THE LEADING BUSINESS MAGAZINE FOR CONTRACTORS

SEPTEMBER 2024 | CONSTRUCTIONBUSINESSOWNER.COM

CONSTRUCTION BUSINESS OWNER®



GROWING GREENER BRICK BY BRICK

REAL-LIFE LEGOS CAN MAKE CONSTRUCTION MORE SUSTAINABLE

IN THE OFFICE
Why embracing recovery creates a healthier workforce

IN THE FIELD
Your handbook for easy wheel loader selection

Hino 40

1984-2024

HINO TRUCKS
A Toyota Group Company



FORTY YEARS, ONE FOCUS!

PLEASE JOIN US IN CELEBRATING OUR 40TH ANNIVERSARY AND WATCH AS WE CONTINUE TO WORK TOWARD OUR NEXT 40!

Forty years ago, we arrived in America with a laser focus on one thing, and one thing only… To be the best medium-duty truck for the hardworking men and women in America. We stayed focused. Grew faster than anyone. Put more trucks on the road, doing hard work for hardworking people. Eventually becoming the fastest growing medium-duty truck company in the U.S. We've been doing that for 40 years and slowing down is not an option.

HINO.COM


YOUR TO-DO LIST CAN BE A LOT.
WE MAKE ONE THING EASY.
SEE IF YOU CAN SAVE WITH PROGRESSIVE
EDDIE'S
EXPERT ELECTRICS
Progressive Casualty Ins. Co. Coverage provided and serviced by affiliated and third-party insurers.
As a small business owner, you can't escape your to-do list.
That's why Progressive makes it easy to save with a commercial auto quote, so you can take on all your other to-dos. Get a quote in as little as 7 minutes at ProgressiveCommercial.com
PROGRESSIVE®
COMMERCIAL

FROM THE EDITOR

MEGAN BEAM



CBO Editor
Megan Beam at Tinker Creek

One thing about me: I'm going to hug a tree.

At about 12, I discovered Annie Dillard, seeing that she'd won a Pulitzer at 27 for her work, "Pilgrim at Tinker Creek." I will never forget the first time I read her motif on the "tree with the lights in it," and how even now, every time I see the shimmered movement of sun and shadow, be it in the forest or in the parking lot, I think of how open and expansive her tree with lights was in my chest.

Last fall, on a whim, I drove to Roanoke, Virginia, feeling the urge to stand in Tinker Creek. I could not tell you why the impulse hit when it did, but I knew it was important to follow. Some experiences don't need to be explained to profoundly change how we approach the world. And as Dillard remarked in "Pilgrim" about so many things she undoubtedly still witnesses in nature: "I'm still spending the power."

So, you can imagine that my investment in content around sustainability or the green revolution in our (and any) industry runs deep. Even in the early content collection for this issue, I was envisioning what kind of contributions would not only inform but inspire you with some sense of the expanded perspective that I felt reading and then standing in Tinker Creek — the hope that more is possible than is wrong.

However complex the approaches, environmental stewardship is a conversation that must continue to be had, perhaps, for the duration of industrialism. My favorite parts of witnessing the shifts in the construction industry are not only the widespread acceptance of the sustainability conversation, but the wild innovation that comes from some of the industry's most cutting-edge leaders (some of whom we've been able to highlight here). One theme remains consistent: We have only just begun to ideate hopeful solutions to the environmental problems created by mass industrialism.

I could wax poetic about leaders of sustainability movements over history — like George Washington Carver's regenerative agriculture, William Colby's and John Muir's work founding the Sierra Club and Hattie Carthan's community tree preservations. Instead, I'll leave you with a quote from an interview with Rachel Carson after the release and continued impact of her pivotal work, circa 1962, "Silent Spring":

"Man's attitude toward nature is today critically important simply because we have now acquired a fateful power to alter and destroy nature. But man is a part of nature, and his war against nature is inevitably a war against himself? [We are] challenged as mankind has never been challenged before to prove our maturity and our mastery, not of nature, but of ourselves."

Thanks for continuing to invest in the industry's maturity and growth.

And as always, thanks for reading,



CONSTRUCTION BUSINESS OWNER

EDITORIAL
Editor
Megan Beam
mbeam@cahabamedia.com · 205-314-8264
Managing Editor
Carmen Capoccia
ccapoccia@cahabamedia.com · 205-961-3391

CREATIVE SERVICES
Art Director
Andi Shepard
Digital Production Designer
Matt Hodges
Web Developer
Greg Caudle

PRODUCTION
Client Services Coordinator
Sonya Crocker
scrocker@cahabamedia.com

CIRCULATION
Subscription Management
constructionbusinessowner@omeda.com
800-256-2785

ADVERTISING
Senior Account Executive
Van Imbragulio
vimbragulio@cahabamedia.com · 205-314-8263
Account Executive
Andrew Arnold
aarnold@cahabamedia.com · 205-961-3384

CAHABA MEDIA GROUP

Publisher
Matthew G. Conroy
VP of Sales
Greg Meineke
VP of Finance
Brandon Whittemore
Director of Content
Elizabeth Manning
Director of Operations
Laurie Tisdale
Director of Sales
Stacy Marshall
Director of Events
Bill Mattes

PO Box 530067, Birmingham, AL 35253

BPA WORLDWIDE MEMBER

EDITORIAL ADVISORY BOARD

Richard D. Alaniz
Partner - Alaniz Law & Associates PLLC

Dr. Scott Arias
Professor – Eastern Kentucky University
CEO/Chairman of the Board - ACE Consulting Company

Ben Ashburn
Senior Trainer - Procore Technologies

Brian Barksdale, CPA
Partner - Carr, Riggs & Ingram LLC

Cal Beyer
Senior Director of SAFE Workplaces - SAFE Projects

Steven Davis
Senior Vice President, Director of Construction - McGriff

Peter Hilger, AIA
Faculty Director, Curriculum and Internship Adviser, FM Program Coordinator Construction and Facility Management Program - University of Minnesota

Crawford E. McInnis
Executive Vice President - Epic Brokers

Joseph Natarelli, CPA
National Construction Services Leader - Marcum LLP

Gregg M. Schoppman
Partner - FMI Corporation

Construction Business Owner (ISSN 1551-3246) is published monthly by Cahaba Media Group, PO Box 530067, Birmingham, AL 35253. Periodicals postage paid at Birmingham, AL and additional mailing offices. Subscriptions: Free of charge to qualified construction business owners. Publisher reserves the right to determine qualifications. Annual subscriptions: U.S. and possessions $48, all other countries $125 U.S. funds (via air mail). Single copies: U.S. and possessions $5, all other countries $15 U.S. funds (via air mail). Call 800-256-2785 inside or outside the U.S. Postmaster: Send changes of address and form 3579 to Construction Business Owner, PO Box 271, Lincolnshire, IL 60069-9835.

©2024 Cahaba Media Group, Inc. No part of this publication may be reproduced without the written consent of the publisher. The publisher does not warrant, either expressly or by implication, the factual accuracy of any advertisements, articles or description herein, nor does the publisher warrant the validity of any views or opinions offered by the authors of said articles, descriptions or any advertisements. Submissions: We welcome submissions. Unless otherwise negotiated in writing, by the editors, by sending us your submission, you grant Cahaba Media Group, Inc. permission by an irrevocable license to edit, reproduce, distribute, publish and adapt your submission in any medium on multiple occasions. You are free to publish your submission yourself or to allow others to republish your submission. Submissions will not be returned.

VOLUME 21 ISSUE 9



A MORE SUSTAINABLE FUTURE IS CURRENTLY **UNDER CONSTRUCTION.**

Your next project could be an environmental landmark, especially if you use blended cement. Decades of research, testing, and use by cement manufacturers, ready mix producers, and builders prove that blended cement performs as well as portland cement and **can reduce a project's carbon footprint by up to 10%**. That's a win on the jobsite, and a win for the environment.

The industry is transitioning to blended cements, and contractors can turn to PCA as a resource:
www.greenercement.com

PCA
America's Cement Manufacturers

Photo Credit: Volvo Construction Equipment North America





FEATURE SERIES

GREEN CONSTRUCTION

24 Electric Equipment Is Proving Its Power
Volvo's VP of sustainability & productivity outlines the perks of alternative fuel options

26 Growing Greener Brick by Brick
Renewable composite blocks that stack like real-life Lego bricks can make construction more sustainable

28 Will Technology Lead Construction to a Greener Future?
Cutting carbon, costs & commutes with digital solutions

30 It's Electrifying! How Construction Fleets Are Advancing Sustainability
Inside global equipment trends & environmental regulations influencing the construction sector

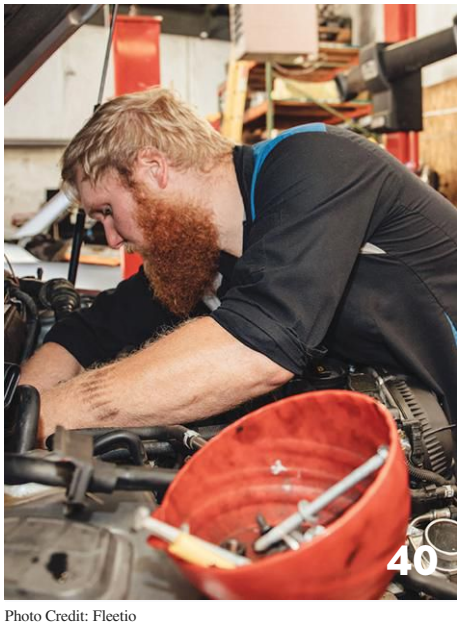


Photo Credit: Fleetio

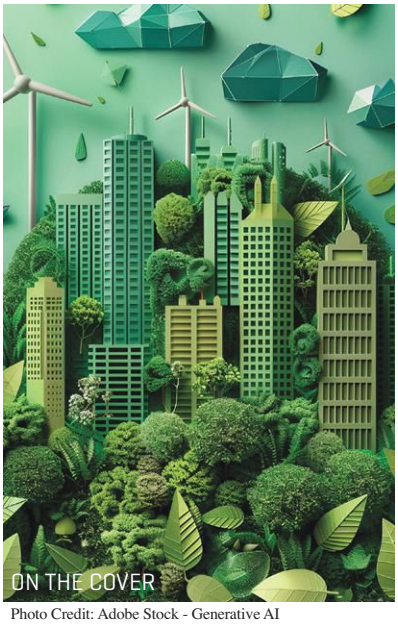


Photo Credit: Adobe Stock - Generative AI

IN THE OFFICE

The Business Council

8 Gregg M. Schoppman
Why leadership needs to refocus on the right measures of productivity & success

10 Marcum Accountants & Advisors
Job costing helps businesses read their vital signs & stay healthy

12 Guest Columnist
Carbon emission concerns are rapidly changing delivery requirements for construction

14 Health & Wellness
Embracing recovery creates a healthier workforce

16 Contracts & Bidding
How to master construction contracts

19 Workforce Management
Solidifying your hiring & retention strategies

21 Business Strategy
The importance of manufacturer certifications for contractors

IN THE FIELD

32 Equipment Matters
Your guide to easy wheel loader selection

35 Jobsite Safety
Reducing the risk of suspension trauma

37 Project Management
How AI-driven excavation leads to faster, safer infrastructure projects

40 Fleet Management
3 pros & cons of managing fleet maintenance in-house

42 Tech Support
Software technology insights from heavy construction IT pros

IN EVERY ISSUE

2 From the Editor

6 News

44 Products

48 Stats

The Contractor's Choice for Construction payroll

payroll4construction

Certified Payroll | Multi-State Payroll | Construction Reporting



See Why Thousands of Contractors Use Payroll4Construction!

payroll4construction.com | 866-562-0195

Payroll4Construction is a member of the Foundation Software product family along with: FOUNDATION®, McCormick, HQSuite, The EDGE® and WorkMax.

Owens Corning Joins Asphalt Pavement Industry's Net Zero Initiative

The National Asphalt Pavement Association (NAPA) added Owens Corning to The Road Forward, an industrywide vision for sustainable communities and commerce. This initiative helps fund ongoing efforts to engage, educate and empower the U.S. asphalt community, driving forward the milestone of achieving net-zero carbon emission asphalt pavements by 2050. With more than 25,000 employees in 31 countries, the Fortune 500 company is making progress toward its sustainability goals. In its 2023 sustainability report, Owens Corning reported achieving a 28% reduction in Scope 1 and 2 emissions from a 2018 baseline, bringing it closer to its goal of a 50% reduction in absolute Scopes 1 and 2 market-based greenhouse gas emissions by 2030. Headquartered in Toledo, Ohio, Owens Corning joined NAPA as an associate member in 2022. Owens Corning is also a member of the Asphalt Roofing Manufacturers Association (ARMA). The company aims to recycle 2 million tons of shingles annually by 2030, in part by leveraging increased acceptance of balance mix design (BMD) to incorporate more recycled asphalt shingles (RAS) in paving mixtures. Additionally, through collaboration with Earth911, the company has been encouraging contractors to pledge to recycle shingles since 2009. The Road Forward brings together the entire U.S. asphalt community to conduct research, implementation and ongoing education. The Road Forward participants are NAPA members that actively support this work through financial contributions, leadership, and expertise. Visit asphaltpavement.org.

Midwest Companies Announces New 10-Acre Facility

Midwest Companies, an Illinois-based sustainable waste management organization, built a new construction and demolition recycling facility in Hampshire, Illinois. This new facility expands Midwest Material Management's (MMM) existing nonhazardous industrial waste recycling and disposal services and allows the organization to meet growing demand. The new facility includes 26,000 square feet dedicated to sorting waste and separating recyclables from nonrecyclable material. Construction and railroad companies can deposit waste and obtain industrial dumpsters or opt for MMM's pickup and collection services. MMM's new location is LEED-certified and has a history of sustainable leadership across its family of brands. The new MMM center in Hampshire will accept railroad ties and other wood waste, like other Midwest Company facilities, and give it new life as TIEROC, a proprietary aggregate substitute that's in high demand for landfill operations. As a tribute to its sustainable operations, the Hampshire facility will be enclosed by a custom fence made of retired railroad ties. Visit mwcompanies.com.

Infotech Announces Acquisition by Diversis Capital

Infotech, a provider of infrastructure construction software solutions, was acquired by Diversis Capital Management LP, a Los Angeles-based private equity firm focused on investing in software and technology-enabled services organizations. Infotech was founded in 1977 and has served the infrastructure construction industry as a private company for nearly 50 years. With increased federal funding for infrastructure, technology providers are making significant investments to serve the growing demands for digital delivery. With Diversis, Infotech gains access to resources and expertise to accelerate product innovation that will benefit the tens of thousands of construction professionals who use AASHTOWare Project and Infotech's comprehensive suite of bidding and construction management tools. Infotech will continue to be the official contractor for AASHTOWare Project and recently signed its 40th consecutive annual contract with AASHTO. Additionally, Will McClave will remain as Infotech CEO. Visit infotechinc.com and diversis.com.

Alison Gorham Promoted to VP at McShane Construction Company



Alison Gorham

McShane Construction Company announced that Alison Gorham was promoted to vice president (VP) of the firm's Wisconsin regional office in Madison. Gorham joined McShane in 2012 as a project engineer and was subsequently promoted to project manager. In 2018, she established McShane's Madison office and was promoted to director of Wisconsin operations. As VP, Gorham will continue to oversee McShane's projects and business development efforts in Wisconsin and will focus on expanding the firm's presence in the region. Gorham is a graduate of Marquette University where she earned a Bachelor of Science in civil engineering. Established in 1984, McShane Construction is a national, award-winning general contractor that provides design-build and build-to-suit construction services for the multifamily, industrial, commercial, health and fitness, and institutional markets. A female-owned and led business, McShane is headquartered in Rosemont, Illinois, with regional offices in Madison; Auburn, Alabama; Irvine, California; Nashville, Tennessee; and Phoenix, Arizona. Visit mcshaneconstruction.com.

Stone Martin Builders Launches New Commercial Construction Division

Stone Martin Builders (SMB), a homebuilder across Alabama and the region, announced a new division dedicated to providing commercial construction services. The builder will launch Stone Martin Commercial to meet the needs of developers seeking to build master-plan communities and small-scale construction projects that blend into the local community. SMB added Drew Brown as VP of commercial

construction to lead the new division. In this role, Brown will leverage his extensive background as an industry leader and commercial builder whose strategic vision drives excellence and innovation. John Manasco, chief operating officer, and SMB's leadership team credit the company's strong corporate reputation and dedication of employees for its ability to diversify into commercial building. Brown's leadership style, characterized by a "get-it-done" mindset and a dedication to servant leadership, will be instrumental in guiding the team toward success. Under Brown's leadership, Stone Martin Builders executives are optimistic about the prospects of incorporating advanced technologies into their commercial projects while emphasizing the importance of simplicity and efficiency in project execution. By leveraging SMB's existing strengths, including a solid reputation, established subcontractor base and rigorous quality control processes, Brown aims to distinguish the company from competitors. Visit stonemartinbuilders.com.

Judy Saxton & Vernita Williams Join Tarlton Team



Judy Saxton



Vernita Williams

Judy Saxton and Vernita Williams joined Tarlton, St. Louis' largest women-owned general contracting and construction management firm, as project coordinators. In this role, each is assigned to Tarlton project teams, working closely with those teams and other internal colleagues, along with clients, design teams, subcontractors and suppliers. Saxton brings wide-ranging construction industry experience to her role. Since 1986, she has served in a variety of capacities including VP senior estimator at a large sheet metal corporation, as well as project accountant, senior project coordinator and project assistant at local and regional general contracting firms. Williams, a St. Louis native, attended Harris-Stowe State University and built her professional career in accounting. She has overseen large multimillion-dollar construction projects at general contracting firms throughout the state of Florida. "Judy and Vernita are highly motivated, and each brings a depth of industry experience to Tarlton," said Anthony Eftimoff, vice president of finance. "Their technical and analytical skills, attention to detail, communication and leadership support our project teams and improve the overall experience for Tarlton's clients and building partners." Visit tarltoncorp.com.

