. Workers can also be injured or die when they fall into a trench, get pinned between equipment or become asphyxiated by gases.

How can we prevent these tragedies? It comes down to prioritizing safety from the very beginning.

Protect Your Workers in the Trenches

It's important to learn OSHA guidelines and train your workers to operate safely in the trenches. Here are some key strategies to keep your crews safe:

- **Instruct your workers** to never enter a
- **Provide accessible entrances and exits** at excavation sites. They're required when a site is more than 4 feet deep. They're also vital in an emergency. Construction trade norms take this a step further, requiring access if a site is 19 inches or more deep. Ladders should extend 3 feet above an excavation site wall and be placed within a trench box if one is used. They also should be placed within 25 feet of where a worker needs to get in and out.
- **Prevent trench collapses:** Protective

trench unless it has been inspected by a competent person (someone who knows OSHA safety tips and who understands soil types). It's important for that person to inspect trenches throughout the day as conditions change. Factors like weather, moisture and vibration can make a trench unstable.

systems are required when a trench is 5 feet deep or more. When 20 feet deep or more, a registered professional engineer must design the system. We follow OSHA's three primary systems for helping prevent cave-ins:

- o **Slope it:** Excavate the sides of a trench to prevent a cave-in. The incline angle depends on the type of soil at the site.
- o **Shore it:** These systems — such as metal plates and hydraulic jacks — support the sides of an excavation and are designed to prevent cave-ins. They're installed from the top down and are removed from the bottom up.
- o **Shield it:** Trench boxes don't prevent cave-ins but protect workers in the event of one. Ensure workers enter and exit a trench from within the trench box.

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- **Ensure trenches are free** of standing water and environmental hazards like gas.
- **Keep materials away** from the edges of a trench.

Invest in Safety to Protect Workers & Keep Projects Moving

Investing in safety isn't just about following the rules. It's about protecting your most valuable asset — your workforce. A healthy

top of normal pace to meet demand just this year.

Your business may be forced to rely on new, less experienced workers. It's incumbent upon you to help keep them safe. This is especially important because first-year employees account for more than 25% of all workplace injuries.

Protecting your workers in the trenches should be motivation enough. Developing a track record of low workplace injuries,

workers. Worker morale, after all, plays a role in production and quality. People talk and will know if your company consistently demonstrates that you take their safety seriously.

Build Resilience & Guard Against the Unexpected

You've worked hard to build your business and workforce. Now it's your job to protect both. Trenching and excavation will always play a necessary role on your projects. However, it shouldn't come at the cost of worker safety. When you prioritize proper inspections, protective systems, and safe ingress and egress procedures, you also prioritize everyone going home safely at the end of the day.

The tips in this article are meant to serve as a set of reminders — but they shouldn't replace a plan specific to your business or projects. Maintain open communication with your team, insurer and local safety experts. You can find help in many places. For example, OSHA provides on-site consultations.

As a director of safety at Sentry, my team also visits construction sites throughout the country to walk through risk scenarios and assist with safety trainings. Trenching and excavation is one of many topics insurers can help with. Don't be afraid to lean into your insurer. By working together, you can better identify hazards, plug safety gaps and secure the appropriate protection for your business. When you put safety first, you position yourself for a productive and safe season. ▲

Here's the sobering reality: A single misstep in trench safety can have devastating consequences for your employees and your bottom line. Just one cubic yard of soil weighs about as much as a car; imagine that burying a worker. ... How can we prevent these tragedies? It comes down to prioritizing safety from the very beginning.

crew keeps projects on schedule and minimizes costly disruptions.

Skilled workers are in demand: According to an Associated Builders and Contractors (ABC) report from early 2024, the industry needed to hire more than half a million additional workers on

however, could lead to lower workers' compensation costs over time. It's a win-win for your workers and the health and safety of your business.

Plus, given the tight labor market, you too can benefit from having a reputation for protecting and caring about your

Randy Dombrowski is the director of safety services for commercial lines at Sentry Insurance. He works with commercial construction businesses through the industry to improve safety and reduce risks. Visit [sentry.com](https://www.sentry.com).



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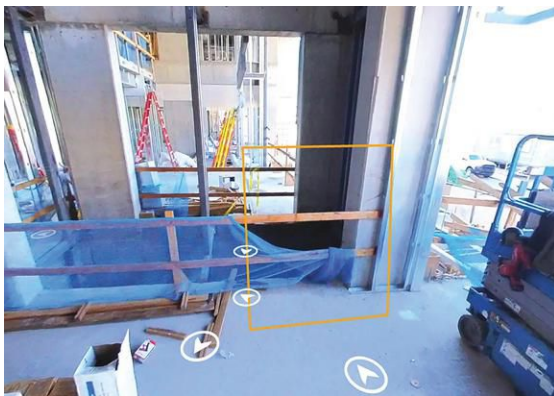
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New Products to Watch

Selected by the editors of Construction Business Owner, these new-to-the-market products are just a few of our favorites recently released to the construction community. Stay tuned in every issue to find out what you need to know about the latest gear, solutions & industry-leading innovations.



