MARCH 2020 | CONSTRUCTIONBUSINESSOWNER.COM

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World of Concrete (WOC) 2020, held Feb. 4-7 in Las Vegas, Nevada, gave attendees more than expected. While show-goers anticipated a slower-paced show (with only a few short weeks between WOC and CONEXPO-CON/AGG), WOC delivered new and exciting product releases and special events with high intensity. After hitting a 10-year high in WOC 2019 attendance, the show is on-pace to have its largest show ever in 2021. WOC 2020 event drew approximately 54,000 registered professionals and featured 1,310 companies (including 255 new companies) exhibiting across more than 700,000 net square feet of exhibit space. The CBO team was there, too, and brought home a truckload of new tools, technology and insight from industry leaders. Check out our post-show coverage on page 26 for the highlights.

At the show, our editors got the chance to meet with Pure Safety Group (PSG), a company that's doing some cool things in safety gear innovation. PSG's January 2020 launch of the Stronghold Quick-Switch Tool Tether System—for the prevention of dropped objects while working at height—is based on the company's proprietary Quick-Switch design, which allows workers to switch tools from one connection point to another in a single motion to provide a level of dropped objects safety. The recent launch makes PSG the ideal voice for our upcoming webinar, "Why Everyone Needs a Drops Prevention Program," taking place at 2 p.m. EST on March 26. Industry statistics show that struck-by incidents are the second biggest cause of fatalities on construction sites. Our webinar will share tips for building and launching your own lifesaving safety strategy at your company to further reduce injury and death. Join us to hear safety expert Mathew Moreau cover key drops statistics and the common challenges, program guidelines and implementation of a drops prevention program.

Looking ahead, we'll be back on the road to North America's largest construction trade show, CONEXPO-CON/AGG 2020, taking place March 10-14. The CBO team will be on the show floor with about 128,000 of our closest friends from the asphalt, aggregates, concrete, earthmoving, lifting, mining and utilities industries. If you can't make it to the show (it only happens every 3 years), don't worry—we've lined up some video coverage from the showroom floor to walk you through some of the show's top product releases. Stay tuned this spring for more information about where you can watch!

Take good care,

Kathy Wells



Last month, at World of Concrete in Las Vegas, Nevada, Editor Kathy Wells tried out Hilti's new cordless concrete breaker. The TE 500-A36 (shown here with the dust removal system, which is also cordless) launched in December 2019 and is the world's first cordless SDS-max chipping and demolition hammer. The tool features a dustless motor, is compatible with Hilti's 36V battery platform, and includes Active Vibration Reduction (AVR) technology, producing 30% less vibration than the equivalent corded model. Visit hilti.com.

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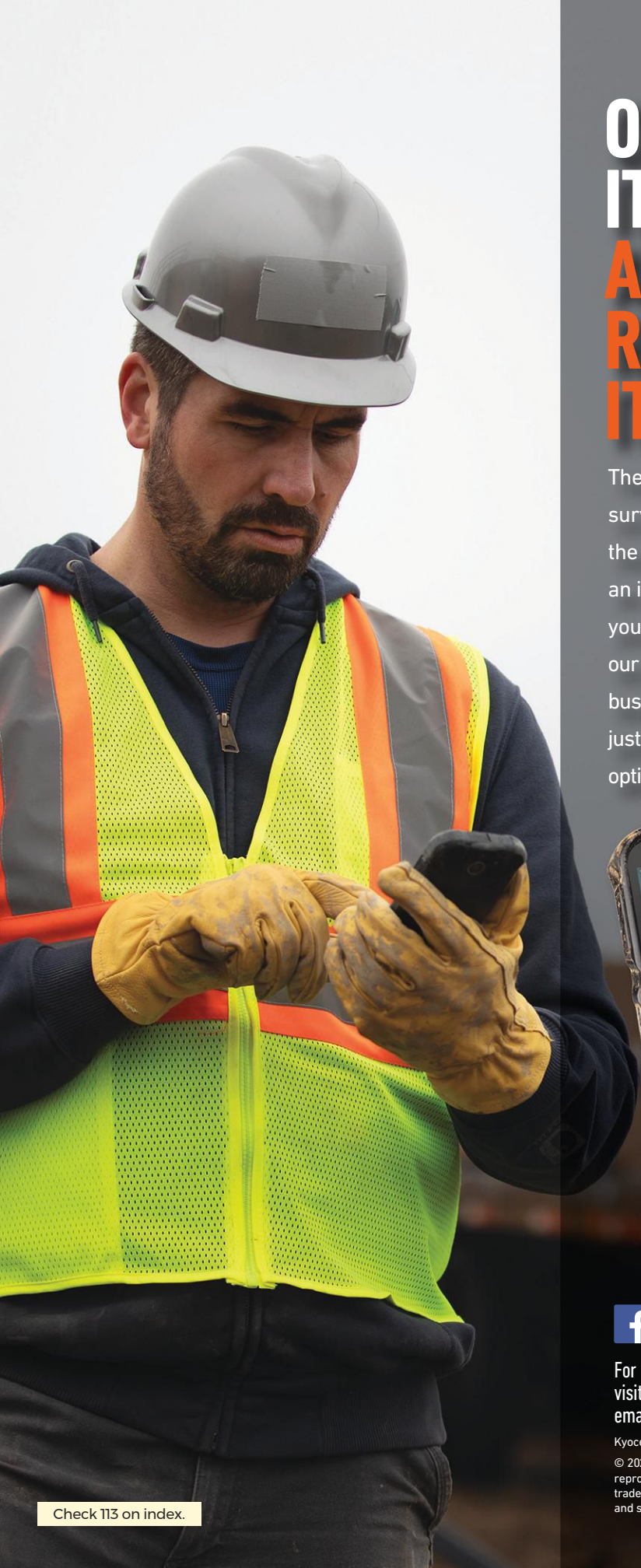
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Cover image courtesy of Turner Construction Company