Dozer Day Program Acquired by NUCA

The National Utility Contractors Association (NUCA) and the Nutter Family Foundation announced a new partnership to promote Dozer Day, the workforce development program that has introduced thousands of young adults to the nation's utility construction industry and a meaningful and productive future for themselves. Under the agreement, NUCA has purchased the trademark and naming rights to "Dozer Day" and now owns the Dozer Day name and all subsidiary slogans associated with the event, such as "Where Kids Drive." NUCA has also assumed the responsibility for the several existing Dozer Day events planned by NUCA chapters and associated charitable entities. Over the next several years, NUCA will work with its chapter network and other organizations and businesses to grow the events in untapped communities and regions, delivering this educational opportunity to thousands more. Dozer Day is an event first created by the Clark County, Washington, Parks Foundation in 2005. The Nutter Corporation, a large Northwest excavation construction company, was a strong supporter of Dozer Day from the beginning and took over the event in 2008 as a strategic partner through their family foundation. Renee Nutter served as Dozer Day's first director in 2008. Since then, the Nutter Family Foundation has partnered with NUCA of Washington, NUCA of Eastern Washington & North Idaho, NUCA of Middle Tennessee, NUCA of Nebraska and NUCA of the Greater Kansas City Region, among other industry organizations, to support and promote Dozer Day in their respective areas. Visit dozerday.org.

Merchants Fleet Hires Brian Sari as Regional Sales Manager for Truck & Van Rental Division

Merchants Fleet, a provider of fleet solutions, announced the hire of Brian Sari as regional sales manager for the company's growing truck and van rental division. Merchants is expanding its truck and van rental initiative to meet the needs of clients throughout North America who continue to struggle with supply chain complexities. Sari's extensive industry experience includes multiple managerial roles at Ryder System Inc., where he focused on building and strengthening client relationships. Sari holds a bachelor's degree from Kent State University and currently resides in Massillon, Ohio.



Brian Sari

For more than 60 years, Merchants has provided the fleet industry with flexible funding, vehicle remarketing and fleet acquisition options, plus complete end-to-end electrification solutions. By offering both long- and short-term fleet services, Merchants is positioned to provide clients with flexibility, services and support essential for keeping businesses ahead of the curve. Visit merchantsfleet.com.

NEED MORE NEWS?
constructionbusinessowner.com/news

Winning the Game, One Single at a Time

Leadership needs to refocus on the right measures of productivity & success



GREGG M. SCHOPPMAN is a partner at FMI Corporation, management consultants and investment bankers for the construction industry. Schoppman specializes in the areas of productivity and project management. He also leads FMI's project management consulting practice. Prior to joining FMI, Schoppman served as a senior project manager for a general contracting firm in central Florida. He has completed complex construction projects in the medical, pharmaceutical, office, heavy civil, industrial, manufacturing and multifamily markets. He holds a bachelor's degree and master's degree in civil engineering, as well as a Master of Business Administration. Schoppman has expertise in numerous contract delivery methods, as well as knowledge of many geographical markets. Contact Schoppman by email at gregg.schoppman@fmicorp.com. Visit fmicorp.com.

Tony Gwynn, Hall of Fame right-fielder from the San Diego Padres, was the epitome of a superior ball player. According to the Baseball Hall of Fame, Gwynn's lifetime batting average was .338, arguably one of the best in major league history. Playing for 20 seasons with San Diego, Gwynn did not disappoint in the post-season either, where he batted .371 in his two World Series games. Here is where it gets interesting: In his career, Gwynn amassed a meager 135 home runs. He led the majors in total hits in six of his 20 seasons. The vast majority of his hitting prowess (3,006 total hits) came in the form of singles (2,378), doubles (543) and triples (85). In a time when the long ball is celebrated and revered, Gwynn proved that success can be had, one single at a time.

Now consider a construction organization. It certainly feels good to knock it out of the park with a huge project. Maybe a team has an amazing buyout, or maybe a team doubles its productivity. Or maybe the weather and permitting gods provide the grand slam, creating the full sweep on the project profitability hot stove. In reality, how often is there a confluence of these amazing statistics? Do we look for the "unicorn scenario" only to feel the "kick of the mule" on a project? Or is there something more realistic at play? For instance, are we looking for the 72-home-run season on every project, when in reality our teams are getting on base with singles and doubles, winning or playing hard in the trenches? The moral of the story is that incremental gains are more likely and should be celebrated as major victories.

Celebrating the Singles

To be clear, this is not the same thing as a participation trophy. Gwynn played 2,440 games, but he did much more than just showing up every day.

What gets recognized in your organization? Ask yourself, when was the last time you as the leader in the firm gave an "atta boy/atta girl" for the small things? Most people will say they don't do this job for the compliments, but just consider the impact to morale. Firms appear to be stingy with the "great hit" compliment, as if the only way to win internal approval is by hitting the proverbial grand slam with two outs in the bottom of the ninth in Game 7 of the World Series. It may be important to reconsider the benefit of how you catch people doing things correctly on your team.

Incremental Success (or Failure) on a Project

It's just a week. Wins and losses in the construction industry can happen under the most simplistic conditions. Better yet, consider general conditions. Figure 1 is a

General Conditions	Duration (Weeks)	Original Budget (Cost Per Week)	Total Original Budget	One Additional Week
Supervision	26	$1,500	$39,000	$1,500
Project Management (Half Time)	26	$950	$24,700	$950
Cleanup Labor	26	$750	$19,500	$750
Trailer/Site Office	26	$125	$3,250	$125
Hoist	26	$1,250	$32,500	$125
Storage Bin (Sea Can/ Cargo)	26	$60	$1,560	$60
Temporary Sanitary (Portable Restroom)	26	$100	$2,600	$100
Temporary Power	26	$75	$1,950	$75
Site Security	26	$150	$3,900	$76
Safety	26	$100	$2,600	$77
Temporary Protection	26	$75	$1,950	$78
Dumpster	26	$90	$2,340	$90
		Total Monthly Costs	$22,641.67	
		Total General Conditions (for a six-month project)	$158,491.67	**$4,006**

Figure 1. A six-month project's general conditions

summary of a six-month project's general conditions.

It should be noted that the costs are simply to show a level of magnitude within a firm. Additionally, items like bonding and insurance were left out, but would need to be considered when looking at a firm's book of business. One extra week of general conditions is approximately $4,000. That's certainly a small number in the grand scheme of things, but what if this organization had 30 projects in a year that each went over one week? Now, the firm has a cost impact of $120,000 in a single year, which also does not reflect any opportunity cost associated with improper utilization of firm resources.

While pundits will point out that not every project will have every cost (i.e., hoists, site security, etc.) on that last week, it should be noted that one of the greatest costs — supervision and labor — also has the greatest impact on gains and losses in the general conditions category. Once again, the gains relative to just general conditions could be considered a multitude of singles if a firm effectively manages jobsite overhead better.

Incremental Firmwide Gains

While every firm has general conditions, labor-intensive firms benefit from the direct labor expenditures and enhanced productivity. Call it being a switch hitter, but trade contractors have the ability to maximize their profitability just by being slightly better than their peers. Consider the example in Figure 2 below.

Income Statement			% of Revenue	10% Improvement in Labor	% of Revenue
Revenues		$50,000,000	100%	$50,000,000	100%
Direct Costs					
	Labor	$20,000,000	40%	**$18,000,000**	36%
	Materials	$20,000,000	40%	$20,000,000	40%
	Equipment	$1,750,000	4%	$1,750,000	4%
	Subcontractors	$1,250,000	3%	$1,250,000	3%
	Total Direct Costs	**$43,000,000**	86%	**$41,000,000**	82%
Gross Profit		$7,000,000	14%	**$9,000,000**	18%
Overhead		$5,000,000	10%	$5,000,000	10%
Net Profit		**$2,000,000**	4%	**$4,000,000**	8%

Figure 2. Gains in productivity

For this labor-intensive contractor, a minuscule 10% improvement in labor productivity, achieved through better planning and utilization, has the ability to improve the bottom line by 100%! In an industry where the net margins for most firms hover in the single digits, improving just slightly can create a massive windfall.

Consider the same analogy using our baseball star. A .250 hitter in the majors probably makes the league minimum. While $500,000 to $750,000 per year is nothing to scoff at, a .300 hitter in baseball is probably securing contractors upwards of $250 million. To be clear, this parallels our construction example quite nicely in that the difference in hitting capability is one extra hit a week for our .300 batter (i.e. 50 hits/1,000 at-bats, or 1/20, or approximately one hit a week in the majors).

It should be noted that there is also a "negative" statistic that doesn't get mentioned. Sure, Gwynn was a powerhouse in the batter's box. However, he also got out close to 70% of the time. Gywnn's .338 average could easily be dwarfed by his 66% "out ratio."

Estimators know this ratio well. While pundits will argue that "win ratio" is probably not the best estimator metric, firms often talk about securing 10% to 15% of their bids. The corollary is somewhat bleak (90% loss ratio), so it is easy to see how important wording is to this conversation. More importantly, all firms needs to wrap their arms around celebrating the singles and doubles and identify opportunities for incremental success within the firm.

In the meantime, we can all commit to spring training in Florida. ▲

Job Costing Helps Businesses Read Their Vital Signs & Improve Performance

Why regular benchmarking keeps your company healthy



KYLE HARTRANFT, CPA, CCIFP, is a director in Marcum LLP's Assurance Services division and a member of the firm's Mid-Atlantic Construction Industry Group, providing clients with compliance, review and audit services. Hartranft understands the unique significance of financial statements and applies his knowledge and experience to best position construction industry clients to secure the project financing on which their business depends. He can be contacted at kyle.hartranft@marcumllp.com. Visit marcumllp.com/construction.

In the construction industry, too many businesses suffer financially for one simple reason: They are not optimizing their job costing analyses. At its heart, job costing is all about maximizing the value you get from your resources. To know where to focus on improvement, you have to know where and under what circumstances you can expect high performance and which projects are underperforming.

The poking and prodding of an annual physical may not be everyone's idea of a good time, but its importance is without question. Without regular benchmarking you can't maximize your health and longevity — and that's to say nothing of the impact regular checkups can have on insurance and health care expenses. Businesses are extensions of their owners, and the same principle of care applies: To set realistic goals and make tangible improvements, you need accurate data that informs your actions.

When it comes to their financial health, many construction companies are forgoing diagnostics or not performing them thoroughly. As a result, these businesses lack the analysis necessary to accomplish transformational change.

In the same way blood pressure readings reveal the need for behavioral modifications or prescriptions, the close analysis of business data can help you see which types of projects contribute to growth and which may not serve your interests or could even hurt your financials.

The No. 1 Barrier to Job Costing

In industries with an old-school mentality, some business owners are reluctant to embrace technology. I see clients who tend to follow their guts rather than engage in formal analysis. The animating idea among these owners seems to be the old saying, "If it ain't broke, don't fix it." But that's a faulty premise because it doesn't recognize the potential for even efficient businesses to improve.

You wouldn't want your doctor to perform critical services based on a hunch or their past experiences alone. When there are high stakes, it's important to back up any assumptions with empirical evidence. It's time that mentality becomes business as usual in finance departments throughout the construction industry.

To that end, there may be no better investment of time and energy than accurate job costing and job-by-job performance analyses. With a thorough and reliable job costing methodology, businesses can make informed decisions and identify critical trends.

Is it wiser to pursue big, labor-intensive contracts or focus on specialized renovations? Backed by hard data collating to your past and present work-in-progress schedule, it's no longer a philosophical question. Instead, trust that your numbers can lead you to the right call.

Top 3 Job Costing Mistakes & Oversights

Not all job costing methods are created

Photo Credit: PaeGAG - stock.adobe.com



equal. For these insights to be valuable, data must be collected accurately and then analyzed with diligence and creativity.

Effective job costing takes a complex, sprawling project and assesses it piece by piece to get an idea of where money is being spent at every step and how valuable each investment is. To improve your job costing methods, avoid the following common mistakes.

First Mistake: Lax Standards

The most common issue is lazy or inaccurate costing. Just because a job is 10% of a firm's total activity does not mean it can simply be reported as 10% of a firm's indirect and direct costs. Job costing is most effective when it is highly detailed. And that goes for every cost. It's common to apply uniform overhead fees on every project, but that may result in an inaccurate picture, given that certain projects require more back-office attention than others. Remember, job costing is more valuable when it reflects a high level of detail, so prioritize accuracy as much as possible.

Shortcuts are often taken when finance departments are underfunded, understaffed or unsupported by outside specialists who can help them implement best practices. The issue is common, but its ramifications can be huge. It can obscure a business's strengths and weaknesses, and cause it to pursue projects and strategies that may be financially inefficient or even counterproductive.

To illustrate, let's return to the example above. A business completes a job accounting for 10% of its total income. Taking a closer look at the costs associated with that project might reveal that the project actually accounted for 20% of total annual labor expenses. As a result, only allocating 10% of the annual workers' compensation, payroll tax and other labor-related expenses could skew data severely. That insight is critical for the business owners to assess the project's true value. It can make the difference between a business that can anticipate profits and one that sees a large contract and essentially pays for the privilege of working under the mistaken assumption that "bigger is better."

In today's highly competitive labor market, job costing plays an important role in helping businesses scrutinize prospects and determine whether labor-intensive projects help or hurt key metrics like cash flow and profitability.

Second Mistake: Forgoing Useful Technology

The next most common issue is that businesses don't make accurate costing easy. While there is no one-size-fits-all software solution, a number of technologies can improve the accuracy of your data — for example, by streamlining accounting functions or time reporting. These solutions can not only help cut down the overhead on projects by automating some aspects of administration, but they can also improve the reliability of your numbers. Time reporting via mobile apps can help every employee in your organization clock in and out to jobsites from a phone. That can free up managers and ensure you have a complete picture of where and how employees at every level are contributing.

Similar technologies track equipment costs and materials and can even be allocated to projects by square inch or pound. That provides a granular level of detail essential for understanding which projects are profitable and can also be helpful at tax time when depreciation is under discussion.

Third Mistake: Limiting Analytics

The third common costing issue is a lack of creative scrutiny. Organizations can have all the data in the world, but if they're not analyzing it sufficiently, then potentially useful insights will be missed. Scrutinize your work-in-progress schedules and associated costs from several angles. Look at costs in relation to contract size, geography and client type to identify trends. If your city-based labor force is commuting to suburban projects and often showing up late or working inefficiently, you need to know. That can help you find workable solutions, like diversifying the geography of your labor pool or pursuing jobs that are a better fit for your existing resources and capabilities.

Use Job Costing to Play to Your Strengths

Think of it this way: a few hundred years ago, we might have taken a medical concern to a shaman who would use their intuition or a soothsaying device to diagnose what ails us. Today, we are fortunate to see doctors backed by the most advanced diagnostics the world has ever seen. If your business is overly reliant on primal intuition, it may be time to step out of the past and put the advantages of our modern world to work for your business. ▲

Continuing the Journey to Net Zero

Carbon emission concerns are rapidly changing delivery requirements for construction



As president and CEO of Strategic Partnerships Inc., MARY SCOTT NABERS has decades of experience working in the public-private sector. A well-recognized expert in the P3 and government contracting fields, she is often asked to share her industry insights with top publications and through professional speaking engagements. Visit spartnerships.com.

Here's a fact that may be surprising — it surely was to me. The construction or renovation of buildings accounts for approximately 39% of the total global energy-related carbon emissions each year.

Embodied carbon contributes another 11%. That category refers to the total greenhouse gas emissions generated over the life cycle of a building, road or any type of infrastructure. Emissions that are measured encompass everything from the production and transportation of materials to their installation and the structure's eventual decommissioning.

Construction guidelines are evolving, and contractors are increasingly required to use concrete, steel, glass and asphalt materials with lower carbon footprints than the industry average. The federal government continues to create programs that either incentivize or mandate the use of lower carbon.

Several upcoming projects described below are part of a pilot project launched by the federal General Services Administration (GSA). The projects focus on four carbon-intensive construction materials: asphalt, concrete, glass and steel.

Local jurisdictions are also increasingly launching initiatives to implement low-embodied carbon construction programs. State and local governments are also supporting such projects with funding.

The GSA program is supporting the expansion and modernization of the Porthill Land Port of Entry in Idaho. The $55 million project is a priority because, after 55 years, the facility no longer meets the federal government's operational requirements. The proposed enhancements will expand the facility's footprint, boost inspection capabilities, reorganize traffic flow through improved lane systems, enhance lighting, install canopy systems and ensure the provision of a secure detention area. The work will also strengthen the port's operational efficiency and capacity while prioritizing energy and water efficiency by incorporating renewable options and fossil fuel-free options. The final environmental assessment was completed in June 2024, and the design phase will begin immediately, but a 2026 construction date is planned.

The Kenneth G. Ward Land Port of Entry in Lynden, Washington, a critical border crossing for travel and trade between the U.S. and Canada, experiences capacity constraints, significant congestion and long wait times. The land port will be expanded and modernized to accommodate increased traffic, upgrade its inspection capabilities and streamline cross-border trade and travel processes. The renovation project, when completed, will reduce the total carbon footprint significantly. Additionally, the project will incorporate innovative, environmentally friendly technologies, referred to as "Green Proving Ground technology," to leverage sustainability objectives. The cost estimate is placed at between $90 million and $100 million. Design work will begin in

Photo Credit: Photo credit: Marcin Jozwiak/Unsplash



2025, and construction is slated for 2026.

The Mike Mansfield Federal Building and United States Courthouse in Butte, Montana, will get a seismic upgrade and be modernized. The facility's exterior is deteriorating, and its old building systems must be replaced. The project will also incorporate sustainable components that include energy-efficient technologies and the use of recycled materials. When the work is completed, the building should achieve a 40% reduction in energy usage and be more environmentally sustainable. Key features will include green roofs, rainwater harvesting systems and permeable paving, which will contribute to enhanced stormwater management and biodiversity. Construction on the $25 million to $35 million effort is scheduled to begin in 2026.

The Howard Metzenbaum federal courthouse in Cleveland received federal funding for a renovation project using low embodied carbon materials. The mandate of this $30 million to $35 million project is to lower carbon emissions during construction using clean construction materials. The renovation will include replacing concrete slabs and restoring structural steel support. It will also involve replacing waterproofing systems and repairing water-damaged walls. The design-build project is expected to be posted in late 2024.

The city of Topeka, Kansas, received funding to renovate the Frank Carlson Federal Building and Courthouse. The $30 million to $40 million project will mandate clean construction guidelines and low embodied carbon materials. The renovation will replace the original facade openings to meet blast requirements, install traffic bollards for security and rework sidewalks and parking lots. Reducing energy consumption and lowering future maintenance costs are prime objectives. Construction is slated for 2025.