◀ DRONEDEPLOY

Safety AI by DroneDeploy

Released: 10/1/24

Availability: U.S. market

What's new? Safety AI analyzes thousands of images captured on construction projects to detect all visible Occupational Safety and Health Administration (OSHA) safety risks, ranks them based on severity, and informs the safety team automatically. Safety AI's ability to understand and interpret risks based on OSHA safety standards brings a new level of precision and compliance to jobsite monitoring.

Specs: Automatically identifies visible safety risks according to OSHA standards, helping contractors prevent incidents, reduce experience modification rate and insurance premiums, and win more work. By aggregating information across projects, Safety AI provides companywide safety trends and insights that can help organizations proactively address high-risk behaviors, ensure proper training and monitor performance across different teams.

◀ PETTIBONE ▶

Extendo 1044X Telehandler

Released: 9/18/24

Availability: U.S. & Canadian markets

What's new? This new telehandler was designed to offer ample lifting power and stability without the need for outriggers, significantly reducing maintenance requirements and enhancing operational speed for users working in construction, masonry and rental applications. The elimination of outriggers from the model's design results in faster setup times and improved maneuverability on the jobsite. It also reduces the number of components in need of periodic maintenance, thereby cutting down service time and costs. All-steel fuel and hydraulic tanks are built to resist damage. The 30-gallon fuel tank offers ample volume for a full day's work, and the lockable fuel-fill is in a clean, accessible location. Other features include nontensioned boom hoses, split-system electrical circuit panels and heavy-duty LED lighting.

Specs: Provides up to 10,000 pounds of load capacity. Features a three-section boom comprised of formed plates that offer greater strength while reducing weight. Boom deflection is minimized for better accuracy when placing loads. Abundant boom overlap provides smooth operation and reduces contact forces on wear pads, thereby extending service life. A bottom-mounted external extend cylinder further reduces the load on wear pads.



◀ HILLTIP

SnowStriker snowplow

Released: 7/2/24

Availability: North American & European markets

What's new? SnowStriker plows feature a curved, powder-coated snow blade made of high-strength steel, making them durable yet lightweight. They also have adjustable two-segment trip edges for plow protection. The cutting edges are available with either polyurethane or steel construction. Other standard features include an adjustable attack angle and tilting blade.

Specs: Available in widths ranging from 5 feet, 5 inches to 8 feet, 6 inches. Hilltip's Quick Hitch mounts allow for easy on/off connections to pickups, SUVs and utility terrain vehicles. Mounting options are available for tractors and loaders as well. Hilltip's HTrack tracking software can be used to monitor the SnowStriker plows in real time from a computer, tablet or smartphone, when used with an IceStriker spreader or SprayStrike sprayer. It offers two-way GPRS tracking capabilities for seamless communication between drivers and operations.



YANMAR COMPACT EQUIPMENT ▲ TL65RS Compact Track Loader

Released: 9/25/24

Availability: North American market

What's new? This midsize machine is the smallest in Yanmar's current lineup of compact track loaders. The TL65RS features multiple options to enhance productivity and ease operations. A work-tool-positioner allows operators to create a preset for the angle of the attachment based on the job, while return-to-position technology enables them to set a designated height for the loader arms. Self-leveling technology utilizes dual-direction capabilities to automatically level the load while raising and lowering the loader arms. Auto two-speed allows the machine to shift automatically between low- and high-speed modes for a smoother ride.

Specs: Features A 67-horsepower Yanmar Tier 4 Final diesel engine and 2,100-pound rated operating capacity. Travel speed of up to 7.5 mph. Machine features a mechanical suspended seat and a 7-inch touchscreen display. Durable steel-embedded rubber-tracked undercarriage offers construction-grade reliability, while heavy-duty bar-tread tracks complement the undercarriage through better ride quality and reduced vibration. The bar-treaded tracks provide year-round dependability, increasing traction in extreme conditions like snow, mud and soft soils.



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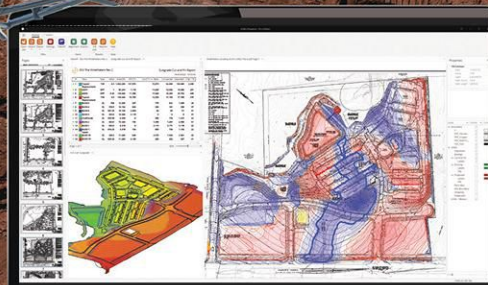
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▲ **IGNITE ATTACHMENTS**

Angle Broom Attachment

Released: 9/17/24

Availability: U.S. & Canadian markets

What's new? This attachment has a 22.5-inch operating height for safer, more efficient operation. Features such as a fully reversible drum with individually replaceable polycarbonate bristle wafers, zinc-coated pins and drum carrier components, and a motor-protecting guard make for dependability and fast return on investment. The angle broom is available in working widths of 72 or 84 inches with a manual or hydraulic angling option and universal harness.