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▶ Skender Promotes Five to Senior Positions on Growing Operations Team

Underscoring its commitment to an employee culture that fosters talent and innovation, Skender has announced the promotions of five key leaders:

- *Clay Edwards to executive vice president (EVP) and partner*—Since joining Skender in 2006, Edwards has managed millions of square feet of interior tenant improvement projects throughout Chicago, Illinois. Edwards is the head of Skender's tenant improvement market and founder of the firm's construction technology and self-perform groups. His expertise is integral to Skender's business development efforts as he cultivates new and existing relationships, and his interior tenant improvement teams are consistently at the forefront of many of Chicago's top tech, legal and corporate headquarters projects.
- *Andy Halik to project executive*—Since joining the firm in 2011, Halik has led numerous interior construction teams on transformational buildouts in Fulton Market, Merchandise Mart and the Old Post Office. These include Google, GGP, Conagra Brands, Walgreens and others. Halik is recognized for fostering long-term client relationships in multiple market sectors.
- *Ashlee Pforr to project executive*—Since joining the firm in 2010, Pforr has overseen numerous interior construction teams on various buildouts, including HERE Technologies, Bank of America, SRAM, Echo Global Logistics, Cars.com, Hinshaw & Culbertson and others. Pforr is recognized for her mentorship and talent development.
- *Rob Shilney to senior project manager*—Since joining the firm in 2014, Shilney has been a leader on numerous buildouts for global clients in the technology sector, including Google, Facebook and Glassdoor.
- *Al McReynolds to senior superintendent*—McReynolds joined Skender in 2015 and has more than 20 years of industry experience. He has been an asset in ensuring the success of Skender's field operations at Northwestern Medicine. He has served as superintendent for numerous high-profile buildouts at Northwestern Medicine and will continue to help lead Skender's healthcare field operations teams. Visit skender.com.

▶ Swinerton Names New CEO & President

Swinerton has named Eric Foster as chief executive officer (CEO) and Dave Callis as president. Jeff Hoopes, Swinerton's CEO since 2013, retired at the end of 2019 after 35 years with the company. This marks only the eleventh CEO leadership change in the company's 132-year history. Since joining Swinerton in 1982 as a project engineer for the San Francisco, California, structural division, Foster has progressed through several roles from project manager to division manager, and most recently as the company's president and chief operating officer (COO). He serves on the board of Swinerton Incorporated and The Swinerton Foundation. Joining Foster at the helm of Swinerton's leadership team is Callis, who will continue to drive sustainable growth across the organization. Callis joined Swinerton in 2001 as a senior project manager for the Orange County division, where he steadily progressed in rank, most recently serving as senior vice president (SVP), region manager for the divisions located in Southern California and the Pacific Northwest. Visit swinerton.com.

▶ The Toro Company to Acquire Venture Products Inc.

The Toro Company announced that it has entered into an agreement to acquire privately held Venture Products Inc., the manufacturer of Ventrac-branded products. The transaction is subject to regulatory approvals and other customary closing conditions and is currently anticipated to close before the end of The Toro Company's fiscal 2020 second quarter. Based in Orrville, Ohio, Ventrac is a manufacturer of articulating turf, landscape, and snow and ice management equipment. The Toro Company will purchase Venture Products Inc. for $167.5 million in cash. Visit toro.com.

▶ Central Civil Construction Announces New Senior Project Manager

Central Civil Construction has promoted Henry Camasta from project manager to senior project manager. He has been with the company for 11 years and has more than 18 years of experience with construction projects in South Florida and the Dominican Republic. This includes administration and planning for federal, industrial and commercial owners specializing in underground utilities, heavy civil roadway, airport, seaport and site development. Currently, he is part of Central Civil's managing team for Miami International Airport's $76 million Central Base Apron and Utilities Modification and Expansion project. He has also worked on improvements for Port Everglades' crane rail infrastructure and Fort Lauderdale-Hollywood International Airport's Terminal 1. Before joining Central Civil, Camasta was project manager at The Sun Land Group LLC, where he oversaw a housing project, which included land development, infrastructure, new roads and utilities and an irrigation project for a new canal with more than 100 miles of open trench. He is also a member of the American Society of Civil Engineering. Visit centralcivil.com.