A $79 million award from the federal government will support the construction of an all-electric facility to house the Food and Drug Administration laboratory in Lakewood, Colorado. The objective will be to deliver a net-zero facility that releases no new emissions. The facility will be built with a combination of steel and concrete to offset energy usage, and a new laboratory will incorporate solar panels and other clean energy options to reduce carbon dioxide emissions. It will be constructed with glass that introduces sunlight to boost thermal insulation and runaround loops, and ground-source heat pumps will be installed to recapture energy as it leaves the building and recycle it. Solicitations for the building's construction will be issued in 2025.

The Amherst School District in Massachusetts will benefit from $97.5 million for the construction of a new energy-efficient elementary school building. This funding comes from the Massachusetts School Building Authority and the city's taxpayers. The new facility will replace the district's two aging elementary schools. A three-story, all-electric building capable of housing 575 consolidated students will be equipped with ground-source heat pumps and photovoltaic panels for clean energy sources. The project will also address restoration and drainage needs in the adjacent Fort River community fields and demolish the two existing elementary schools. The project is currently in its design phase, and construction bids are expected this summer.

A $33 million upgrade is scheduled for the Denver Federal Center in Jefferson County, Colorado. It will involve work to upgrade the space for 26 agencies. The effort will focus on enhancing safety, drainage and accessibility. The improvements will include using sustainable, low-carbon materials to replace vehicle and pedestrian bridges and refurbishing parking lots, curbs and roadways. The project also calls for adding conduit infrastructure for electric vehicle charging stations. The modernization effort will also significantly lower carbon emissions. A construction launch is anticipated in 2025.

Construction projects will be different in the future. To remain competitive, contractors are advised to prepare for them now. ▲

Why Embracing Recovery Creates a Healthier Workforce

Promoting wellness in construction starts at the top

BY CAL BEYER

In the fast-paced world of construction, prioritizing worker wellness is more crucial than ever. The health of construction employees is directly tied to productivity, job satisfaction and overall business success. One effective way to enhance worker wellness is by promoting recovery from substance use disorders (SUDs) and reducing the associated stigma. Here's how we can make a difference in the construction industry.

Understanding Recovery's Role in Construction

Substance use disorders affect millions of people, and the construction industry is not immune. Workers struggling with SUDs often face decreased productivity, higher absenteeism and an increased risk of workplace accidents. The stigma surrounding addiction can prevent individuals from seeking help, exacerbating these issues.

Promoting recovery isn't just compassionate — it's strategic. By creating a supportive environment that encourages recovery, employers can foster a healthier, more engaged workforce, leading to better job performance, reduced health care costs and a positive company culture.

The No Shame Pledge

SAFE (Stop the Addiction Fatality Epidemic) Project is a national nonprofit dedicated to ending the addiction crisis in the U.S. It offers resources and programs to support individuals in recovery, and fight the stigma around SUDs. One of the key initiatives is the No Shame Pledge, a public commitment to end the stigma surrounding addiction and mental health issues.

By taking the No Shame Pledge, individuals and organizations promise to treat those struggling with SUDs with compassion, understanding and respect. The pledge promotes open discussions about addiction, educates people about SUDs and builds a supportive community for those in recovery.

Bringing the No Shame Pledge to Construction Sites

Employers in the construction industry can play a pivotal role in promoting recovery by integrating the principles of the No Shame Pledge into their workplace culture. Here's how to get started:

1. *Education and awareness* — Offer training and resources about SUDs, recovery and mental health through workshops, seminars and informational materials.
2. *Supportive policies* — Implement policies that support recovery, such as flexible work schedules for treatment, confidential counseling services and nonpunitive medical leave.
3. *Open dialogue* — Create a safe space for employees to discuss their struggles without fear of judgment. Encourage leaders to share their own recovery experiences.
4. *Access to resources* — Ensure employees have access to recovery resources like employee assistance programs (EAPs), local support groups and recovery coaches.
5. *Recognizing recovery achievements* — Celebrate recovery milestones to boost morale and encourage others to seek help.

Real Stories From Industry Leaders

Dana Wentzel Piscopo, director of global sales operations at Oracle, openly shared her recovery journey: "I've been sober and in recovery for almost four years. It was affecting my personal and professional life. Quitting drinking was one of the hardest but most fulfilling things I've ever done. Setting boundaries and using tools like meditation and journaling help me stay on track."

Piscopo continued: "A new sense of purpose overwhelmed me. I did not go to meetings; however, I did decide to become a recovery coach. Once certified, I knew in my heart I wasn't the only one suffering in silence at work. I stepped out of my comfort zone and went to senior leadership with my story, wanting to help my colleagues."

Piscopo's recovery impacted her career: "I was promoted twice in 10 months, first to senior manager, then to director. Leading a team is hard, heartwarming, challenging and fulfilling to a degree I did not know possible."

She also emphasized the importance of boundaries: "Boundaries, empathy,

authenticity and vulnerability have all become my best friends not only at work but in my personal life as well. I have a 'toolbox' with tools like meditation, breathing and journaling that help me push forward and bring me back to why I am sober and in recovery."

Piscopo has also challenged misconceptions about recovery in the workplace. "I started two employee resource groups, Reclaim Your Moxie for well-being and mental health, and OAR — Oracle Alliance for Recovery — for sobriety and substance use disorders. We currently have over 400 people within the two groups."

Her advice to employers: "Provide resources and peer support groups within the organization that are safe spaces for people to engage and learn. Leadership with empathy and compassion, and understanding of resources, goes a long way. Have programs that train and teach employees about mental health first aid, addiction awareness and suicide prevention. People will bring their authentic selves to work in this environment, and both they and the company will thrive."

Kara McCaffrey, chief wellness officer at Houck Group Inc., lost her brother to suicide and has since become a mental health advocate. "Losing loved ones drove my passion for mental health awareness," McCaffrey said. "At Houck, we trained staff in Mental Health First Aid (MHFA) and VitalCog, a construction-specific suicide prevention program, and improved our employee assistance program. It's all about creating a supportive environment."

"I lost my brother Gary to suicide in 2005, and others since. For over a decade, I worked for a health care software company, where I learned more about the clinical side of suicide and became an advocate for incorporating mental health and well-being in the workplace," McCaffrey said about her motivation. "We spend most of our waking hours at work, so having workplaces that strive to be stigma-free and supportive can make a difference in keeping people healthy."

McCaffrey's lived experience with suicide has profoundly influenced her career. "Losing those I love in this way has driven my passion and guides me to take on opportunities in the mental health space. I feel it's my purpose in life to raise awareness and break down stigma, educate people on available support, and use my voice and platform to make a difference, hopefully saving lives."

McCaffrey is proud of the initiatives she has helped develop at Houck. "We trained a group in MHFA to be a support system to those in crisis. Research shows individuals trained in MHFA show reduced stigma and increased empathy."

"We improved our employee assistance program and access to virtual behavioral health care, and actively promote these. We share wellness information and resources through various platforms, including toolbox talks, emails, texts, hard mailings, newsletters, onboarding and social media. We have Narcan in case of an emergency, we have participated in a press release with Keystone Contractors Association and Pennsylvania senators, we promote national drug take-back days, and include education in newsletters."

"For Construction Opioid Awareness Week in July 2024, we shared an opioid-related toolbox talk and offered 'Opioids — Warn Me Stickers' for insurance cards. For Construction Suicide Prevention Week in September, we'll be participating in a national stand-down, delivering toolbox talks, and handing out hard hat stickers to promote the 988 Suicide & Crisis Lifeline. We also focus on wellness year-round, not just during specific months."

McCaffrey advises employers: "Start somewhere, even small. Support employees' mental health just as much as their physical health, and make it OK for them to ask for help. Get a group of people together who care about this, and see where it can lead for your company."

Benefits of a Recovery-Supportive Workplace

Promoting recovery in the construction industry offers numerous benefits:

- *Increased productivity* — Employees in recovery are often more focused and motivated.
- *Lower health care costs* — Supporting recovery can reduce overall health care expenses.
- *Better employee retention* — A supportive environment fosters loyalty and reduces turnover.
- *Improved safety* — Employees in recovery are less likely to engage in risky behaviors.
- *Positive culture* — Promoting recovery and reducing stigma creates a more inclusive and positive workplace.

Supporting worker wellness and recovery is key to creating a healthier, more productive workforce. By leveraging resources from SAFE Project and embracing initiatives like the No Shame Pledge, employers can make a significant impact on their employees' lives. Supporting recovery isn't just the right thing to do — it's a smart business move that benefits everyone. Let's work together to create construction sites where recovery is celebrated, and everyone has the opportunity to thrive. ▲

Cal Beyer, CWP, is senior director of SAFE Workplaces for SAFE Project. Beyer is a longtime national advocate for workplace mental health, substance misuse, suicide prevention, and opioid risk reduction and overdose prevention. This grew out of his work on human capital risk management and worker well-being. Since 2016, he has served as a member of the editorial advisory board for Construction Business Owner. Reach Beyer at cal@safeproject.us or 651-307-7883. Visit safeproject.us.

Blueprint for Success: Mastering Construction Contracts

Following the 3 C's & building a suit of armor for your business

BY TYLER PETERSON

Would you believe that a piece of paper is strong enough to stop the damage from a burst pipe or a collapsed wall? Contracts can all look the same, with pages and pages of impossible-to-understand legalese, and they can be tedious to read. But within those paragraphs, even the smallest of word choices can have an alarming impact on the future of a contracting business.

When something goes wrong on a construction project where there are several different businesses working together, a legal dance of pass-the-blame usually follows. For instance, suppose that weeks after an office building is restructured, the pipes burst, causing water to flood the offices. The property owner might then sue the plumbing company for damages. Because the general contractor hired the plumbing company, the contractor could also be held responsible for negligent hiring, facing serious financial, legal and reputational consequences if sued. For even the most flawless of contractors, the best defense is a strong contract. Often, contracts are not given the attention they deserve and are signed without being read fully.

To develop an ironclad contract, it's important to recognize that a contract sets the stage for the 3 C's: commitment, communication and collaboration between two parties. A well-negotiated contract highlights the contractor's value, establishes clear boundaries and fosters a stronger engagement in the long run.

Construction professionals should view crafting a contract like building a suit of armor for their beloved business, personal reputation and finances, but what should be included?

Key Components of a Successful Construction Contract

To establish a mutually beneficial



Photo Credit: Shisu_ka - stock.adobe.com

partnership between a professional and a client, here are the five key components to include in a construction contract.

1. Clear Scope of Work

It is important not to rush into a project without a well-defined scope of work (SOW) as it could open the door for client misunderstandings, scope creep, overages, potential allegations of falling short on work and more.

Just as a contractor must lay down a solid foundation before starting a project, they also must develop a well-defined SOW to ensure a successful engagement. By outlining project objectives, labor materials, schedules, budgets, payment terms and more, the SOW defines the exact roles and responsibilities of the hired professionals.

When designing an SOW, it is crucial to make transparency the top priority. This aligns both parties and reduces the likelihood of a breach of contract.

2. Indemnification Provision

Another essential element of a construction contract is an indemnification provision. This clause mitigates risk by shifting the liability from one party to another. In layman's terms, one party will be responsible if a project goes south. An indemnification provision says that the indemnitor, the party who agrees to take responsibility for the damages, will reimburse the indemnitee, the protected individual, for actual losses.

For instance, a construction contractor hires an electrical group to install light fixtures and outlets in a new office building. The electricians install faulty wrap lights that spark, and nearby office equipment catches fire. The office owner sues the contractor for the damages. Because the general contractor included an indemnification provision in their agreement with the electrical group, the electricians would compensate the contractor for the costs.

3. Hold Harmless Provisions

Often confused with an indemnification provision, a hold harmless provision is another important way to manage risk. Generally, indemnification provisions contain language stating that the indemnitor will "hold" the other party "harmless." To hold harmless is a promise to pay any costs that may result from a claim covered by the indemnity provision, including any subsequent fallout stemming from the covered claim and/or its settlement.

For example, a general contractor enlists a subcontracting group to build a ceiling in a warehouse. There are inconsistencies in the subcontractor's installation of steel beams, and when the ceiling is finished, a portion of it falls onto a warehouse worker, causing harm. The worker files a lawsuit against the general contractor; however, if a hold harmless provision is included in the contract, the subcontractors responsible for building the warehouse ceiling will take full responsibility and reimburse the general contractor for the financial and legal damages of their own errors and negligence.

It is important to note that the exact interpretation of what "hold harmless" means differs from state to state. Most states provide that "hold harmless" and "indemnify" mean the same thing, while a minority view them as separate. Therefore, it is important to understand your state's laws and speak with an attorney to make sure you are adequately protected by your indemnification provision.

In states that hold the minority position, contractors should ensure that hold harmless language is included in the indemnification provision. This will protect the general contractor from financial losses, allowing them to be made whole for expenses, losses, damages and other financial risks, as well as liabilities such as bodily injury, design defects, accidents or negligence. So not only will a sub have to make the general contractor whole for financial losses, they also will not be able to pursue litigation for any injuries caused by accidents or negligence.

4. Limitation of Liability Clause

A limitation of liability clause is a crucial protection in a contract, capping the financial amount a party will pay for errors related to their work. This clause is essential for preventing significant financial losses from third-party claims. Imagine a contractor is paid $30,000 to demolish a few floors of a commercial building, but a mistake made by the contractor affects the entire property. Without this clause, the contractor could be held liable for the entire value of the property, leading to disproportionate financial consequences.

The limitation of liability should reflect the portion of the project the contractor is involved in or a pre-agreed amount negotiated with the client. Some insurers advise against entering contracts without a limitation of liability clause, as a contractor could be sued and held liable for amounts far exceeding the value of their specific work. Including this clause ensures that financial responsibility is fair and proportionate.

5. Change Orders

Finally, not every project will go as planned. In anticipation of scope creep, which is often typical as projects evolve, contractors should incorporate a section on "modifications." Approved by both parties when the contract is first developed, a "changes to work" section confirms that a contractor's scope may be susceptible to change, affecting their work or compensation.

If a hotel owner submits a change order

to expand in the hotel's ground-level restaurant, this clause requires the general contractor to perform the request. Before tackling the job, the contractor and owner will agree to a modified scope with an adjusted project, timeline, budget, etc., to satisfy the request.

Thirty percent of all projects involve a change order, so it is essential to include a "changes to work" clause to promote flexibility and adaptability and avoid client disputes.

What Should Be Included in a Subcontractor's Agreement?

If a general contractor outsources to specialist groups, such as plumbers or electricians, they should ensure that those agreements contain the same provisions listed above. This way, liability is properly managed, and neither party will be unfairly held responsible when the unexpected happens.

Importance of Insurance Coverage

There are inherent dangers in the construction industry, so it is imperative that contractors and subcontractors are adequately insured. At a minimum, groups should carry general liability and professional liability insurance to protect against injuries, property damage, or claims of error, negligence or design flaws. These policies help ensure the teams can rebound financially, operationally and reputationally if such claims arise.

All in all, a construction contractor should always draft terms that are most favorable to them as the beginning point for negotiations. Up-front negotiations and contract clarifications are advantageous and the first step to kicking off a successful partnership. Make sure that if you have any legal questions regarding contract negotiations, you consult with an attorney. For all involved parties, properly structured contracts are critical to manage risks, protect against liabilities and ensure smooth project execution. ▲

Tyler Peterson is the head of professional risks at Hiscox USA, responsible for overseeing the professional liability offering for the small business insurer. With over a decade of experience at Hiscox, she has developed insurance products for customers around the world, and currently serves customers across the professional services, health care, technology, media and construction sectors. Visit hiscox.com.



Today's Labor Shortage Is a Multifaceted Problem. It Needs a Multifaceted Solution.

How to solidify your hiring & retention strategies

BY JOE SUPINO

This year, the U.S. construction industry will need to hire roughly half a million workers on top of the normal pace of hiring to meet demand, according to a projection from Associated Builders and Contractors.

The labor shortage is hitting organizations from all angles. On the one hand, retirement levels are high; on the other hand, newcomers to the industry may be put off by what they perceive as a staid career path, or they may be quick to leave for other industries. Meanwhile, managers and other midlevel employees — the very people expected to maneuver companies through this moment — are quitting at elevated rates.

As someone who helps construction companies around the country source skilled talent, from superintendents to project managers and engineers, I've seen firsthand how tempting it is to identify one area or potential solution as a silver bullet. "If only we could hire more entry-level talent," one might say, or "If only we could outsource more work to third parties."

The list goes on. But narrow efforts, while understandable, can end up a lot like "whack-a-mole." Instead, a multifaceted problem requires a multifaceted solution.

What Does a Multifaceted Talent Strategy Look Like?

One size does not fit all for construction companies navigating today's labor shortage. For instance, executives regularly complain that they spend lots of time and money developing entry-level talent — but right as they're about to see a return on investment, those employees leave for another job.

My response? If you look at hiring entry-level talent as just a proportion of your overall staffing strategy and understand turnover rates, you can make sure you're not adding more employees at this level than is profitable. A holistic, multipronged approach should help meet current demand and be understood as a long-term play.

A few of those prongs include:

- *Internal resources and talent acquisition teams* — These are important, especially when it comes to ingraining your organization in local universities, engineering schools and technical colleges to attract new talent at the start of the pipeline, be it through internships and apprenticeships, training and education programs, or simply heightened visibility with potential hires.
- *Outsourcing* — An outsourcing strategy is another important lever to pull, empowering companies to leverage external expertise, enhance efficiencies and cut down on certain talent costs. Key functions worth exploring include project management, design and engineering services, IT and technology, and sustainability consulting, among others.
- *Consultants* — Finally, hiring consultants who can help provide access to talent could round out a holistic strategy, especially given the current burdens on internal resources. For example, consultants could supplement internal efforts by bringing in more midlevel resources on an assignment basis to relieve pressure on managers.

Best Practices for a Successful Talent Strategy

Of course, enacting a multifaceted talent strategy is no simple feat. Here are a few best practices that construction executives should keep in mind as they get started.

- *Get the right internal systems and processes in place* — Some companies are great at getting their names out there and attracting skilled workers but don't have the systems in place to bring them in, whether it's ineffective payroll processes, a lack of onboarding resources or an inability to find the right talent from their own inbound application systems. (I've heard from qualified people who have applied to jobs for three years at one well-known company without hearing back.) Streamlining systems and processes is critical; it might also help to engage

Photo Credit: Yuttana Studio - stock.adobe.com



and "try out" new employees on a contingent basis before making a full-time hire.