Specs:

- Swept width — 72 inches
- Overall width — 86.7 inches
- Operating height — 22.5 inches
- Operating depth — 50 inches
- Bristle wafer diameter — 24 inches
- Storage height with stands — 26.2 inches
- Storage depth with bristles — 47.4 inches
- Storage depth without bristles — 41.5 inches
- Number of bristle wafers — 36
- Bristle type — Polycarbonate
- Weight with hydraulic angling kit — 541 pounds

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- ☐ 02 \$500,001 – \$1,000,000
- ☐ 03 \$1,000,001 – \$2,500,000
- ☐ 04 \$2,500,001 – \$5,000,000
- ☐ 05 \$5,000,001 – \$10,000,000
- ☐ 06 \$10,000,001 – \$20,000,000
- ☐ 07 \$20,000,001 – \$50,000,000
- ☐ 08 More than \$50,000,000

4. Which of the following products/services are you planning to buy during the next 12 months?

(Check all that apply)

- ☐ 01 Earthmoving Equipment
- ☐ 02 Trucks, Trailers and Accessories
- ☐ 03 Compact Equipment
- ☐ 04 Lifting and Hoisting Equipment
- ☐ 05 Safety Equipment and Apparel
- ☐ 06 Attachments
- ☐ 07 Concrete and Paving Equipment
- ☐ 08 Survey and Site Prep
- ☐ 09 Compressors, Generators and Pumps
- ☐ 10 Financing and Accounting Services
- ☐ 11 Software and Technology
- ☐ 12 Insurance and Bonding
- ☐ 13 Training and Education
- ☐ 14 Telecommunications
- ☐ 16 Greases, Lubricants and Filters
- ☐ 17 Jobsite Lighting
- ☐ 18 Building Supplies
- ☐ 19 Rental Equipment
- ☐ 21 GPS Equipment and Security

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Annual Value of Construction Put in Place

August 2022/2023/2024 Annual Rate Comparison

This chart compares the two previous years' total value of construction put in place to an annual forecast based on August 2024 figures. (Millions of dollars. Totals may not add up perfectly due to rounding.)

	2022	2023	2024
Total Private Construction	1,425,963	1,551,822	1,642,165
Residential	912,913	879,896	899,939
Nonresidential	513,051	671,927	742,225
Total Public Construction	355,314	431,648	489,772
Residential	9,080	9,907	11,490
Nonresidential	346,234	421,741	478,282
TOTAL Construction	1,781,278	1,983,470	2,131,936

*Seasonally Adjusted Annual Rates. Source: U.S. Census Bureau

\$2,131,936

AUGUST 2024 TOTAL ANNUAL VALUE OF
CONSTRUCTION PUT IN PLACE

“Unfortunately, even the impending interest rate cuts didn’t move the needle on project inquiries or new design contracts at architecture firms,” said Kermit Baker, Ph.D., AIA chief economist.

“Hopefully, once the trajectory of further cuts gets clarified, delayed projects will restart, and new projects will gather momentum.”

AIA Architectural Billings Index (ABI)

National			*Regional - Billings				*Sectors - Billings			
Month	Billings	Inquiries	Northeast	Midwest	South	West	Multifamily Residential	Commercial/Industrial	Institutional	Mixed
Mar-24	43.6	54.9	46.0	45.2	45.3	47.6	44.2	42.9	49.9	48.3
Apr-24	48.3	54.8	45.9	44.2	44.7	47.8	45.6	47.4	46.1	43.9
May-24	42.4	52.1	47.7	41.7	46.0	46.3	47.3	48.2	43.2	42.8
Jun-24	46.4	51.6	52.2	40.9	43.9	43.1	45.1	42.0	44.3	46.9
Jul-24	48.2	52.4	50.0	47.6	46.3	46.0	45.4	45.0	49.1	47.7
Aug-24	45.7	52.4	48.2	46.6	46.8	45.7	44.0	46.6	47.4	48.6

For more information on the index or to subscribe to the complete historical data going back to 1995 for your internal analysis, please contact economics@aia.org. The ABI presents monthly construction billings data, using a base score of 50. A score of more than 50 indicates a growth from the previous month, and a score of less than 50 indicates a contraction from the previous month. A score of 50 indicates no change. Source: The American Institute of Architects (AIA), Architecture Billings Index (ABI).

*Regional and Sectoral indexes are three-month moving averages, due to small sample size. All data is seasonally adjusted.
**Every January, the AIA research department updates the seasonal factors used to calculate the ABI, resulting in a revision of recent ABI values.



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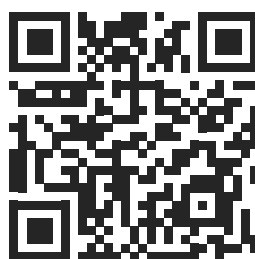


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