▶ ACE Adds Project Executive Joe Chaklos



Joe Chaklos

American Contracting & Environmental Services (ACE), of Columbia, Maryland, has announced the addition of Joe Chaklos as a project executive. Chaklos will be responsible for expanding the company's environmental construction portfolio in the Northern Virginia and Western Maryland regions. Chaklos joins ACE after spending 20 years building wastewater construction projects around Virginia's Capital Beltway. He will allow ACE to more heavily pursue projects with top clients in the region, including Loudoun Water, Upper Occoquan Service Authority, Fairfax Water, Fairfax County and Frederick Water, among many others. Chaklos' extensive background building wastewater infrastructure projects is a huge asset to the ACE business development team as they focus on securing hard bid and alternative delivery projects in Northern Virginia and Western Maryland. ACE is coming off its most successful year on record, recording over $55 million in total revenue, and garnering industry recognition for its work. Visit aceservinc.com.

▶ Terra Site Constructors Announces Changes to Senior Leadership Team

Terra Site Constructors, a construction firm specializing in highway, federal, commercial and industrial construction projects in the mid-Atlantic region, announced key changes to its senior leadership team, including the promotion of Peter W. Bernat to EVP and COO and the addition of Geoff Bambini as SVP to lead the company's newly formed federal services division. Bernat joined the Terra team in early 2019 and has served as SVP of operations throughout his tenure. He has led the firm's

team of experienced engineers and construction personnel to new levels of success during a time of rapid growth. In this new role, he will continue to develop, refine and execute the firm's strategic plan in order to achieve key objectives, including the continual advancement of the firm's innovative solutions to address the complex issues faced by the firm's clients. He will also oversee field operations to ensure quality, achieve financial objectives and meet client expectations. Bambini joins Terra Site Constructors to lead the firm's recently formed federal services division. As SVP, he will take the lead in procuring federal contracts and partner with Bernat to build a project delivery team that has deep experience in the federal market in order to meet growth and quality objectives. Bambini brings more than 25 years of construction management experience with both large and small construction firms, including significant experience developing and growing companies involved in the SBA 8(a) business development program to Terra. Visit terrasiteco.com.

▸ WSP Acquires LT Environmental

WSP has announced plans to acquire LT Environmental. Aligned with WSP's 2019-2021 global strategy, in addition to expanding WSP's geographic presence in the United States (most particularly the Rocky Mountain West), this acquisition will strengthen the company's expertise in the environmental sector. "This transaction will enable us to fulfil our strategic ambitions of our activities in the Rocky Mountain West region, while solidifying our expertise in the environmental sector," said Lou Cornell, president and CEO of WSP in the U.S. Tom Murphy, LTE's president and CEO, said, "Becoming a member of WSP is great news for our company and employees. By joining WSP, we will significantly strengthen our competitive position in the western U.S., while providing us with access to a global network and the expertise of one of the leading firms in our industry." Visit wsp.com.

▸ ACCEND Construction Names Senior Project Manager

Employee-owned general contractor ACCEND Construction announced that Jim Smiley is joining the firm as senior project manager. An industry veteran with over 25 years in the field, Smiley will lead ACCEND's construction projects, ensuring the on-time and quality completion of all projects for clients. Smiley will build upon his previous experience as a senior project manager to build teams, problem solve and ensure that project delivery is consistently flawless. Smiley has led projects for Google, Vital Proteins, Google Cloud and Brookfield Properties. Visit accendconstruction.com.

▸ Brown and Caldwell Promotes Gus Hrncir to Senior Principal of Owner's Advisory Group

Environmental engineering and construction firm Brown and Caldwell announced the promotion of Gus Hrncir to senior principal of the firm's growing owner's advisory group. With 20 years of experience, Hrncir's background includes development-phase leadership and capture management of large water and environmental infrastructure projects and programs using collaborative delivery approaches. Hrncir will provide strategic advisory guidance to owners on maximizing the value of their procurements from project definition through RFQ/RFP development to evaluation, selection and negotiations. Concurrently, he will offer counsel on choosing the most sustainable and cost-effective project delivery method. Since joining Brown and Caldwell in 2015, Hrncir's leadership and knowledge have played an integral role in numerous clients receiving prestigious awards for bringing visionary, leading-edge projects to life. Collaborations include headworks improvements at Atlanta's RM Clayton Water Reclamation Center, a new Process Water Reclamation Facility for Bush Brothers and Company (Bush's Best Baked Beans), and combined sewer overflow enhancements for the Louisville/Jefferson County Metropolitan Sewer District. Visit brownandcaldwell.com.