- *Avoid manager meltdowns* — Engaging new employees has never been more important, but managers navigating a talent deficit and changing workplace norms are increasingly burnt out. Ensuring new hires get what they need without sacrificing managers' productivity and well-being requires striking a delicate balance. This starts from the top: Construction executives should provide a sense of security and stability for frontline managers by offering additional resources and support, as well as relieving some of the burden of developing new talent by leveraging a more multifaceted talent strategy.
- *Personalization is key to employee engagement* — Personalization should improve engagement across the organization. This entails employers and managers taking consistent, genuine interest in their people and being willing to have difficult conversations. This doesn't mean micromanaging. For instance, asking, "What can I offer or help with to make you feel more comfortable or successful?" is very different than saying, "Today I expect you to call Jess, calculate these figures like this, tackle the project in this order and report back on how far you get by the end of the day."
- *Offer training that finds a happy medium between what your company needs and what employees want* — Today's construction companies can't just tell their up-and-coming employees to stay in their lane. They want opportunities to develop their skills and grow in their careers, which, in our fast-paced business landscape, is one way to engender employee loyalty. So don't thrust all the menial work on new hires because that's what you had to do when you started out. In fact, simply making cross-training/career progression tools and programming available can build trust and let employees know you're listening.
- *Update your value proposition* — Some construction companies are still selling themselves like they did two decades ago, highlighting benefits packages or employee-owned business models. While those are great, newer employees rarely see the value in them in the near term. What they want is practical (and meaningful) work experience and skills that will set them up for success. They also want to work on projects they can get excited about, like a new sports stadium or educational facility.
- *Hire more diversely* — The construction industry is finally waking up to the vast, untapped potential of women and workers from other underrepresented groups. However, this must go beyond marketing language. It comes down to accountability: If this is who you want to be as an organization, you must hold people accountable should they act counter to your values.
- *Keep an open mind* — Today's construction leaders can't afford to require every new hire to meet all the bullets in the job description. Understand that you're going to need to teach and coach new employees no matter what, so it's OK to be more flexible in certain cases. Similarly, try not to brand employees as "good" or "bad." There could be a great employee who simply went through something difficult in their personal life or is struggling and doesn't know how to ask for help. It doesn't mean that, with the right care and management, they won't be a top performer. Treat people the way they need to be treated, and they'll flourish.

A Brighter Tomorrow for Construction

Broadening your talent pool and strategy offers significant benefits for today's construction companies, many of which will need to institutionalize existing knowledge and pass it along as a wave of workers retire. New hires can also bring new energy to an organization through the embrace of emerging technologies like artificial intelligence, fresh perspectives or different ways of collaborating.

Getting there may be an uphill climb given present challenges. That's why executives should harness every tool in their arsenal to address this complex problem from all sides — and usher in the next generation of construction talent. ▲

Joe Supino is a segment director at Actalent, a global provider of engineering and sciences services and talent solutions. Supino leads national strategy for the utilities and construction vertical for Actalent's contract talent line of business across North America, overseeing 35 of the company's largest, most strategic client relationships. Visit actalentservices.com/en.



The Importance of Manufacturer Certifications for Contractors

Gaining a competitive edge & building your reputation

BY ALI ANWAR

In the construction industry, possessing manufacturer certifications is not just beneficial — it's essential. Recognized by manufacturers such as GAF, BASF, Carrier and others, these certifications attest to a contractor's ability to competently install specific systems, significantly affecting their eligibility for various projects.

Impact on Market Opportunities

Lacking these crucial certifications, contractors might encounter barriers when attempting to bid on projects that necessitate specialized installations, thereby hindering their potential for business growth. For instance, possessing a Kemper System certification can be a significant advantage for roofing projects that specify Kemper System materials, highlighting the value of such credentials in expanding business opportunities and access to a broader range of projects.

Leveraging Certifications for Competitive Advantage

Securing manufacturer certifications equips contractors with expertise and a competitive advantage in bidding processes. This edge is particularly significant when specifications demand specific branded systems, narrowing down the pool of qualified contractors.

Building Client Trust

Beyond technical knowledge, these certifications reassure clients of a contractor's adherence to industry standards, fostering professional relationships and enhancing business reputation. They serve as a benchmark for quality, distinguishing certified contractors in the industry.

Ensuring High-Quality Project Outcomes

1. Certifications Translate to Quality Work

Manufacturer certifications are not just about meeting industry standards — they are a commitment to excellence. Certified contractors bring a level of expertise that ensures high-quality work, reducing the likelihood of installation errors, subsequent repairs and maintenance costs. This quality assurance is crucial for complex projects where precision is key to longevity and functionality.

2. Enhanced Client Satisfaction

When contractors deliver projects executed to the highest standards, it naturally leads to increased client satisfaction. Satisfied clients are more likely to provide repeat business, offer referrals and leave positive reviews, which are invaluable for a contractor's reputation and future business prospects. Certifications, therefore, not only serve as a tool for winning bids but also as a foundation for building strong, trust-based relationships with clients.

3. Risk Mitigation

Certified contractors are knowledgeable about the specific requirements and potential pitfalls associated with the systems they install. This expertise helps in proactively identifying and mitigating risks, ensuring that projects are completed safely, within budget and on time, further solidifying the contractor's reputation for reliability and excellence.

Expanding Opportunities With Manufacturer Certifications

Manufacturer certifications are widely recognized for potentially qualifying contractors for a broader range of projects and fostering stronger relationships with manufacturers, which can lead to access to exclusive resources and new market opportunities. These credentials are believed to position contractors as experts in niche markets, possibly enhancing their industry standing and unlocking opportunities for specialized projects with higher profitability. Moreover, certifications are thought to facilitate networking, potentially leading to industry recognition and collaborations that could expand a contractor's business horizon and contribute to sustained growth. Based on general industry observations and my company's own experiences as exterior contractors, the pursuit of such certifications is often seen as a strategic investment that could lead to significant business advantages.

Identifying Valuable Certifications for Your Business

To maximize the benefits of

Photo Credit: kunakorn - stock.adobe.com

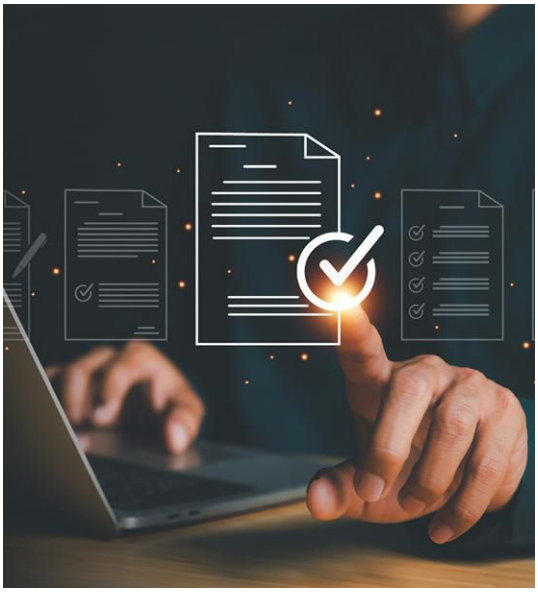


Photo Credit: dimon_ua - stock.adobe.com

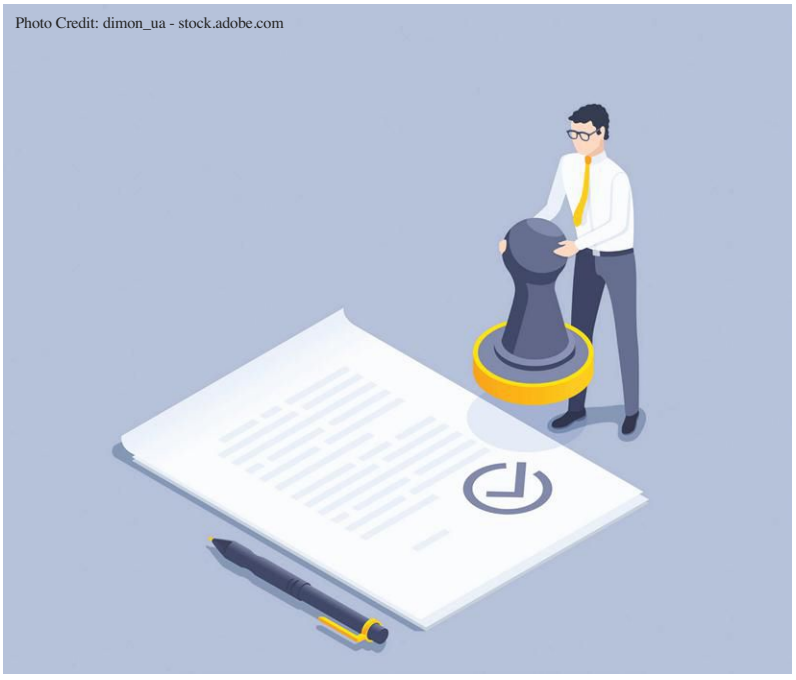


Photo Credit: Chryses - stock.adobe.com



manufacturer certifications, contractors should adopt a strategic approach to select the ones to pursue. It's crucial to consider market demand, the types of projects you aim to undertake and the certifications most respected in your industry. Target those from manufacturers that are not only widely recognized but also align with your business goals and market needs. Engaging in market trend analysis and consulting with industry peers can offer valuable insights, guiding you to invest in certifications that will genuinely enhance your business prospects and expertise.

Navigating the Path to Certification

Obtaining manufacturer certifications typically involves a structured process that includes training sessions, examinations and practical assessments, ensuring contractors are well-versed in the specific products and installation techniques. Interested contractors should start by reaching out to the manufacturers or visiting their websites to learn about the certification requirements and available training programs. The process often includes attending workshops, hands-on training sessions and passing a certification exam. Once certified, contractors must stay informed about the latest products and installation methods, as continuing education is frequently a requirement to maintain certification status, ensuring they remain at the forefront of industry standards and best practices.

Manufacturer certifications are vital for contractors seeking to distinguish themselves in the construction field. These certifications are more than just accolades — they're a testament to a contractor's expertise and commitment to quality, enhancing their competitiveness and credibility. By acquiring and leveraging these credentials, contractors can broaden their project scope, foster client trust and uphold high standards of workmanship, positioning themselves for greater success and sustainability in the industry. ▲

Ali Anwar is the principal of Aarco Contracting, an exterior maintenance firm in New York City. With over 15 years of experience in construction and a master's degree in construction management from Columbia University, Anwar is known for his exceptional leadership and project management skills, consistently delivering outstanding results on complex projects. Visit aarcocontracting.com.



ANA
We make your world easier.

Maximizing Power Efficiency

ANA, Inc. offers sustainable construction solutions tailored to your needs. By integrating advanced battery technology, you can now convert any generator into a hybrid, resulting in lower costs, reduced energy consumption, and greener operations. These systems reduce emissions and noise, making them an attractive option for construction companies. In addition, ANA provides a wide range of support services, from installation and maintenance to technical support, making your world easier. Learn more about the complete line on our website at:

ANACORP.COM

JOURNEY™ TO ZERO



ENERGY BOSS™

HEAD UNIT MODELS

TRAILER MOUNT AND SKID MOUNT OPTIONS AVAILABLE!

BOSS 25-15 Head Unit Model shown

LARGER MODELS COMING SOON!

ANACORP.COM // (562) 450-3570 // anaenergy@anacorp.com

© 2024 Alliance North America, Inc. All rights reserved.
Airman® is a registered trademark of Hokuetsu Industries Co. Ltd. All other trademarks are property of their respective owners. Form EBOSSREV0524



Electric Equipment Is Proving Its Power

Volvo's VP of sustainability & productivity outlines the perks of alternative fuel options

BY RAY GALLANT

Photo Credit: Volvo Construction Equipment North America

While many in our industry remain hesitant about electric heavy equipment, the machines are quietly but undeniably proving themselves on pilot tests and real jobsites.

Questions and concerns around how to charge, how long that charge will last and how the higher purchase price is recouped are all fair. But compact electric machines have been proving their worth for several years now, and the larger machines are not far behind. Let's take a look.

Calming Charging Concerns

Charging is obviously a huge piece of the electrification puzzle, and there are more solutions than many people realize. Of course, there is the standard grid charging using outlets at your "home base." Different types of outlets will take different amounts of time to power a machine, but they get the job done.

We've seen — and will continue to see — announcements about original equipment manufacturers (OEMs) and battery or charging solution providers entering partnerships, establishing joint ventures or making investments to further electrification efforts.

Another key factor for better charging is getting our infrastructure up to speed. The machines and charging units are developing quickly, but there is still work to do on the grid that supports them. Governments and trailblazing companies remain essential for moving this forward.

Making a Charge Last

The general rule for battery life is that the harder the task is, the faster a battery will run down. For example, cutting and grading with an electric excavator will affect battery life differently than moving a few buckets of dirt.

However, one of the biggest perks of electric equipment is that it doesn't idle when it's not in use. Most electric machines will turn off when the operator stops for a few seconds, and they can start right back up to provide immediate power. When you consider that diesel machines can spend 40% to 50% of their shift idling, this is a big deal for both battery life and resale value down the road.

That said, many models available today will benefit from a top-off over the lunch break or other pause in work (also called "opportunity charging"). This can often allow a machine to work a full eight hours — and again, this means actual operating hours with no idle time. It is important for contractors to size the machine and charging cycles to the tasks.

One such example comes from Coastal Waste & Recycling in Florida. They're using a 23-ton Volvo EC230 Electric excavator to process up to 100 tons of construction and demolition debris and green waste each hour. They use it for four to five hours, give it a quick charge and then use it on another shift, allowing them to get a full day's work out of the machine.

Keep in mind that most electric heavy equipment uses lithium-ion (Li-ion) batteries, which are far superior to the old

lead-acid or nickel-cadmium technology some people may be more familiar with. Li-ion batteries offer triple the energy density, double the battery life, consistent performance, no memory effect, faster charging and no maintenance.

Justifying a Higher Price

Electric machine prices are higher than those of their internal combustion equivalents but — as with any new technology — this will improve as the supply chain strengthens and adoption grows. In the meantime, there are four additional factors in the cost equation.

1. *Maintenance* — There is almost none! Because there's no engine, diesel exhaust fluids and engine oil and air filters aren't needed. There is no difference in the maintenance of nonelectric components (e.g., grease for joints) or ground engaging/wear items. Technicians will need to be trained on the electric components, especially regarding safety. It may feel like a big shift at first, but it's just like when telematics and in-cab displays became more prominent. Once you have the knowledge, it becomes fairly simple. And don't forget: No more buying and hauling fuel. The time and cost savings around uptime can counteract that purchase price pretty quickly.
2. *The ability to win more jobs* — When you can significantly reduce noise and emissions on a jobsite, customers appreciate it. Consider that a difference of 10 decibels is perceived as twice as loud to the human ear. (Side note: Less vibration also makes operators happier and allows them to talk over the machine. Compact electric machines are proving themselves valuable for work like indoor demolition, food production, landscaping, any kind of night work and so much more. And larger machines are coming out of pilot tests with some impressive results too. Simply put: Having electric equipment in your fleet will put you ahead of the competition.
3. *Financial incentives and flexibility* — Depending where you work, you could benefit from tax incentives or grants that prioritize carbon reduction. Your dealer and/or OEM can help you find these. And, since the tech is still relatively new, many manufacturers are offering flexibility in terms of buying, leasing or renting so you can try before you buy.
4. *Total cost of ownership* — It's important to consider all the factors that can cost or save dollars over the entire life span of your electric machine. The elimination of fuel, the reduction in maintenance, the ability to win new work and potential incentives can quickly make up for the higher purchase price.



Photo Credit: Volvo Construction Equipment North America

For example, construction giant Skanska recently completed a 90-day pilot project with the Volvo EC230 Electric excavator, loading trucks of export material from an underground tunnel as part of a transit line renovation in Los Angeles. All things considered, the machine reduced hourly costs by 74% and hourly carbon emissions by 66%.

In another 90-day pilot in California, this time collaborating with Sunbelt Rentals, the machine delivered an 83% cost savings and an 80% carbon reduction rate in comparison to its diesel equivalent. Numbers like these will be hard to ignore for companies and governments looking to reduce emissions while being fiscally responsible.

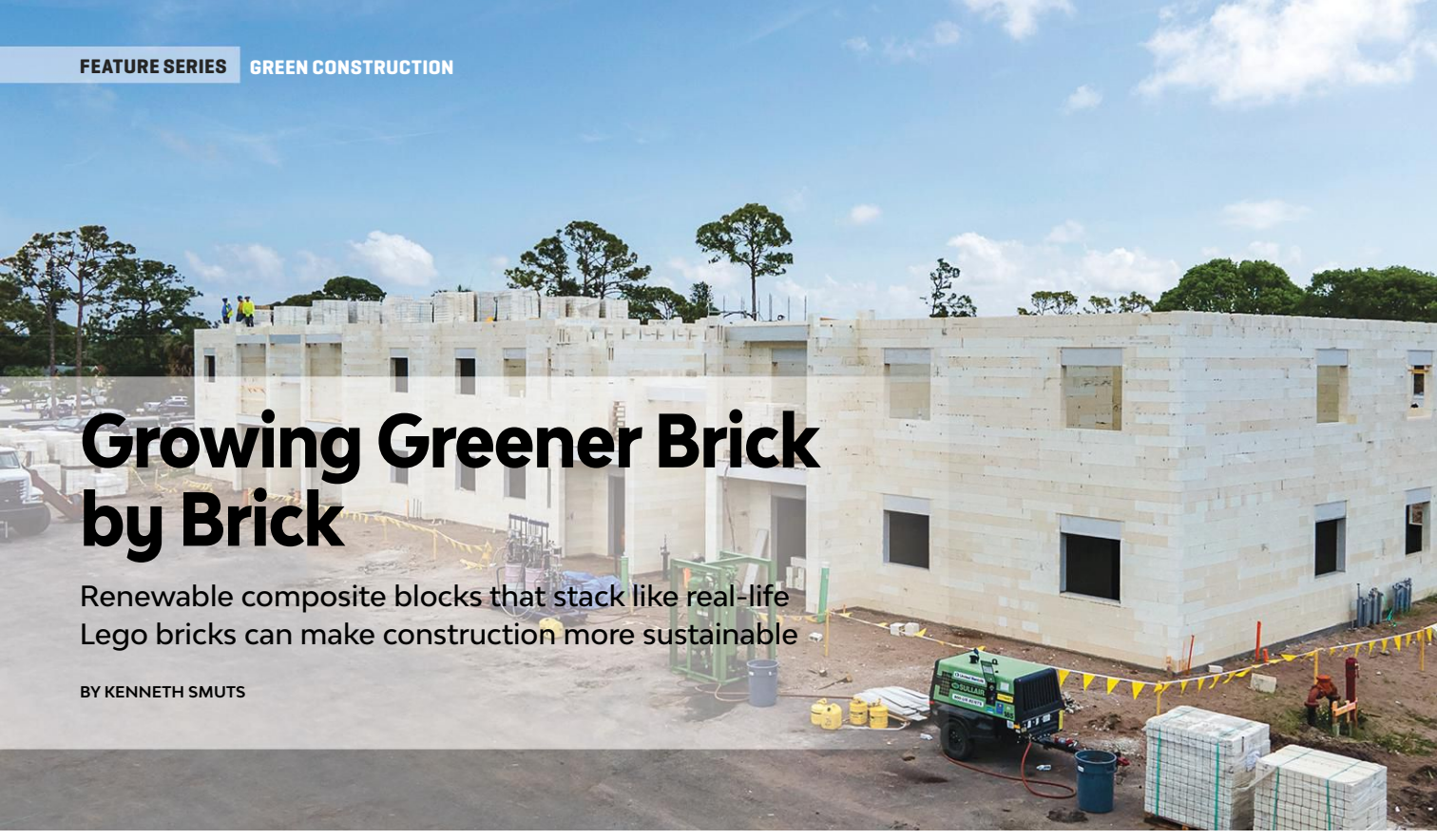
The Proof Is in the Power

So far, nonconstruction industries are adopting electric heavy equipment faster because they have more incentives or regulations to do so, and because they may have simpler charging situations. What we learn from them — and the solutions that develop as a result — will make electric more viable in the construction segment.