▸ Immel Construction Ushers in New Leadership

Immel Construction announced the transition of its leadership. Kelly Hafeman and Pete Smits will leave the roles they have held as president and vice president (VP) since 2005, and turn over management of the company to the following employees:

- *Paul Martzke, AIA, LEED AP*—President
- *Alex Santos*—LEED AP EVP
- *Steve Hucek*—VP, Estimating
- *Brian Wetzel*—VP, Operations
- *Steve Sipiorski*—Chief Financial Officer

Hafeman and Smits will serve on the company's board of directors and serve as advisors to the company's new leadership team, which has a combined 138 years of experience in the construction industry, 58 of those years at Immel Construction. Visit immelconstruction.com.

▸ ARA Insurance President & CEO Announces Retirement

Phil Kelling, president and CEO of American Rental Association (ARA) Insurance, located in Kansas City, Missouri, has announced his retirement. John Kennedy, CPA, CPL, and current ARA Insurance CFO, who joined ARA Insurance in August 2017, will assume the role following Kelling's departure. Kelling has been with ARA Insurance since 1997 and has many accomplishments throughout his tenure. Under his leadership, ARA Insurance grew from a small insurance agency with four independent agents to a premier insurance program with a network of insurance agents who support the needs of ARA members nationwide. Additional accomplishments under Kelling's leadership include the startup of ARA Insurance Limited, a captive insurance company, developing a rental-specific risk-management program, improved insurance coverages and institutionalizing ARA Insurance's culture to serve its members as the highest priority. Kennedy comes into the role of president of ARA Insurance with a wealth of experience in the insurance industry. Visit ararental.org.

50 years

Liebherr celebrates 50 years manufacturing in North America this year. The manufacturer has been producing construction equipment and supplying construction machinery and other technically advanced, user-oriented products and services in the U.S. since 1970. Liebherr sells and distributes products throughout its own locations and through an independent distribution network. Visit liebherr.com.

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Insight from industry aces and answers to construction's biggest questions

ASK THE EXPERTS

What is one process you've implemented that significantly improved your safety record?



Eric Olson, MS, CSP, CIH
Safety Director
Western Specialty Contractors

Over the years, we have introduced a number of initiatives that have improved our safety program, including a soft tissue management program, mandatory glove use and a daily huddle/job hazard analysis program. But one of the most impactful initiatives was implementing a 24-hour safety hotline that allows employees to reach a safety professional at any time. We have mainly used this type of communication for the handling of safety incidents, but also for answering questions and managing regulatory inspections. Instant communication with the safety department has allowed Western to take control of situations in the field prior to them becoming a problem. For example, we recently contracted with a mobile medic company that will travel to the jobsite to treat first-aid injuries within 60 minutes. In the past, we would often find out about these minor issues after several hours—or even days. By then, it was too late to minimize their impacts. The process has drastically cut down on claims and Occupational Safety and Health Administration (OSHA) recordable cases when the injury was reported late or the initial report was not taken seriously because the site manager was tied up with something else at the time. Real-time case management can absolutely have a bottom-line impact, without requiring a great deal of knowledge to truly handle the situation.



Tomasz Dering
Corporate Safety Director
Plaza Construction

First and foremost, safety needs to be embedded in all that we do. At Plaza Construction, it's one of our four core values. Simply stated, "we ensure the well-being of all individuals by upholding the highest standards of health and safety." To that end, we have made a conscious effort to integrate safety into every level of preplanning in order to improve our already strong safety record. We begin our process with prequalifying subcontractors and reviewing their OSHA recordable cases and experience modification rates to ensure we can flag applicants that do not meet our standards. A logistics plan is developed for each jobsite that not only addresses the best options for cost and schedule, but also addresses public and worker safety by reviewing crane routes, overhead protection, debris netting and emergency evacuation, just to name a few. All of our subcontractors take part in preconstruction safety meetings, where all aspects of the job specific to their operations are discussed and reviewed. That portion of the project does not start until all possible hazards are discussed. The process continues with weekly safety meetings, where all trade competent persons to discuss current and future work so proper planning can be made.



Martha Bixby
Vice President, Health & Safety
Brown and Caldwell

Brown and Caldwell (BC) developed a peer-to-peer recognition program focusing on behaviors, actions and ideas that lead to improved safety and health outcomes. Fundamentally, the program shifts the mindset towards safety. We've created an environment where employees are rewarded for safe behaviors, reporting incidents or near-misses, and suggesting innovations to make designs safer and more sustainable for clients. This encourages reporting and gets people talking about desired behaviors or mindsets. Having a peer-to-peer nomination process is key. Rather than traditional, behavior-based safety observation programs, we believe our program is optimized for our industry and culture. While a 'thank you' has value, BC's utilization of the award creates visibility for the nominator and the receiver and allows leadership to connect our employees with the reasoning behind the award. Since the program's inception, we've seen a rise in award volume by approximately 175%. Simultaneously, lost-time incident rates have dropped to zero, and our recordable incident rate is significantly lower than the industry average. This mindset extends to our design-build sites and subcontractors. While we still act upon near-misses and administer first aid, the majority of our design-build projects are completed with zero injuries and no significant property damage incidents.