We also have to keep in mind that the approach to making our industry more sustainable isn't a single technical solution, but rather a variety of options we'll need to develop and integrate into our operations (like hydrogen, hybrid, renewable fuels and more). As long as we keep working together toward the end goal, there is no wrong way to get there. ▲

Ray Gallant is vice president, sustainability and productivity services, at Volvo Construction Equipment North America. He is responsible for Volvo's vision on product development and future technologies, customer center operations, and sales and operator training programs. Gallant believes we are on the cusp of transforming the industry thanks to tremendous opportunities in efficiency, productivity, safety and operator comfort. Visit volvoce.com.





Growing Greener Brick by Brick

Renewable composite blocks that stack like real-life Lego bricks can make construction more sustainable

BY KENNETH SMUTS

Photo Credit: RENCO

Imagine a construction site with no overflowing dumpsters, no heaps of discarded materials and no loud, energy-consuming machinery. Instead, envision a place where every piece fits perfectly, like a life-sized Lego kit, creating structures that are not only strong but also green. This vision is becoming a reality at certain innovative construction sites today.

More Demand for Greener Ways to Build

After spending my career in the construction industry, I am venturing into an entirely new way to build as the industry calls for more sustainable construction.

According to Forbes, a recent global survey of 1,000 executives across various sectors found that the engineering and construction industries are leading in sustainability efforts during the design phase, with 47% prioritizing sustainability. Sustainable design is crucial for reducing energy consumption in completed buildings. However, the survey also revealed a gap between setting sustainability goals and taking firm realistic actions to achieve them.

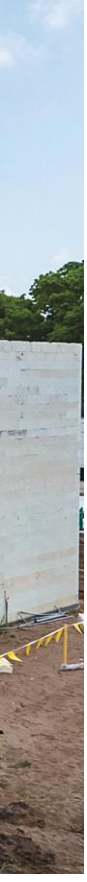
I am working on taking that action with a new way for contractors to think about building. Consider a method where molded blocks interlock to create entire structures, akin to a real-life Lego kit. These blocks are made of a composite material, composed of naturally occurring and repurposed materials. By using repurposed materials from various industries, such as leftover glass fibers and resin from boat building, this approach significantly reduces waste. In addition, composite material can surpass the strength of conventional materials and can withstand Category 5 hurricane forces.

Composite Materials Will Launch a New Era of Green Construction

For the past century, the construction industry has not really changed much. Structures were only designed and built using wood, concrete or steel. It is time to look at new materials that have a much smaller environmental impact.

Composite materials offer the construction sector a pathway to enhanced environmental sustainability and reduced life cycle costs through their ability to manufacture robust, lightweight products. Composite parts address the demand for design flexibility, high performance, rapid installation, corrosion resistance, and minimal maintenance across various building and infrastructure applications — from bridge decks and concrete reinforcement to railway platforms and building components like panels, stairs and fencing.

These fiber-reinforced composites exhibit a versatile range of properties not found in traditional materials such as metals, concrete and wood. This versatility has spurred their increasing adoption across diverse industries, where they offer superior performance, resilience and durability. In sectors like wind energy, composites enable the production of stronger, longer-lasting rotor blades for more efficient turbines, meeting the rising demand for renewable energy. Substituting heavier metal components with lightweight composites further reduces



energy consumption and carbon dioxide emissions across transportation modes — from automobiles and aircraft to trains, ships and aerospace vehicles. This lightweight advantage also facilitates easier installation at construction sites, highlighting additional benefits in building and infrastructure projects.

Reducing Energy Consumption on Construction Sites

There are many ways to reduce energy consumption on construction sites, including implementing energy-efficient equipment, streamlining construction processes to minimize idle time for equipment and workers, using renewable energy sources like solar and wind to power equipment, and implementing smart site management to monitor and optimize energy use.

Another key is material selection, which can also reduce waste. By simplifying construction into a kit of composite blocks, structures can be assembled much faster. Moreover, it only takes about two hours to train a person to build with this technique, mitigating delays due to traditional labor shortages. For instance, my company, Renco USA, completed a housing complex in South Florida in record time with just 11 unskilled workers assembling four identical three-story buildings in about eight weeks each. In residential developments, the potential is even more impressive. The shell of a 2,500-square-foot house can be built by just five workers in a single day.

Efficiency in Transport

Another element to consider is how to make construction transportation more sustainable. There are several strategies to reduce emissions, such as using electric and hybrid trucks to reduce greenhouse gas (GHG) emissions.

Contractors should also focus on optimizing logistics and planning. By planning construction routes to minimize travel distances and avoid congested areas, you will reduce fuel consumption and emissions.

Another key is promoting and choosing lightweight materials. For instance, for every truckload of composite material blocks, it would take four trucks to deliver the same number of heavy concrete blocks. This not only reduces the transportation carbon footprint but also simplifies the construction process. The building method requires minimal heavy equipment or power tools, only needing a forklift, a battery-powered glue gun and a rubber mallet.

Reducing Construction's Carbon Footprint

The construction industry is a major contributor to global GHG emissions, accounting for approximately 40% of the total. Innovative materials with a significantly lower carbon footprint are crucial in addressing this issue. For example, my company's new composite joists have an 82% lower embodied carbon footprint than a structural steel beam and 62% lower than a reinforced concrete beam.

This reduction is largely due to the minimized use of concrete, a major source of carbon emissions. Cement production alone is responsible for 8% of global carbon emissions, surpassing the entire airline industry. This innovation avoids using concrete above the foundation, representing a breakthrough in green construction and a significant step toward reducing the environmental impact of building materials.

Embracing Innovation in the Face of Climate Change

As climate change intensifies, the construction industry must innovate by embracing new materials and technologies to create stronger, more sustainable and cost-effective buildings. The goal is to simplify the construction process while enhancing the durability and sustainability of structures.

This innovation in construction is not just about building better but about building a future where sustainability and resilience are at the forefront. The simplicity and effectiveness of these new methods and materials offer a promising path forward, demonstrating that the construction industry can significantly contribute to a greener, more sustainable world.

The Biggest Challenge Ahead

One of the greatest challenges ahead is change itself and this mindset within the construction industry that we should just keep doing things the same old way.

I believe that by changing how we build, we can make homes stronger, more affordable, attainable and sustainable. As natural disasters worsen and property insurance rates skyrocket, now is the time to innovate so we can create homes and buildings that can withstand storms and are easier to insure. And as America faces a housing affordability crisis, we must offer solutions to make buildings more affordable so that more people can fulfill the dream of homeownership. ▲

Kenneth Smuts is the President of Renco, USA, Inc., a composite manufacturing and building industry startup and affiliate of the Coastal Construction Group. He has spearheaded the research and development of the Renco Structural Building System in the U.S. and has codified and secured Renco's approvals under the International Building Code (IBC). Having secured U.S. patents and all necessary approvals to build mineral composite fiber reinforced structures under the IBC, Renco is embarking on a campaign to launch the marketing, sale and implementation of its structural building products throughout the U.S. Visit renco-usa.com.



Will Technology Lead Construction to a Greener Future?

Cutting carbon, costs & commutes with digital solutions

BY BRYAN WILLIAMS



Photo Credit: Diki - stock.adobe.com

Sustainability is no longer a peripheral concern. Construction businesses are under growing pressure to minimize environmental impact, comply with regulations and meet market demands — all while managing rising costs and economic uncertainty.

Still, sustainability is not just a buzzword — it's a critical aspect of modern construction. In addition to helping preserve the environment for future generations, implementing sustainable practices can lead to cost savings, improved marketability and compliance with increasingly stringent regulatory requirements.

Emerging policies such as the Federal Buy Clean Initiative and the Inflation Reduction Act (IRA) low embodied carbon program prioritize low-carbon construction materials such as asphalt, concrete and steel for federally funded projects. While these policies currently focus on large-scale projects, they will inevitably influence the broader construction industry in the coming years.

Sustainability must be an intentional commitment and investment, and although each company's strategy may differ, technology will invariably play a critical role in success.

Leveraging Technology for Sustainable Outcomes

Modern technology is essential for reducing waste and lowering the construction industry's carbon footprint. Building a greener future also depends on connected, collaborative design and construction workflows that democratize data and eliminate silos.

Connected construction gives the right people access to the right data at the right time so they can detect problems earlier and make informed decisions faster. Breaking down communication barriers and encouraging collaboration and data sharing across project teams will reduce errors, rework and waste through every project phase. In addition, having accurate and timely as-built data before, during and after construction significantly increases efficiency and helps reduce costs.

Before construction begins, software and analytics technology allow architects, engineers and designers to create eco-friendly models while considering other aspects of the project, such as material, water and energy needs. With technological advances, owners and project teams can explore concepts nimbly, without fully defined parameters to make sustainable design decisions. Concepts can be shared across stakeholders for collaboration, ensuring designs are sustainable and constructible.

Constructible data can then inform fabrication and off-site prefabrication for more accurate material estimates and less over-ordering and waste.

Clark Pacific, a California-based manufacturer of prefabricated building systems, uses 3D modeling technology to design and manufacture with precision, and in turn, eliminate waste. During a recent project to manufacture wall panels for Mission Rock Building G, a 13-story, 310,000-square-foot mixed-use building, 3D modeling technology was used to produce machine-ready, constructible designs with lower material requirements. This reduced material carbon by roughly 10% and transportation carbon by 44% because the panels were lighter and easier to transport.



Technology is also impacting sustainability in the field. Viewing 3D models in the real-world environment increases accuracy during site prep and advanced 3D scanning technology generates high-fidelity data for in-field verification for fitment of prefabricated components. These are merely a few ways technology drives sustainability efforts forward by lowering material waste, reducing errors and eliminating rework.

Exploring New Ways of Working

In the effort to build more sustainably, construction businesses like Saunders Construction are testing new technologies and workflows. The company recently completed construction on One River North, a 343,000-square-foot, 16-story building in Denver, Colorado. Saunders used the project to demonstrate and improve its cast-in-place practices by pre-concrete pour scanning.

Traditionally, post-tensioned concrete floors are subject to errors ranging from missing embeds, bollards and planter drains, to misplaced or misoriented connection conduits and light boxes. Conventional quality control methods are typically slow and error-prone with long feedback loops, often resulting in rework and material waste.

Saunders implemented a pre-concrete pour scanning workflow. Using a Trimble X7 high-speed 3D laser scanner, teams scanned each floor of the high-rise before pouring the concrete.

The Saunders team compared the scans to 3D models and drawings to identify any issues they needed to address — all while in the field and within minutes. Progressive scanning allowed the team to uncover and resolve potential issues quickly and, in most cases, before the pour. The estimated return on investment of the virtual design and construction process was 1,164%, with a total cost savings of $505,000 and total carbon dioxide savings of 144,221 kilograms.

An Accessible Path to Sustainability

Construction businesses have a pivotal role to play in a more sustainable future. Reducing the industry's carbon footprint requires strategic technology integration, collaborative partnerships and continued innovation.

Connected construction is within reach thanks to the emergence of subscription programs that make technology accessible, and technology vendors that prioritize interoperability to democratize data and open the door to collaboration. Utilizing software and/or hardware as a subscription gives construction businesses of all types and sizes — from owner-operators to large general contractors — an opportunity to upgrade or test new technologies without significant up-front investment or long-term commitment.

Taking advantage of accessibility to technology and leveraging digital solutions to enhance efficiency, reduce waste and mitigate environmental impact will help the construction industry build its way to a greener future. ▲

Bryan Williams is portfolio manager at Trimble. He has over 30 years of international experience working in the construction industry as a site engineer, construction surveyor, project supervisor and consultant. He has spent the last 15 years developing and marketing intelligent positioning solutions for the construction industry. Visit trimble.com.



It's Electrifying! How Construction Fleets Are Advancing Sustainability

Inside global equipment trends & environmental regulations influencing the construction sector

BY SARAH MACKINNON

Photo Credit: Delta-Q Technologies

Electric drive equipment is rapidly gaining traction across all industries, including construction. On jobsites around the world, the rumble of diesel engines is giving way to the quiet hum of electric equipment. The shift signals a transformation in the construction industry driven by environmental concerns, regulatory pressures and strong economic advantages.

Driving Factors for Electrification

The construction market is one of the largest emerging markets in electrification on a global scale. International Construction Magazine recently ranked the Top 50 global construction original equipment manufacturers (OEMs) for 2024, according to construction equipment revenue, and found Asia leading by region, followed by North America and Europe. Asia has traditionally been a leader in driving electrification, particularly automotive electric vehicles (EVs). Now, Japan, Korea and China are paving the way for electric construction equipment ahead of Europe and the U.S. These figures are impressive, given China's current difficult market conditions.

Closer to home, experts expect the North American construction equipment market to experience explosive growth, jumping from $27 billion in 2022 to a staggering $46 billion by 2028. Stakeholders will likely invest some of this capital in electric equipment.

Countries worldwide are implementing regulations to phase out diesel-powered equipment. For example, in the U.S., the California Air Resources Board has been directed to develop strategies to "achieve 100% zero-emission from off-road vehicles and equipment by 2035 where feasible." California has a history of leading the way in sustainability governance, and other states will likely follow suit.

California's stricter regulations could cause a nationwide ripple effect. American construction companies that want to operate in California must adapt to these policies. Investing in separate fleets for different states is a logistical and financial nightmare. As stricter regulations to phase out traditional equipment are likely to be implemented in other states, electric construction equipment is not just a way to comply with California's push for sustainability; it's a wise business decision for long-term success in a rapidly evolving market.

Europe is implementing similar regulations. For example, Norway, which also leads the way in EV adoption, has mandated that public construction work in the capital city of Oslo must be emission-free by 2025, while general construction projects have until 2030.

While the environmental benefits of going electric are clear, including reduced carbon emissions and a cleaner environment, there are additional reasons for companies to make the switch.

Consumer preferences are also indirectly pushing the switch to electric construction equipment. Noise pollution is a prime example. Local noise mandates, often influenced by the public's concerns, may limit the operating hours of traditional, noisy equipment on jobsites. Electric equipment, with its significantly quieter operation, offers a solution. It enables construction businesses to operate much more efficiently while complying with local mandates. In some cases, switching to electric may



even allow construction companies to operate around the clock. The lack of noise and emissions also makes electric construction equipment ideal for indoor work.

Business Benefits of Electrification

Making the switch to electric equipment can be a wise financial decision for construction companies. The operating costs of electric construction equipment are significantly lower than those of traditional construction equipment. There are no fuel bills, and maintenance and servicing costs are reduced.

In the U.S. and Europe, several incentive programs exist, enabling businesses to switch to electric equipment. These programs can offset the higher initial cost, making adopting electric equipment cost-neutral or even cost-beneficial. A recent example is the Clean Off-Road Equipment Voucher Incentive Project (CORE) offered in California.

CORE is a multimillion-dollar incentive initiative intended to motivate users of off-road equipment in California to buy or lease zero-emission off-road machinery. The aim is to counterbalance the higher cost of zero-emission technology by offering an immediate purchase discount. This incentive includes a large variety of qualifying equipment, from professional landscaping equipment to construction equipment and more.

Another incentive (which went into effect January 2023) was included in the Inflation Reduction Act by the Environmental Protection Agency (EPA), stipulating that purchasers of qualifying electric equipment will receive a tax credit. It covers 15% of the vehicle purchase price for plug-in hybrid electric vehicles and 30% of the vehicle purchase price for EVs, including heavy equipment.

Like electric vehicles, electric construction equipment offers operators a more comfortable and enjoyable experience. There is less vibration, and overall performance is improved. This means switching to electric equipment will likely be an easy and well-received transition for employees of companies that adopt electric equipment.

Challenges & Obstacles

Transitioning to electric construction equipment presents a unique set of challenges, especially for companies that have a large inventory of equipment. Deciding when to make the switch and how to manage costs are key considerations.

However, a smooth transition is possible with careful planning. Companies should first understand their operating landscape, including factors like the regulatory environment in each region they operate in, as well as any available incentives.

To ensure a smooth transition to electric construction equipment, having a good understanding of the available infrastructure is also crucial. The progress of charging infrastructure development is mainly steered by automotive EVs — with the increasing number of electric vehicles entering the market; there will be a greater availability of improved charging infrastructure in the long run for owners of electric construction equipment. Companies can gain valuable insights from pioneers in the automotive EV sector.

They made substantial investments in infrastructure even before introducing their vehicles, setting the stage for their success. It is anticipated that charging infrastructure will continue to be a key focus for the automotive EV industry, construction sector and beyond.

The Future of Construction Electrification

Electric equipment will become the new standard in the construction industry, it is just a matter of time. Technology is rapidly advancing, making electric construction equipment more powerful and accessible. As the production of electric equipment scales up, the initial purchase price is likely to decrease, making it an even more affordable and attractive option. It will significantly improve efficiency for companies, allowing them to function more effectively and leverage capital better than ever before.

Smaller machines, typically under two tons, are leading the way in electrification. This is partly because technical solutions are simpler for smaller equipment but also because there are simply more small machines in use. Starting with smaller equipment and gradually transitioning the entire fleet to electric power makes the process smoother and more manageable.

Building a Sustainable Future

Electric construction equipment is no longer a trend but a powerful movement transforming the industry. Environmental concerns, evolving regulations and economic advantages are fueling its rise. By embracing electric equipment, companies can not only contribute to a cleaner and quieter environment but realize significant cost savings and efficiency gains, positioning themselves for success in a rapidly evolving landscape. The path forward is clear — the construction industry is going electric. ▲

Sarah MacKinnon is CEO of Delta-Q Technologies, an electrification provider for industrial and recreational vehicles with top-tier OEMs. As part of the ZAPI GROUP, and together with ZIVAN, they offer charging solutions up to 36 kW. MacKinnon's financial acumen propels Delta-Q's growth, strengthening partnerships and exploring new markets in vehicle electrification. Visit delta-q.com.





Photo Credit: DEVELON

Your Handbook for Easy Wheel Loader Selection

Dive into the features that can make you more productive when choosing a new wheel loader

BY WILLIAM ZAK

Wheel loaders are versatile, powerful machines known for their robust design and efficiency on jobsites. But how do you decide which loader features are best for you and your specific needs?

The process of selecting a new wheel loader involves several considerations, including the type of material being handled, the working environment, comfort features, technology, maintenance, safety and specific tasks to be completed. By carefully examining these factors, you can choose a wheel loader that meets your needs.

Materials & Working Environment

Consider the materials your wheel loader will handle as well as the working environment. Gravel, sand and soil have varying densities that directly impact the choice of bucket size, type and durability.

When selecting a wheel loader model, it's important to consider how much the material weighs and how high the machine will be lifting it. Material weight matters when turning or articulating the wheel loader, too. Following these recommendations will help you pick the ideal model for your needs.

Many wheel loaders are available with a high-lift option for more lift height and reach. This may be important if you're regularly loading into high-sided trucks and need additional reach at full dump height.

Your working environment and terrain also play a significant role. Extreme temperatures, dust and humidity influence the need for specific features like advanced cooling systems, pressurized cabs and reversible cooling fans to ensure that loaders operate efficiently and safely in all conditions.

Comfort Features

Modern wheel loaders feature spacious cabs that provide room for movement and ergonomic controls. Large, unobstructed windows and strategically positioned mirrors provide excellent all-around visibility. High-quality air-suspension seats with adjustable settings help you find the perfect position for long hours.

Integrated smart displays and automated controls provide real-time information about the loader's performance and operational status, allowing you to make informed decisions without leaving your seat. Automated features such as joystick controls and load-sensing hydraulics simplify complex tasks.

Climate control systems are vital for productive work. Advanced heating and air conditioning systems maintain a comfortable cabin temperature, regardless of weather. This is particularly important if you're working in extreme climates. A comfortable cabin helps you maintain focus and efficiency, reducing the likelihood of errors and accidents caused by discomfort or distraction.

Modern wheel loader cabs are designed to significantly reduce engine noise and vibrations. A quieter and more pleasant working environment allows you to communicate more effectively and stay alert throughout your shift. Some models are outfitted with high-illumination LED lights for enhanced visibility.

Technology & Automation

Modern wheel loaders are equipped with telematics and monitoring system technologies that provide real-time data on various aspects of the loader's performance, such as engine health, fuel consumption and upcoming maintenance.

By encouraging proactive maintenance and immediate response to potential issues, telematics help prevent or minimize breakdowns and reduce the risk of accidents caused by mechanical failures. These fleet management systems can also track your operating behavior, offering insights into driving patterns and areas for improvement.

Automated payload weighing systems further streamline operations by providing accurate weight measurements of material being moved or loaded.

When working in challenging conditions, operators can now employ such features as load-sensing hydraulics. Load-sensing hydraulics will vary the rate of flow, based on demand. When the operator lifts the wheel loader arms, the load-sensing system will provide more flow to the hydraulic cylinders as the operator pulls the joystick back farther.

Some wheel loader manufacturers offer a rollover warning system that alerts the operator in the event of an unsafe operating condition. For example, if the operator makes the wheel loader lift arms fully raised and exceeds a predetermined speed, they will receive a warning.

Safety Features

Advanced safety features ensure that wheel loaders work well in diverse and hazardous environments. Many of today's wheel loaders are equipped with advanced camera systems that offer a 270-degree view of the loader's surroundings. The systems integrate feeds from multiple cameras positioned around the machine into a comprehensive view of the immediate environment on a single in-cab display.

Object detection is an advanced wheel loader safety feature that uses ultrasonic proximity sensors to detect objects and people in the loader's path. This system provides audible and visual alerts via the LCD monitor if an obstacle is detected so the operator can take immediate action.

Features such as a cabin handrail assist operators as they enter and exit the wheel loader cab. Rotating beacons are available for additional safety when working in low-light situations or at night.

Maintenance

Choosing a wheel loader with easy service access to fluids, filters and the engine simplifies routine maintenance tasks and reduces downtime. Some manufacturers also offer an automatic lubrication system, which improves machine reliability and saves time on daily maintenance.

Leasing vs. Buying a Wheel Loader

If you're looking to maximize your operations, consider leasing rather than paying cash or financing a new wheel loader. Here are a few reasons:

1. *Lower up-front costs* — Leasing typically requires a lower initial investment compared to purchasing through a loan, freeing up capital for other operational needs or investments.
2. *Reduced end-of-term ownership responsibilities* — At the end of the lease, you typically have the option to purchase the equipment, renew the lease or return the equipment, providing greater flexibility based on your changing needs.
3. *More flexibility and upgrades* — Leasing allows you to upgrade to newer models more frequently without the hassle of selling the old equipment. And you'll have access to the latest tech and features.
4. *Better cash flow management* — Leasing offers predictable, fixed monthly payments, making it easier to manage cash flow and budget for equipment expenses without the capital required for a purchase. Because the capital is not tied up in equipment, you can use it to grow your business.

Understanding the total cost of ownership, including maintenance expenses and fuel efficiency, will help you select a wheel loader that meets your needs not only today but in the long run. Following a regular maintenance schedule as outlined in the manufacturer's operation and maintenance manual

Photo Credit: DEVELON



can help ensure that your wheel loader operates at peak performance throughout its life cycle.

Choose a wheel loader brand with a local dealer network that can provide technical support and access to genuine parts. The local dealer can assist you with telematics support and make sure your machine is working properly.

Attachments Drive Versatility

Different jobsites require various attachments, such as buckets, forks and grapples, each designed to complete specific tasks for heavy material handling. Understanding the main applications of your wheel loader will help determine which attachments are needed.

Quick coupler systems allow you to switch between nonhydraulic attachments rapidly and safely without leaving the cab. This capability not only saves valuable time but also reduces the risk of injuries associated with manual attachment changes. By selecting a wheel loader with a compatible quick coupler system, you can ensure seamless integration with a wide range of attachments, improving productivity.

Different attachments may have specific hydraulic needs to operate efficiently. Ensuring that the wheel loader's hydraulic system can support the necessary flow and pressure for attachments is important for optimal performance.

Attachments are subject to wear and tear, especially in harsh working environments. Attachments made from high-quality, durable materials have a longer life span and require replacement less frequently. Easy access to replacement parts service from a local dealer is essential to minimize downtime.

By thoroughly examining factors like working environment, safety and operator comfort, you can select a wheel loader that not only meets your immediate jobsite requirements but also supports your long-term growth and success. ▲

William Zak is the product manager for wheel loaders at Develon. He has more than 20 years of construction equipment experience in product management, marketing and training. Develon North America's products include crawler, wheel and mini excavators; material handlers; log loaders; dozers; wheel loaders; articulated dump trucks; compact track loaders and attachments. Visit na.develon-ce.com/en.





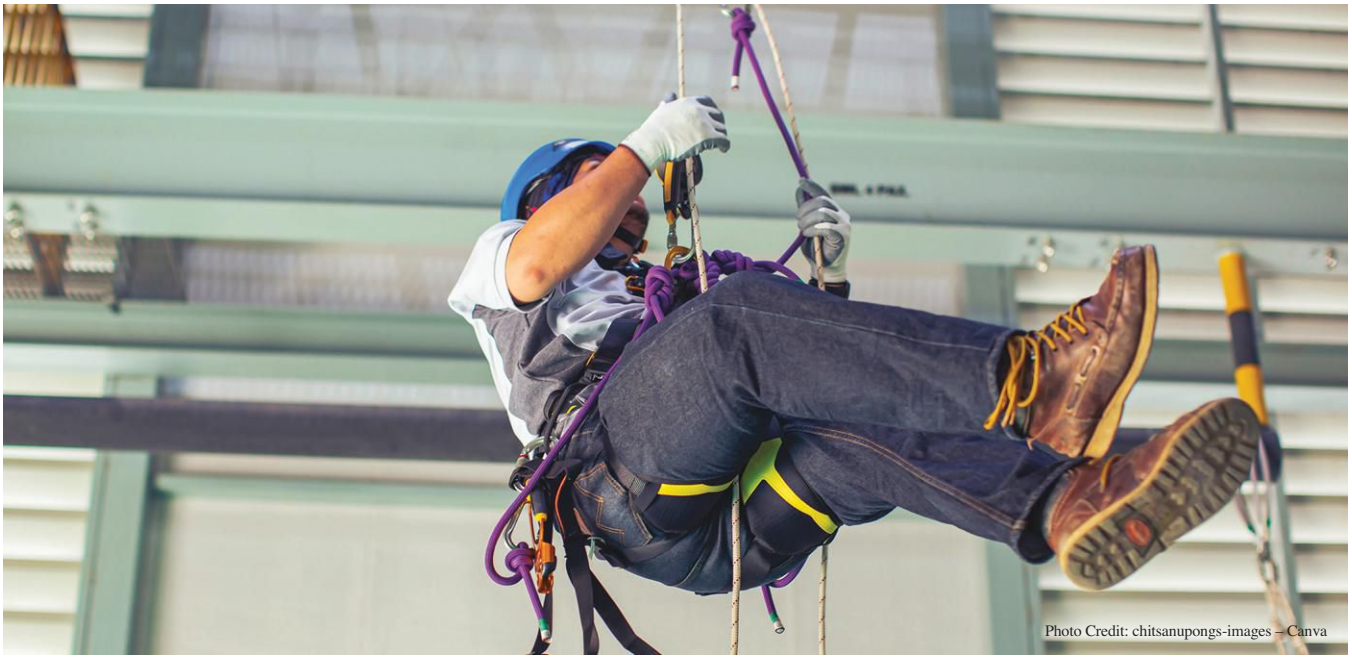


Photo Credit: chitsanupongs-images – Canva

Minutes Matter: Reduce the Risk of Suspension Trauma

Recognizing fall dangers & optimizing your company's rescue response

BY RICK PEDLEY

Falls are a leading cause of serious injury and death in the construction industry. While quality fall arrest systems do an excellent job of preventing impact injury, ensuring worker safety doesn't end there. Suspension trauma, also known as harness-induced pathology, occurs when a worker is left suspended in a fall-arrest harness for an extended period. This condition can quickly escalate into a life-threatening situation without an appropriate and immediate response.

According to the Occupational Safety and Health Administration (OSHA), prolonged suspension from fall arrest systems can result in unconsciousness, followed by death in less than 30 minutes.

Suspension Trauma & Why Every Minute Counts

Fall-arrest harnesses hold the body upright regardless of how it falls. While this protects the spine, the human body is not meant to remain in a vertical position for extended periods without movement. When a worker is suspended in a harness, gravity pulls blood down to the legs, preventing efficient blood flow back to the heart. Meanwhile, the harness leg straps can compress the femoral arteries, further hindering the body's ability to deliver oxygen-rich blood to the vital organs.

To better understand the dangers, let's delve into the biological factors at play during suspension trauma:

- *Venous pooling* – Under normal conditions, muscle contractions from leg movements help pump blood back to the heart. When the body is suspended in a harness, these muscles can remain inactive, leading to blood pooling.
- *Orthostatic intolerance* – As blood pools in the legs, less blood returns to the heart. This decreases blood flow to vital organs, including the brain, kidneys and heart.

The combined effects of venous pooling and orthostatic intolerance lead to suspension trauma, which manifests through the following symptoms:

- Numbness and tingling in the legs
- Weakness and fatigue
- Nausea and vomiting
- Confusion and dizziness
- Loss of consciousness

The longer a worker remains suspended, the more severe these symptoms become. In extreme cases, delayed rescue can lead to shock, organ failure and even death.

Responding to Suspension Trauma: Immediate Actions

If there is any reason to suspect suspension trauma, enact your rescue plan immediately and call for emergency medical assistance. For reference, OSHA's "Fall Protection Systems Criteria and Practices" standard includes the following contingency-based actions:

- *Activate lower limbs* — If self-rescue is impossible or if rescue cannot be performed promptly, employers should train workers to pump their legs while suspended to "activate muscles and reduce the risk of venous pooling." Suspension trauma straps, which are lightweight, inexpensive and can easily attach to harnesses, lets workers step into a stand-up position. This alleviates pressure while providing support for muscle pumping.
- *Use on-site equipment* — Rescue procedures don't have to be complicated. In some situations, a portable ladder or any equipment the suspended worker can stand on may be enough to prevent suspension trauma. The on-site rescue team can also pull them over to structural members, such as beams, posts and rafters.
- *Monitor the suspended worker* — If possible, communicate with the suspended worker to assess their condition and keep them calm until rescue.

According to the American Road & Transportation Builders Association (ARTBA), the heart's inability to tolerate the abrupt increased flow of carbon dioxide-saturated blood from the legs causes post-rescue death. As such, avoid laying the rescued worker down on their back. Instead, place them in a sitting position with knees close to the chest. Keep them in this position for at least 30 minutes to prevent the rush of oxygen-deprived blood to the heart.

Tips for Mitigating Suspension Trauma

While rapid response is crucial, preventing suspension trauma incidents in the first place is a more ideal approach. Here are some key strategies:

1. Assess Fall Hazards

Perform a thorough walkthrough of the jobsite to identify potential fall and suspension hazards. Pay attention to elevated work areas, unprotected edges, holes and unstable surfaces. Evaluate how quickly and safely workers can be reached and rescued in case of a fall, considering obstacles, space and distance.

This evaluation enables you to assess the viability of rescue equipment, such as rope ladders, controlled descent devices and emergency hoists.

2. Implement Comprehensive Fall Prevention Measures

OSHA requires employers to set up the workplace to prevent falls off overhead platforms, elevated workstations, or holes in the floor and walls. This can involve installing guardrails, toe-boards, proper scaffolding and other protection measures.

Additionally, employers must provide the appropriate fall arrest systems for specific tasks and work environments. Aside from properly fitting and industry-compliant harnesses, this can include self-retracting lines, suspension trauma straps and fall protection kits.

3. Develop a Rescue Plan

Have a preestablished rescue plan in place and ensure all personnel are trained to execute it effectively. This comprehensive plan should outline step-by-step procedures for safely accessing and lowering the suspended worker and cover various scenarios guidelines:

- *Roles and responsibilities* — Clearly define roles and responsibilities for each member of the rescue team, such as who calls 911 and who performs the internal rescue procedures.
- *Rescue training* — Provide comprehensive training to all personnel on fall arrest procedures, including techniques for creating footholds and raising their legs while suspended. All workers should be familiar with the company's rescue plan and practice drills regularly. This enhances awareness and coordination during high-pressure situations.
- *Equipment training* — Practice executing proper rescue procedures using available equipment. This can include using pulley, winch, and brake-tube systems; controlled descent devices; rope ladders and other safety equipment.

Remember, relying on external first responders cannot be your "Plan A." In addition to the time required for them to arrive, unfamiliarity with the site's layout and hazards can lead to further delays and increased risks. On-site personnel must always be prepared to act swiftly when colleagues are working at heights.

4. Promote Awareness

Promote suspension trauma awareness among your workforce. Organize training and workshops to educate them on its signs, symptoms and dangers while emphasizing the importance of executing a swift rescue. Encourage open communication and a culture of safety where workers feel empowered to speak up about potential hazards. These measures ensure workers are well-informed and prepared to handle situations that could lead to suspension trauma. ▲

Rick Pedley, PK Safety's president and CEO, joined the family business in 1979. PK Safety, a supplier of occupational safety and personal protective equipment, has been operating since 1947 and takes OSHA, ANSI, PPE and CSA work safety equipment seriously. Visit pksafety.com.





Photo Credit: Don - stock.adobe.com

Tunneling Through Time

AI-driven excavation for faster, safer infrastructure projects

BY ATAL BANSAL

Infrastructure design and features are key to growing communities and cities, driving economies and forming neighborhood identities. The construction industry recently experienced costly bottlenecks attributed to supply chain breakdowns and workforce reduction, and officials have implemented stricter regulations and protocols designed to safeguard environments and construction personnel during excavation.

Artificial intelligence (AI) continues to have a transformative impact within several industries as software specialists have enhanced this powerful resource to automate tasks, elevate collateral quality and produce nuanced, error-free data analysis to create actionable insights. Its application within construction and infrastructure development has the potential to reimagine how these industries design, plan, monitor and bring projects to fruition, all while elevating safety, reducing expenses and creating modern structures and resources to innovate cities.

Modernizing Excavation, Mitigating Hazards

Risk mitigation remains a priority within any construction project, and excavation protocols have become more stringent in response to the Occupational Safety and Health Administration (OSHA) recently reporting 39 deaths directly attributed to excavation and trenching, the highest statistic in 18 years. Despite additional campaigns to promote safety awareness, the industry utilizes new technology resources to reduce worker injuries and facilitate proactive strategies to complete more accurate excavation projects.