What's on your mind?

To submit a question for this section, email Managing Editor Elizabeth Manning at emanning@cahabamedia.com.

Visit **constructionbusinessowner.com/asktheexperts** for more industry-leading insights.

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AT WORKSITES IT'S TIME TO FOCUS ON SAFETY



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1 The camera unit containing the camera, EyeQ® chip, and speaker, mounted on the inside of the windshield behind the rearview mirror.

2 The EyeWatch™ display for visual alerts, mounted in the bottom corner of the windshield.

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contact us at +1-877-867-4900 or go to www.mobileye.com/en-us/contact

Pay Attention to the Pennies

9 tips to maximize your company's profit potential



GEORGE HEDLEY, CSP, CPBC, is a professional construction BIZCOACH and industry speaker. He helps contractors build management teams and get their businesses to work for them. He is the bestselling author of "Get Your Construction Business To Always Make A Profit!," available on amazon.com. Email Hedley at gh@hardhatpresentations.com to sign up for his free e-newsletter, start a BIZCOACH program, attend a Wealthy Contractor BIZ-BUILDER Boot Camp or get a discount at hardhatbizschool.com online university for contractors. Visit hardhatpresentations.com for more information.

Just Ask George.

Send your questions for Hedley to Editor Kathy Wells at kwells@cahabamedia.com.

Most construction companies only make 2% to 4% net profit after paying job costs and fixed expenses. The little things you don't think about can add up to an additional 1%, 2% or even 5% more profit at the end of the year. This additional amount can be the difference between struggling and running a successful business.

You don't make money building things or doing great work. You make money by knowing what it actually costs to run your construction company and what to charge for labor, equipment, materials, subcontractors and overhead. Below, find nine tips for making the most of your company's profit potential.

1. GET AN ACCURATE LABOR BURDEN RATE

Most construction companies don't use accurate labor rates when calculating their crew bid rates. Every year, tax, unemployment, social security, and workers' compensation rates change. Plus, as your employees get older and their situations change, their health insurance rates will also change. Don't forget to factor in the overtime used versus anticipated in your bids. Good estimating starts with accurate labor rates—so have your accounting manager figure out exactly what the accurate rate is for every field employee. You'll find that your labor burden rate can vary by as much as 20% or more for each employee.

2. CALCULATE EQUIPMENT COSTS

Calculate the exact cost for every piece of equipment you own factored by the annual utilization to determine the right rate to charge. For each piece of equipment, add the purchase price, interest, depreciation, maintenance, gas and oil, service, tires, repairs, insurance, storage rent, and mobilization costs you really spend across the life of the equipment. Divide this total cost by the total number of hours you hope to bill, utilize and charge for the equipment over that duration. This is your real cost of ownership per hour, not including overhead and profit. Next, compare this cost with the price of renting it. Get rid of all the equipment that costs you more money to own than you'll get back from your projects.

3. MAXIMIZE CHANGE ORDER PRICING

Determine what rates you want to charge on each job based on what the allowable or highest fair and competitive rate is in your area that your clients will tolerate. Present your proposed rates to your customer to make sure you are on the same page before you begin any extra work. Are small tools and equipment free, or do you charge for them in your change orders? To maximize your change order pricing, always include these additional items required to perform extra field work. Some contracts clearly state the allowable change order markup rates, while others



don't. Why not try 15% or 20% for overhead, and then 15% for your profit markup, instead of the traditional 15% in total? This double markup will increase your bottom line on changes by 1% to 3%.

4. WATCH OVERHEAD COSTS

You must know what it costs to keep your doors open without any work under construction. This is your break-even minimum you must cover before you make a profit. Make it a priority to sit down with your accounting manager and get a handle on this annual amount. Then, trim the fat. Look at every overhead check you signed last year. Where are you wasting money? Consider outsourcing payroll services, craft training, project scheduling, marketing services, safety programs and equipment maintenance. By outsourcing, you'll free your staff to take care of the important things that make you money.

5. SHOP MATERIALS PRICES

You're often busy running your company, and keeping your customers happy and crews occupied—this doesn't allow you enough time to get enough materials quotes for every job when bidding projects. You get stuck using the same suppliers on most jobs. When this happens, your materials prices inevitably creep up over time. And when you need more material on jobs, you just call your old friend at the supplier and get more shipped out, without taking the time to get another price from a different supplier.

6. NEVER RUN OUT OF THE TOOLS & MATERIALS YOU NEED

Another mistake occurs when your crew runs out of material, tools or supplies at the last minute. The foreman heads to the store to buy things they forgot to order in advance. And while the foreman goes to the store, the crew stops working. Require your foremen to prepare a weekly inventory, clearly listing out all the tools, materials and equipment they will need for the next week. And never allow the foreman or superintendent to leave their jobsite to go to the store.

7. HIT YOUR GENERAL CONDITIONS BUDGET

On almost every job, contractors run over on their general conditions budget. Ask your estimator the last time they checked the actual cost of temporary facilities, fencing, trailers, toilets, water, security or power. They tend to use old numbers on estimates because they're too busy bidding new work. Temporary toilet facilities can vary by $100 to $300 per month, depending on how many times per week they are serviced. Look at how many bids you got on those services, such as fencing, power, water, trailers and final cleanup. Too busy to inspect? Give up your next vacation, and you'll probably cover what you lost on general conditions on your last two jobs.

8. RANK YOUR TEAM

Do you know which estimator, project manager, superintendent or foreman makes you the most money? Rank each management team member by work performed, gross dollars and net dollars earned, actual profit versus bid profit, callbacks, punch-list items and customer satisfaction. Also, rank them by who hits their project labor, material, equipment and general conditions budgets. Focus on how better players make results happen and which low-ranked players don't do well. Give poor players a chance to improve by providing mentoring and training.

9. MANAGE YOUR MONEY AGGRESSIVELY

Most contractors run a lot of money through their checking accounts every year. What are you earning on your bank balance? By meeting with your banker, you can design a program to earn interest or invest your bank balance on a daily basis. There are many ways to invest your cash in short-term investment programs that full-service banks offer. For every $1 million in sales volume, you should be able to generate $20,000 to $40,000 in interest or investment income annually. This will only take about 5 minutes a day to do. That's not a bad return on your accounting manager's time. **CBO**

Farm System or Free Agency?

Finding the recruiting strategy that best aligns with your needs



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Even when the game isn't on, the world of sports keeps pressing. In the dead of winter, baseball teams are doling out large sums of money to get the best free agents in the market. Before the last second of the Super Bowl, general managers and coaches are feverishly examining a fresh crop of college recruits entering the draft. Both baseball and football have drafts, and both have the opportunity to enhance its team's talent through free agency.

Standout teams like the New York Yankees seem to have an endless stream of cash to pay for the best players that other teams have developed in their farm systems. On the other hand, how many wide receivers did the Detroit Lions draft in the early 2000s?

There is not the same clamor of recruiting in the world of construction. Imagine the fanfare as Brand X Construction makes its eighth selection for an equipment operator and their tenth selection for a project engineer. While there is no draft per se, construction firms annually select from a bright group of men and women in high schools, trade schools and universities.

Additionally, there is no moratorium on free agency, as professionals regularly traverse the construction landscape seeking new opportunities. All that said, firms need to understand how their strategy aligns with their talent goals. For instance, recruiting new talent from universities may be a sound philosophy for some firms, but without the right strategy to support it, the new professionals will only flounder.

In the end, every firm will engage in both talent pools—the farm system and free agency—but the ones that make a conscious decision and back it up with the right tactics will win the never-ending war for talent.

A CASE FOR THE FARM SYSTEM

Whether it's the wide-eyed new graduate from a local college or the greenhorn apprentice from a trade school, both hopefully come into a new firm with a lot of ambition and little to no experience. Schooling provides essential skills, but there is almost no equivalent to seeing construction in real time.

The flaw in many firms is that they recruit from these sources and then thrust those individuals into a world with little to no training. How often have we heard, "We let them sink or swim," or, "We throw them to the wolves." Why are we throwing anyone anywhere? Yes, real-world experience is imperative and there are few substitutes for it, but there are alternative methods and means for accomplishing this all while setting new team members up for success.

The first is a development plan that aligns with the operational model of the firm. Even if a new manager learned about change orders and requests

for information, there should be an indoctrination with the firm's model. Constructing a project schedule in software is one thing, but building a schedule in concert with a seasoned superintendent is another story. Firms that rely on rookie talent must have a playbook that clearly articulates how to build in accordance with the firm.

Too often, new associates are handed a manual for standard operating procedures on day one and that might be the last time it is opened, unless they are looking for a vacation request. This playbook needs to be the guide for everything anyone would need to do—or know how to do—in the firm, regardless of tenure.

Secondly, there should be a robust training program that focuses on practical knowledge for all associates. The operative word here is "all." What better way to reinforce the "how to" than to have senior and junior associates mingle together? Additionally, even the saltiest of veterans need to be reminded of the firm's best practices from time to time.

The farm system approach does not mean the firm avoids free agents. However, creating homegrown talent focuses on molding a cadre of associates that learn the firm's way of building from day one since there are no other behaviors that have not yet taken root.

The Farm System Model

- Reliance on training
- Marrying seasoned practitioners with rookies to create synergy
- Playbook that serves as a detailed "how to" for all things construction

The Free Agency Model

- Focus on creating "buy-in" to the firm's ideals and best practices
- Strong on accountability to the firm's best practices rather than the individual's toolbox
- Create a sense of camaraderie quickly

A CASE FOR FREE AGENCY

Whether it's because a firm always seems to have a bountiful backlog or the talent pool in their market is weak, bringing in free agents often seems to be the most viable source of talent.