AI is an invaluable resource when utilized during construction planning stages. Project managers deploy AI-driven blueprint programs and instantly gain deep insights into potential obstacles and the hazards of surrounding environments that may hinder project completion. Accurate and automatic measurements in real time eliminate repetitive tasks and human error. At the same time, cloud-based programs provide instant document and blueprint sharing, facilitating collaboration and ensuring strict adherence to the newest OSHA and construction regulations with no confirmation delays.

AI-driven robotics will propel excavation and construction processes

forward as software specialists have enhanced sensors and predictive analytics to produce actionable insights. Nuanced sensors within robotics successfully detect any minute presence of nitrogen and other oxygen-depleting gases that cause death by asphyxiation during trenching. OSHA continues to report that trenching remains dangerous, and despite a reduction in fatalities, the U.S. Bureau of Labor Statistics reported 166 deaths directly related to trenching from 2011 to 2018. AI-driven resources can significantly reduce this chilling statistic by proactively studying environmental conditions and facilitating careful planning of all jobsite processes to ensure more stringent safety strategies.

Machine learning (ML), a subset of AI, provides great innovation in how project managers engage in rock analysis. Rock analysis is critical for efficient and safe excavation, and ML algorithms complete error-free, highly nuanced studies of rock mass, composition and brittleness index (BI) parameters in real time to enable project managers with expedited reports to reduce excavation completion times and properly utilize all resources required for safe workflow. Accurate BI reports are paramount for project managers to make informed, data-driven decisions on the fragility properties of rock mass. Machine learning eliminates any inconsistencies in BI report generation and augments personnel by providing a new resource to reduce expenses and promote careful project strategies. ML ensures on-time and on-budget task completion as its analytics forecast task completion times, as rock mapping and analysis have historically been time-consuming.

Promoting Precision With Artificial Intelligence

Successful construction and excavation projects are predicated on strategic planning, budgeting and accurate data. AI automatically produces error-free studies and real-time data production to empower project managers by unlocking unprecedented insights into every stage of construction project planning.

Software developers have made great advancements with AI-based algorithms. Modern designing and programming algorithms offer project managers recommendations for task completion, providing data-driven options on how to proceed and alternative measurements within blueprints to ensure safe, quality project completion.

Predictive analytics remain an innovative resource enhanced by dedicated developers. By automatically collecting and monitoring data, predictive analytics successfully forecast future outcomes within customized parameters. Applied within excavation and construction, predictive analytics enable insight into a structure's durability, forecast task completion times and provide project managers with error-free data detailing expenses.

Data-Driven Decisions Drive Sustainability

Industries continue to grapple with how to innovate products and services while balancing production processes with demands for more sustainability. The construction industry remains one of the biggest consumers of raw materials, and processes such as trenching and excavation can tax environments.

AI-driven analytics successfully guide project managers on which raw materials offer the most durability and sustainability, carefully studying manufacturing techniques and composition, and automatically generating reports for recommendations. Utilizing analytics enables more informed, data-driven decisions beyond the initial criteria for sourcing raw materials for construction projects.

Project managers, officials and advocates for sustainability have reevaluated construction project life cycles as calls for more green initiatives have increased. AI analytics facilitate greater insights into how infrastructure, commercial real estate and residential properties consume energy. Leveraging AI enables nuanced studies of structural integrity and efficiency, and it carefully recommends what energy sources promote the cleanest utilities while reducing consumption and operating expenses.

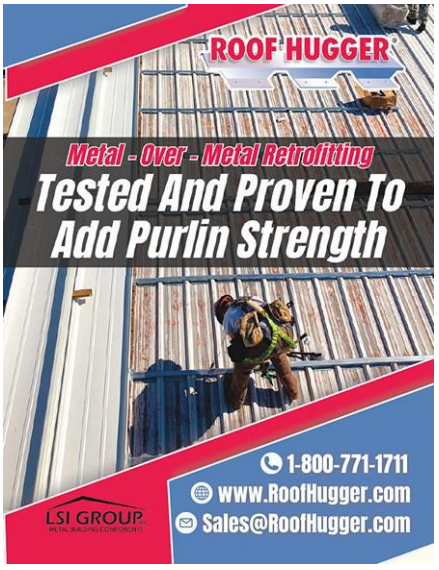
Leveraging AI for Optimization

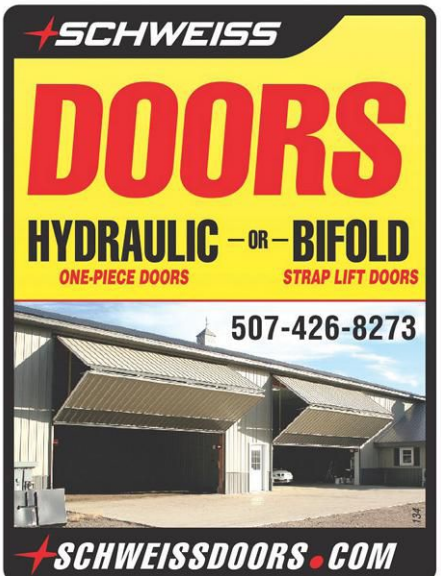
Leveraging the limitless capabilities of AI provides the construction industry with cutting-edge resources to promote safety and reduce expenses and environmental impacts, ultimately completing projects critical for infrastructure.

Great advancements by software specialists have facilitated innovation within all industries, and the integration of AI and analytics within construction and infrastructure development provides new paths to modernity for an industry that continues to experience significant challenges. These continued challenges have forced the construction industry to seek recourse and develop new strategies to meet modern infrastructure demands while reducing expenses and expediting project completion times. Sharp increases in construction raw material costs have stymied budgets, but technological innovations may provide the construction and infrastructure sectors solutions to move forward successfully and provide more safeguards during excavation. ▲

Atal Bansal, a member of the Forbes Technology Council, is the founder and CEO of Chetu, a global software solutions and support services provider with over 2,800 in-house software developers working in more than 40 industries, including the construction sector. Visit chetu.com.







PROfiles

ARE YOU A PRO?

Want to see your company's leaders featured in the PROfiles section of our next issue?

Email Editor Megan Beam at mbeam@cahabamedia.com to share the story of your growing business and its people, practices and strategies.



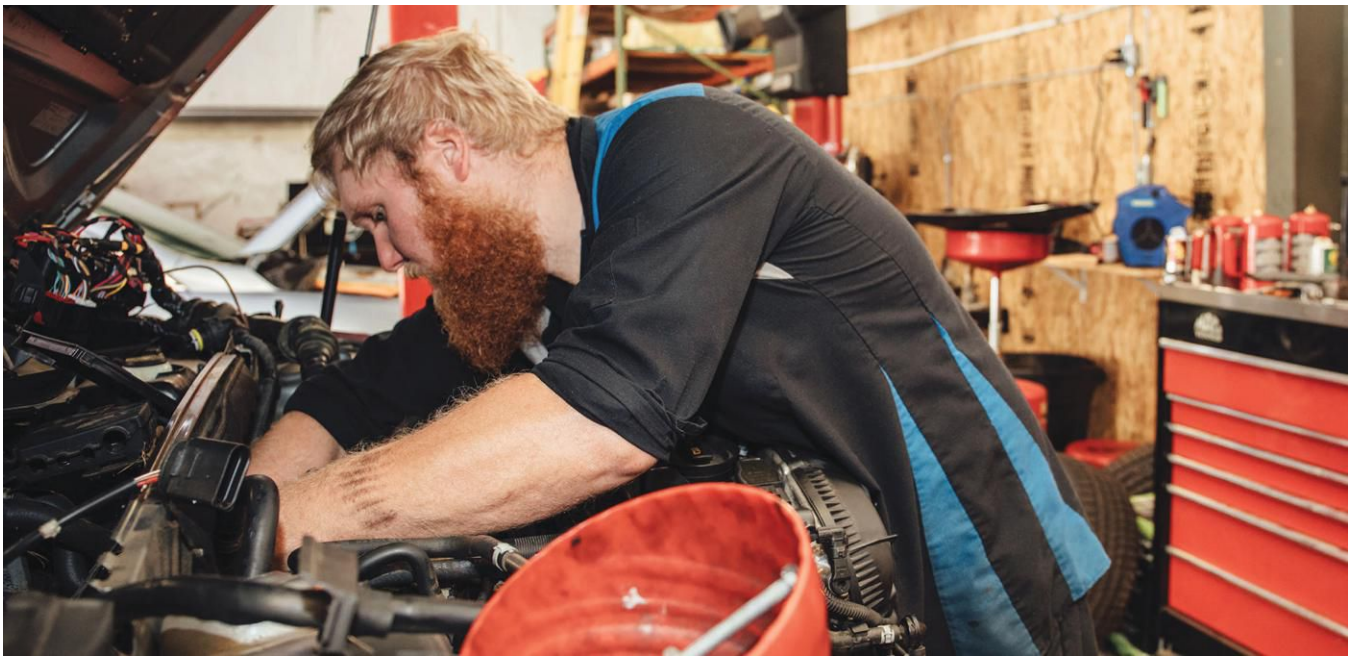


Photo Credit: Fleetio

3 Pros & Cons of Managing Fleet Maintenance In-House

Determining your equipment service strategy

BY RACHAEL PLANT

One of the greatest costs in operating a construction fleet is asset maintenance and repair. Coming in second only to fuel, service spend on average takes up roughly 22% of a fleet's budget, according to Fleetio's recent benchmarking report. But is it more cost-effective to manage maintenance and repair services in-house rather than working with third-party shops?

Like most things in life, the answer can be … complicated. While servicing assets in-house can be cost-effective for localized fleets, that may not be the case for those operating across a larger region. A lot of the deciding factor also depends on resources. Does the company have the facility, tools, labor hours and workforce to handle in-house servicing?

Chuck Metoyer, a veteran fleet manager, has experience on all sides. He moved from farming out all maintenance and repair services, then to a blend, and he finally settled to primarily handling everything in-house. "It was kinda rough [outsourcing] because I was just using an Excel spreadsheet to keep track of everything, [so it] was really, really hard to keep track of stuff," he explained.

"Once we moved into this new building, we [had] our own facility here in-house, so we could do all the oil changes. That's what I actually started out with at first. We're not going to do any major work; we're just going to do the oil changes, and we'll farm out the major work to other shops." This process was in place for about two years before Metoyer realized he could boost productivity by moving all maintenance and repair service in-house.

"The only thing I farm out now would be alignments and body work, and that's it. Everything else is done here in-house."

While choosing the option that best fits the fleet's — and business's — needs is largely situationally dependent, investing in moving maintenance and repairs in-house can pay dividends. Let's look at a few pros and cons of in-house service.

The Pros

1. Better Operational Flow

Operational flow can be a "vibe" of sorts. It's a rhythm that departments get used to and rely on. Performing services in-house allows the technicians and fleet managers to attune to that rhythm in such a way that it reduces productivity blockers. This includes things like ensuring optimal parts inventories, scheduling for minimized

disruption and guaranteeing that priority service gets handled in a timely manner. Having insights to the whole fleet operation, from where an asset is located to where it's needed and when, can help construction fleets schedule maintenance or repairs to improve both safety and productivity while minimizing the risk of further component damage.

2. Intimate Knowledge of Fleet Assets

Between technicians and operators, construction crews just know their assets better. That means when an operator hears a novel noise or feels a difference in a vehicle's suspension, they're likely to raise the issue. And because steadily employed technicians have likely worked on the vehicle before, they can easily determine the cause of the issue, especially with access to robust service data. This process becomes even easier for fleets using maintenance management solutions, like fleet management software (FMS) integrated with telematics, as they can reference sensor data associated with a particular issue and attach sensor data snapshots to work orders, expediting the service process.

3. Improved Cost Control

Your shop? Your rules. From parts purchasing to choosing shop equipment that streamlines operations — while helping to improve technician safety — to scheduling for minimal downtime, cost control is more in your hands when performing services in-house. Not only can you see and adapt to trends like poor-performing replacement part brands, but you can also invest in shop infrastructure that cuts down shop-related downtime.

"We used to waste a lot of time taking front rotors off the trucks. It's a time-consuming job," said Metoyer. "A vendor came in with a brake lathe that [let you] cut the rotors on the truck without taking it apart. That just cut that job down to half the amount of time it normally takes. We can do three or four in a day versus one."

Outsourced vs. In-House Maintenance in Fleetio

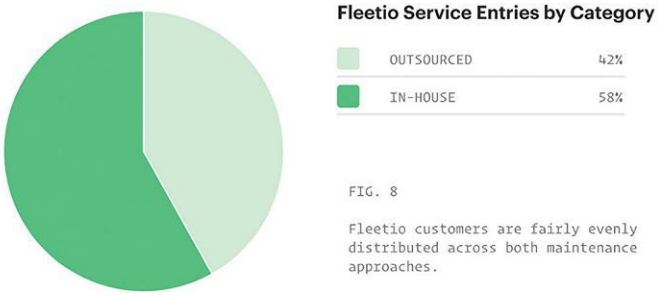


FIG. 8

Fleetio customers are fairly evenly distributed across both maintenance approaches.

The Cons

1. Cost Barrier to Resources

At some point, everything comes down to cost. The difference is up-front versus long-term costs, and what makes the most sense for your operation. While potential savings through in-house maintenance and repairs are there for the taking, it's also an investment in one capacity or another. Good technicians are worth their weight in gold, and retaining them — in addition to shelling out for any certifications you need them to obtain — is a necessary expense. Likewise, good equipment and tools are also a necessary expense. Outsourcing maintenance and repairs services, conversely, can help fleets save money through tiered discounts and removing the need for cutting-edge tools and equipment.

2. Cost-Attribution Challenges

According to the aforementioned benchmarking report: "Because maintenance and operational costs are so closely tied together, it may be hard to mitigate one without impacting the other." An asset's health can impact a project's timeline and even drive up fuel expenses — which already makes up a whopping 50% of the fleet budget, on average. To determine service-specific costs and how they impact other aspects of the business, total operating costs must be taken into consideration. Without an efficient way to collect and aggregate this data, accomplishing cost attribution can be difficult. However, fleets can use FMS to collect, consolidate and aggregate fleet data, including total cost of ownership, to quickly determine and address issues driving up service costs.

3. Limited Flexibility

When managing asset service in-house, there may be limited flexibility around maintenance scheduling, addressing priority repairs or both. This can play a heavy role in extended shop-related downtime, leading to missed project deadlines and overtaxed techs. On the other hand, farming out specific maintenance services or emergency repairs can provide more flexibility and a quick turnaround so operators can get back on the road or to the jobsite.

Determining whether to service assets in-house, through a third-party shop or by using a combination of both really depends on your operations, availability of resources, short- versus long-term goals and, of course, budget. While making the switch is something that can be planned for in advance, consider the pros and cons and where your fleet fits into that matrix. As a significant cost center for construction businesses, minimizing fleet costs while maximizing safety and uptime are paramount to getting jobs completed on time. ▲

Rachael Plant is a senior content marketing specialist for Fleetio, a fleet management software company that helps organizations track, analyze and improve their fleet operations. Visit fleetio.com.





Photo Credit: metamorworks - stock.adobe.com

Software Technology Insights From Heavy Construction IT Pros

3 leaders on selecting the best tech for their companies & customers

BY GREG NORRIS

With software options expanding at a seemingly exponential rate, IT leaders for contractors in the heavy construction sector face exciting opportunities and tough challenges. Three of those leaders shared how they pick the best solutions for their companies, get end users to adopt them and get software systems to communicate with each other.

Prioritizing Investments

With tech expanding so rapidly, prioritizing and deciding where and how to focus is a growing challenge. "You have to make sure you're not just buying something for the sake of buying something," cautioned Eric Schubert, chief information officer at Vermont-based Casella Construction, a contractor that completes heavy civil work across New England and New York. Schubert says contractors should be sure the technology will solve a problem or help them take advantage of an opportunity, both of which should be well defined before buying decisions are made.

This defining stage is where IT experts can play a vital role. "We want ideas to come from the organization, but IT is there to say, 'Let's talk about the problem before we talk about the solution,'" said Chris Malafa, IT director for Griffith Companies, a large heavy civil contractor based in California.

Malafa and Scott Martin, the IT director for Sherwood Companies, emphasize that it shouldn't just be up to IT to bring all technology ideas forward. They view internal employees as customers of the IT team and put a lot of effort into listening to the ideas they have, understanding what is causing frustration and then matching technology to those needs. Sherwood is based in Oklahoma and has nine entities across the midwestern U.S.

"If everyone across the company could just go out and select the software they wanted, we would end up with a lot of different silos of information," said Martin. "Trying to bring everybody together onto common platforms that talk to each other is really critical as we move forward."

Griffith Company has even established an innovation committee. Representatives

from different departments meet to review technology needs and opportunities. Input from the cross-functional group surfaces information on how new technology in one department could potentially impact other departments and workflows.

"Often, you will have a department that says 'We want this because it will help us,' but they don't necessarily understand how that may impact the other departments," said Malafa.

Financial return is — and should be — a major factor in evaluating IT investment options. Malafa, however, pointed out that it is not the only one. "Being modern is helpful in terms of recruiting," he said. "People — especially young people — want to see that you are a company that embraces technology, so sometimes you make a decision for that reason as well."

Choosing Suppliers

When a contractor settles on an investment strategy or a particular technology, picking the right supplier is often the next challenge. Long-term viability, openness to integration and commitment to ongoing innovation are key criteria IT leaders like Schubert, Malafa and Martin look at.

"We need to be confident they will be around for a while and that they will continue to innovate," said Malafa about software suppliers. "I have seen a lot of companies do a great job at what they do and then go stale, and 10 years later, the product they have is the same product they had then."

Once Sherwood is confident a supplier meets its basic qualification standards for size, long-term viability, underlying tech and integration, a structured scoring system helps in evaluating competing options. Weights adding to 100% are assigned to each task the company wants the software to accomplish, and individual members of a committee score each option. Quantitative scoring provides an objective basis about which one to pick.

"This directs you toward what was identified up front as important to the company, so you are not distracted by all the bells and whistles ... you might not really need," said Martin.

Getting Buy-In

"I was the last guy who wanted to switch from pen and paper, but once I found out how easy the new system was to use and how it made my life easier, I liked it," is a common refrain among end users of new software. Proven strategies can help contractors overcome initial resistance and get to that desired conclusion.

Getting end users involved in the software selection decision is an effective way to get buy-in because it gives them a sense of ownership and makes them more invested in the initiative, according to Martin. Projects where IT or executive management independently dictate which software will be used are the ones that are more likely to fail, he added.