Free agents have already been trained, and in some cases, they bring a strong book of business they've developed with them. They bring their own toolkit and a Rolodex from their years in the industry. However, it is important to note that they also bring in their own toolkit and behaviors from their years in the business. Did we mention that already?

For every sports superstar and team player that braved the free agency market, there are countless stories of the teammate who was a cancer to the team and had a detrimental effect on the overall business. The same can be said for a construction organization.

Without a codified set of best practices and, most importantly, a strict methodology for accountability, free agents can run amok and leave a wake of destruction in their path—both internally and externally.

Training this group is less about the construction methods and means and more about the firm's culture and behavioral model. Free agents have worn a few jerseys in their time in the field. It is important to make sure the current jersey is the right fit and creates a sense of belonging and passion. Whether it is how customers should be treated or why a process is integral to the firm's success, free agents need to see the connective tissue to ensure buy-in.

Accountability is critical. The scoreboard doesn't change because a new player arrives on the field. In the end, talented managers and superintendents need to play within the confines of the model leadership has created.

While there needs to be an openness to new ideas and avoidance of the status quo, the firm has to protect against multiple versions of the playbook simply because a manager "did it this way" at their last job.

It can seem serendipitous when looking at talent acquisition. Every construction firm would love a steady stream of qualified applicants exactly when and where they need them. The reality is much different, and will vary considerably based on market conditions, geography, sources of talent and more.

However, a firm can make the conscious decision about how it wants to strategically position itself as a magnet for talent, whether that talent is a rookie or a seasoned veteran. Now, should we talk about signing bonuses? CBO

Safety Trends: Why Workers Are More Invested Than Ever

Key findings from Dodge Data & Analytics' latest safety report



DONNA LAQUIDARA-CARR, Ph.D., LEED AP, is industry insights research director at Dodge Data & Analytics, where she provides editorial direction to the SmartMarket Report Series, covering such diverse topics as world green building trends, business value of BIM, managing risk in the construction industry, the drive toward healthier buildings, building a safety culture and lean construction. Her insights on these topics have been published in numerous industry publications, and she regularly conducts webinars and speaks about this research at events for several organizations, including the AIA National Conference, CMAA National Convention, AGC National Convention, the Lean Congress, Greenbuild, the inaugural WELL Conference and BOMA. Visit construction.com.

The latest "Safety Management in the Construction Industry" SmartMarket Report by Dodge Data & Analytics reinforces many of the messages of the previous studies on this topic, including the benefits that contractors experience from their safety programs and their reliance on in-house expertise for delivering safety training. One of the most interesting findings, though, continues to be the importance of jobsite workers to an overall safety program. The findings of the current study not only reinforce the degree to which jobsite workers' involvement are at the heart of safety management efforts, but it also provides new insights into how workers can be more extensively engaged. The report increases recognition of the importance of supervisory leadership for safety on-site and the degree to which contractors believe technology can help enhance worker safety.

The "Safety Management in the Construction Industry" study was first conducted in 2012, and in that study and every subsequent one, contractors were asked to select what they believe to be the essential aspects of a world-class safety program from a list of 12 possible options. One of those options was jobsite workers' involvement. In 2012, it ranked in the middle in terms of whether contractors regarded it as an essential component. In 2015, it moved to the top of the pack, and it has remained there ever since. In the 2019 study, 84% of the contractors surveyed said they thought it was essential.

However, when it comes to the most common means to involve workers in safety, a pattern emerges in the current study. Two-thirds or more of contractors surveyed report they encourage workers to respond to safety hazards on-site on the majority (more than 70%) of their projects. This includes 78% who say that workers are encouraged to report unsafe conditions, 68% who encourage workers to report near-misses, and 66% who give workers stop-work authority.

Meanwhile, only half or fewer of those surveyed actually engage workers in safety planning at the same rates, with only 50% who ask workers for input on jobsite safety and health conditions, 45% who involve workers in job-hazard analyses, and 39% who involve workers in safety and health planning on the majority of their projects.

This data suggests that many contractors are not taking advantage of the perspectives that their field workers can bring, not just to react to unsafe conditions, but to actually help make their projects safer in the future. The findings identify a key area that contractors should consider as they continue to improve their safety programs.