"You also have to look at usability," Schubert said. "Whose hands are you going to put this digital tool in, how are they going to use it and is it going to be user-friendly for them?"

Schubert and Malafa cited unique and diverse dynamics in construction sectors in terms of the comfort level with technology. They said taking time to get people up to speed and to tune systems to the people who are going to use the technology are critical.

"We have people who are very sophisticated and some people who are really technology averse, and you have to be able to meet those people where they are," said Malafa. Schubert encourages contractors to put particular effort into bringing along the employees who may be least comfortable with technology.

Executive support, an explanation of the big-picture benefit of new technology to the company and training are important too. Moving forward with a pilot program to work out any kinks before rolling a new system out to the entire organization is another proven strategy. This can entail a "train the trainer" approach, with product "champions" gaining expertise and helping to bring additional users onboard.

"We have always had the best success when we focused on in-person training, direct contact and making it clear to end users who they can go to for questions or support," said Malafa. "At the same time, online training has improved significantly, and the convenience can be a benefit."

Schubert said shorter, on-demand training content, particularly in illustrative video formats, is emerging as a very effective tool. Documentation, such as quick-reference guides, as well as follow-up training can also be effective for buy-in and ongoing success, according to Martin.

Data & Integration

It's important not to overwhelm users and instead make it easier for them to get the information they need. That means an added emphasis on standardization of data collection and communication and data sharing across multiple systems.

"As we continue to go into the future with more and more technology, there are going to be more silos of data ... if we don't do something about it," said Martin.

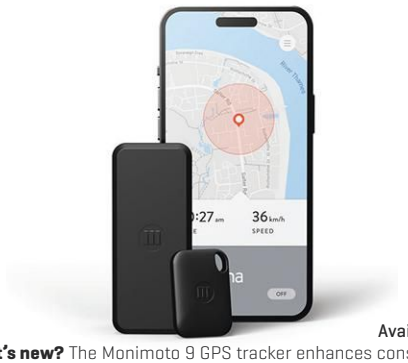
"Integration is only becoming more and more paramount. You need your systems to integrate with each other," Malafa added. Schubert is clear: "If there isn't a robust API or other mechanism to get data in and out of these systems, we are already moving on and looking at something else." ▲

Greg Norris is communications director at B2W Software, a Trimble company. The B2W platform connects people, workflows and data and includes unified applications to manage estimating, scheduling, performance tracking, equipment maintenance, data capture and business intelligence. He can be reached at greg_norris@trimble.com. Visit b2wsoftware.com.



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.



◀ MONIMOTO

Monimoto 9

Released: 4/1/24

Availability: U.S. & European markets

What's new? The Monimoto 9 GPS tracker enhances construction site safety by protecting valuable equipment with wireless technology. It offers 24/7 monitoring, giving project managers and professionals peace of mind. Ideal for remote construction sites like solar plants, roadbuilding and well drilling, its compact size and long battery life suit areas with limited power sources. The rechargeable USB-C battery ensures up to 12 months of operation, providing effective asset monitoring.

Specs: Monimoto 9 uses LTE-M (LTE Cat-M1) network and works internationally. Waterproof and dust-proof (IP68). Wireless and hassle-free installation in less than five minutes. In case of any suspicious movement, the owner will be alerted via a phone call. Following the call, it consistently relays the GPS position to the Monimoto app. Real-time tracking in theft scenarios.



◀ BAILEY INTERNATIONAL

Larger bore Chief WT cylinder with SAE ports

Released: 3/4/24

Availability: U.S. & Canadian markets

What's new? The Chief WT hydraulic cylinders feature cross tube mounts on the rod and base ends, 3,000 pounds per square inch (PSI), and are one of Bailey's strongest welded cylinder lines. Bailey now offers the Chief WT line with SAE ports on its larger bore sizes, 5 inches, 6 inches, and 8 inches, in standard and custom sizes from a factory in Knoxville, Tennessee.

Specs:

Dimension (inches): 4.75 - 15.75
Tolerance (inches): + or - 1/16

Dimension: 15.76-39.375, 39.38-78.75
Tolerance: + or - 1/8

Dimension: 78.76-157.5
Tolerance: + or - 3/16

Dimension: 157.51-315
Tolerance: + or - 1/4

SOUTHCO INC. ▶

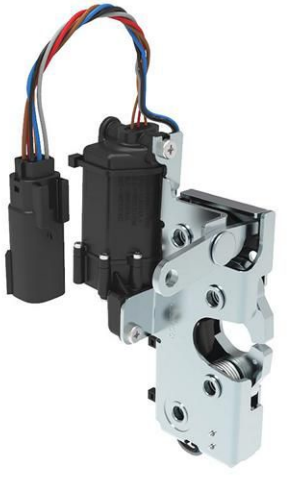
R4-50 Heavy-Duty Electronic Rotary Latch

Released: 3/14/24

Availability: U.S. & Canadian markets

What's new? It combines the durability of Southco's R4-50 rotary latches with the convenience of electronic actuation. It is also compatible with Southco's Bluetooth controller, allowing it to be remotely actuated from the Keypanion app. It also includes a built-in sensor that can tell whether a door is closed at all times, so it saves space and simplifies designs for engineers. If they need a latch and sensor, it's one less device they need to account for in their designs.

Specs: Features include high-strength door retention (FMVSS 206), exceptional cycle life, quick release and sealed actuator. Releases reliably under high load. Sensor verifies door closure. Electronic specifications: operating voltage 12 VDC nominal, operating current < 600mA, and temperature is -40 to 80 degrees Celsius. Sealed (IP65).





KEEN UTILITY

Evanston Work Boot

Released: 5/1/24

Availability: U.S. market

What's new? The Evanston offers the burly protection of a work boot with the athletic feel and flexibility of a sneaker. A tough worker with an energetic sole, the Evanston is available for both men and women as well as an electrostatic dissipative (ESD) option.

Specs: Product highlights include a responsive KEEN.ReGEN cushioning that provides up to 50% energy return with every step as well as carbon-fiber safety toes that are unobtrusive and 15% lighter than steel. Other features include a KEEN.DRY waterproof, breathable membrane and full-grain Barnyard Resistant leather upper to keep you shielded from jobsite messes.



TORO

Dingo TX 1000 TURBO

Released: 2/19/24

Availability: U.S. market

What's new? The Dingo TX 1000 TURBO's new engine has more torque to deliver the productivity of the Dingo TX 1000 quicker, especially when using the trencher and auger attachments. The 24.7-horsepower Yanmar diesel engine is engineered with a focus on vibration reduction. The result is an engine more than capable of handling the most demanding applications. Toro engineers added a larger hydraulic filter, found in the Dingo TX 1300 model, for longer maintenance intervals and less downtime.

Specs: Engine: 24.7-horsepower (18.4 kilowatts) Yanmar 3TNV80FT Turbo Diesel Tier 4 and EU Stage 5 compliant. Rated operating capacity: 1,000 pounds. Hydraulic pressure: 3,000 PSI. Hinge pin height: 81 inches (205.7 centimeters).

TAKEUCHI

TCR50-2 Crawler Dumper

Released: 6/26/24

Availability: Global markets

What's new? The TCR50-2 crawler dumper is a versatile, well-balanced dump carrier that excels in a wide range of applications. With a 65-degree dumping angle and 8,157-pound maximum loading weight, the TCR50-2 allows operators to carry up to 2.7 cubic yards of material while rotating and dumping it in a single cycle. The machine's ability to rotate its dump bed 180 degrees reduces both the need to constantly reposition the machine and deterioration of its rubber tracks. The machine has LED work lights and a tinted sun visor, while the cab window has rear windshield wiper and window vents, all providing greater visibility. A customizable travel alarm can be adjusted to sound for forward and reverse travel or only when the unit is put into reverse.

Specs: Weighs 14,440 pounds, with a 118-horsepower engine. Features an intuitive, 5.7-inch, multi-information color display with standard 180-degree rearview camera, hydraulic joystick controls, adjustable suspension seat, powerful air conditioner, radio with USB functionality and large cup holder. Hydraulic pilot controls deliver smooth operation for both travel and dump body functions, while the foot throttle efficiently adjusts engine speed. Wide-opening maintenance covers offer exceptional access to the TCR50-2's engine and routine inspection points. Takeuchi's Fleet Management (TFM) telematics system is standard on the TCR50-2. TFM reduces downtime and controls costs by providing owner/operators with machine health and condition, run time (hours) and machine location, as well as remote diagnostics, scheduled maintenance reminders and customizable alert settings. TFM also gives owners the ability to geofence their machines, helping them protect and secure their investments.

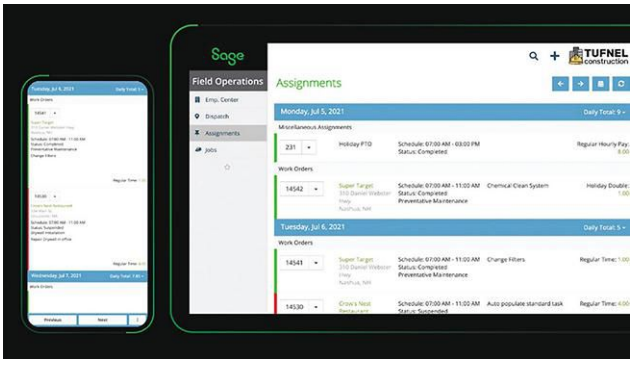




◂JOHN DEERE

E-Drive 744 X-Tier Production Class Wheel Loader

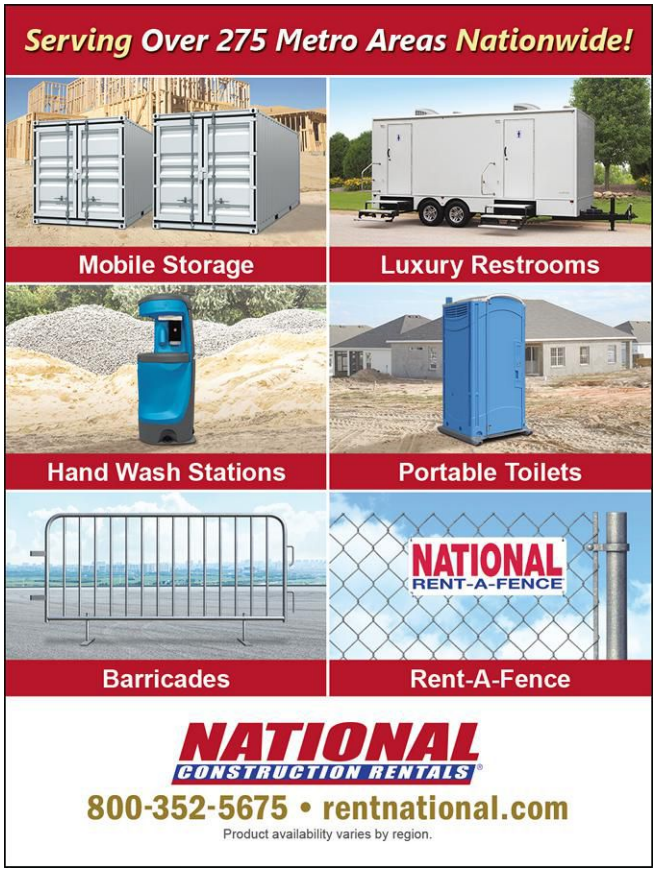
Released: 7/22/24
Availability: U.S. market
What's new? Engineered with the demanding conditions of the construction jobsite in mind, this technology-packed loader is an ideal solution for customers looking to benefit from fuel efficiency, enhanced productivity and operator comfort. The new loader features the John Deere exclusive Electric Variable Transmission (EVT) E-Drive system. It includes a JD9 diesel engine as the primary power source; however, the torque converter and traditional transmission have been replaced by the EVT system, offering more efficiency. In addition, the E-Drive component provides instant power, while simplifying operation and reducing complexity.
Specs: Operators can expect a quieter cab environment attributed to the constant engine speed. If hauling material over longer distances, like those seen in aggregates and roadbuilding applications, the addition of the Tire Pressure Monitoring System can help increase tire life and lower fuel consumption by ensuring tires maintain proper inflation throughout the day. With the Advanced Vision System and Advanced Object Detection, operators can enjoy an improved range of view on both sides of the loader and better visibility beyond conventional mirrors. Also, dynamic reversal projected path lines assist with visualizing the anticipated reversal path to ensure a better line of site. The deluxe LED lights also help amplify vision in tough-to-see settings.



SAGE ▲

Sage for Specialty Contractors

Released: 6/26/24
Availability: U.S. market
What's new? Sage for Specialty Contractors is an end-to-end native-cloud construction suite that is built to handle the complexities specialty contractors face every day. It enables contractors to handle every aspect of their business, from preconstruction to closeout and everything in between. It helps them save time, avoid error-prone work, improve communication with field teams and make informed decisions with real-time data.
Specs: Sage for Specialty Contractors includes Sage Construction Management, a construction management solution built for collaboration and mobility; Sage Field Operations, a field service solution designed for specialty contractors with service technicians; and Sage Intacct Construction, a financial management solution built for construction; delivering real-time, anytime, anywhere access to project information and insights.



INDEX OF ADVERTISERS

CONSTRUCTION BUSINESS OWNER

ADVERTISER INDEX

Advertiser Name ..... Page

ANA 23
Foundation Software 5
Hino Trucks ..... IFC
Instagrid Inc. ..... IBC
JCB 39
National Construction Rental 46
Portland Cement Association 3
Progressive Commercial Auto Insurance 1
Propane Education & Research Council ..... BC
Roof Hugger 39
Schweiss Doors 39
Thieman Tailgate 18
Uline 34

PRODUCT INDEX

Company Name ..... Page

Bailey International 44
John Deere 46
Keen Utility 45
Monimoto 44
Sage 46
Southco Inc. 44
Takeuchi 45
Toro 45

**This ad index is furnished as a courtesy, and no responsibility is assumed for incorrect information.*

RS2409

SUBSCRIBE TODAY!

With your FREE subscription to Construction Business Owner's monthly magazine and weekly CBO Alert e-newsletter, you'll get:

- Practical advice for running a successful company
- Tools for solving common problems
- Expert insights into today's industry trends
- Tips for improving productivity and efficiency
- Management strategies to build your business

CONSTRUCTION BUSINESS OWNER
constructionbusinessowner.com/subscribe

YOU MUST SIGN AND ANSWER ALL QUESTIONS TO QUALIFY FOR A FREE SUBSCRIPTION

Qualified subscriptions begin at the publisher's discretion. Incomplete forms cannot be processed or acknowledged.

We will use your email address to send your annual renewal notice and other related products and services.

○ Check here to opt out of email messages from our marketing partners.

○ **YES! I wish to receive or continue to receive a FREE subscription.**
○ **PRINT edition** *(U.S. only)*
○ **DIGITAL edition** by email
○ No. Cancel my FREE subscription.

REQUIRED for SUBSCRIPTIONS

Name

Title | Company

Address | City/State/Country/Zip/Post

*Phone | *Email

*Signature | Date:

1. Your company's primary business is:
(Check only one)
❑ 12 General Contractor – Commercial
❑ 02 General Contractor – Residential
❑ 10 Construction – Special Trade Contractors
❑ 03 Highway and Street Construction
❑ 04 Water, Sewer and Utility Construction
❑ 05 Heavy Construction
❑ 06 Concrete Work
❑ 07 Excavation Work
❑ 08 Wrecking and Demolition Work
❑ 13 Architecture, Engineering and Construction Management Services
❑ 11 Consulting Contractor
❑ 99 Other (please specify)

2. Your primary job title is: *(Check only one)*
❑ 10 Owner, Partner, President, CEO, CFO, COO, Vice President, Director
❑ 11 General Manager, Manager, Foreman, Superintendent, Purchasing Agent, Controller, Accountant
❑ 12 Engineer, Architect
❑ 06 Consultant
❑ 99 Other (please specify)

3. Approximate annual contract sales volume:
(Check only one)
❑ 01 Less than $500,000
❑ 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

ONLINE
For fastest service, complete this form online constructionbusinessowner.com/subscribe.

EMAIL
Complete this form and email to: constructionbusinessowner@omeda.com

MAIL
Complete this form, tear out, place in an envelope and mail to: Construction Business Owner P.O. Box 271, Lincolnshire, IL 60069

Annual Value of Construction Put in Place

June 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 June 2024 figures. (Millions of dollars. Totals may not add up perfectly due to rounding.)

	2022	2023	2024
Total Private Construction	**1,416,405**	**1,516,910**	**1,664,594**
Residential	923,721	856,302	927,986
Nonresidential	492684	660,607	736,608
Total Public Construction	**345,912**	**421,447**	**483,850**
Residential	9190	10,106	11,820
Nonresidential	336,722	411,342	472,030
TOTAL Construction	**1,762,317**	**1,938,357**	**2,148,444**

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

$2,148,444

JUNE 2024 TOTAL ANNUAL VALUE OF CONSTRUCTION PUT IN PLACE

"Architecture firms continue to face a period of headwinds in the construction sector, driven by elevated interest rates, high construction costs and generally weak property values," said Kermit Baker, Ph.D., AIA chief economist. "This is the seventeenth consecutive month of a billings decrease and yet, despite the softness, firms remain generally optimistic that conditions will start to improve once interest rates begin to ease."

AIA Architectural Billings Index (ABI)

National			*Regional - Billings				*Sectors - Billings			
Month	Billings	Inquiries	Northeast	Midwest	South	West	Multifamily Residential	Commercial/ Industrial	Institutional	Mixed
Jan-24	46.2	53.8	43.6	50.9	45.2	46.6	44.6	47.0	48.5	42.9
Feb-24	49.5	56.0	44.0	50.8	47.7	47.2	44.9	46.1	50.7	47.1
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

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.

POWERS ANYTHING.
GOES ANYWHERE.
WITHSTANDS EVERYTHING.

Now available in North America



instagrid.co/us

Instagrid

ENERGY FOR EVERYONE®
propane

Power a Cleaner Future Today with Propane Generators

Whether you need primary or backup power, propane generators deliver quieter, more efficient and far more environmentally friendly performance than diesel options. In fact, propane is the cleanest alternative energy for power generation, able to significantly improve local air quality. With the capability to meet any need, propane generators provide power that's quiet, versatile, reliable and available anywhere you need it.

Visit **propane.com/powergen** to explore propane power generation options for your needs.



Propane Education & Research Council