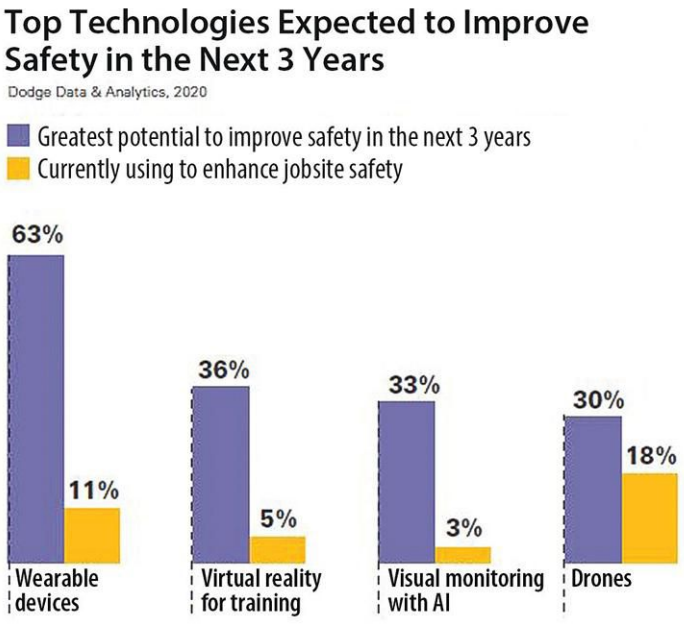
The current study also emphasizes the important role that supervisory leadership plays in fostering safety on-site. Not only is "strong safety leadership abilities in

supervisors" the second most commonly selected essential element of a world-class safety program among contractors (83%, only one percentage point behind jobsite worker involvement), but 73% of contractors report that supervisors/ foremen deliver safety training to workers, far more than those who report using an in-house trainer (56%) and nearly three times as many as those who use third-party trainers (28%).

Small companies in particular are growing in their recognition of the importance of the role of supervisors in promoting safety. In 2017, only 52% of respondents from companies with fewer than 20 employees report that regular safety meetings with workers and supervisors are essential to a world-class program. That increased to 64% in 2019.

One tool introduced in 2017 to improve safety leadership among supervisors is the Foundations for Safety Leadership (FSL) training module, which was added to the Occupational Safety and Health Administration's 30-hour training course as an elective. Over half of contractors (57%) in the study say that they are not familiar with this elective, so there is a great need for more information about it in the industry. Among those who have heard of it, about half have actually used it at their company. Those who have actually used it were asked to rate its effectiveness for improving the safety climate, and overwhelmingly, the vast majority (90%) found it to be effective. This suggests that the module is still a widely underutilized resource in the industry.

Technology also emerged from the study as an area that contractors think has great potential to improve overall safety performance. One area that is widely known but still emerging is the use of online training. While few contractors (13%) use online/e-learning sites, 71% report that at least some training was conducted online.



Currently, though, contractors are only using it for about a quarter of the safety training classes, which is a slight reduction from the percentage of safety classes conducted online reported in 2017. However, most contractors expect their use of these tools to increase in the next few years, with an expectation that they will conduct well over one third of their classes online by 2021. This finding points to contractors still figuring out the best ways to use online tools to deliver training. It also tells us that much of the current use is likely by internal resources within their company; the favored approach for delivering training in general according to the data.

There is also growing interest in multiple emerging technologies that currently have limited adoption by contractors. The most striking example is wearable technologies, which are currently only being used by 11% of respondents, but 63% of contractors believe that wearable tech is one of the top three with the greatest potential to improve safety in the next 3 years. As contractors see these technologies at trade shows and in use by other companies on-site, they are clearly excited by their potential.

Two other technologies are used by 5% or fewer contractors, but over one-third think they are among the top three with the greatest potential to improve safety: virtual reality for training and visual monitoring with artificial intelligence (AI). Wearables and visual monitoring with AI offer contractors the potential for a wealth of data on ways to better understand the specific hazards their workers face, and virtual reality may be an essential tool as skilled worker shortages force contractors to train inexperienced workers quickly on best safety practices and the implications of them.

And while this emphasis on data and technology seems to shift the focus away from workers and supervisors, a case study in the current Dodge report shows that the opposite is the case. A contractor seeking to use jobsite data to improve safety management finds that the key to success is gathering good, complete data, and that workers are again at the heart of that data gathering effort. Thus, the potential of these technologies enhances, rather than supplements, the central role of engaged jobsite workers and supervisors to improving contractors' safety management programs. **CBO**

Shift Happens

4 steps to adapt your marketing strategy in a fluctuating economy

BY MIKE GAUSS

Marketing—in both good times and in downturns— will pay dividends through your company's brand and reputation. Dodge Data & Analytics expects a 4% decline in total construction starts in 2020 (Figure 1), following an estimated 1% decline in 2019, according to its "2020 Dodge Construction Outlook." Meanwhile, FMI Corporation estimates construction put-in-place numbers are predicted to grow by 2% this year (Figure 2), according to its "Engineering and Construction Outlook: Third Quarter 2019 Report." Both organizations agree that most nonresidential segments are slowing down. When the market is booming, construction executives are in heaven because they can invest much of their time and money in creating a great product. But markets shift. When these shifts happen, so must the mindset of leadership.

2020 Dodge Forecast for U.S. Total Construction Starts ($ Billions)

	2015*	2016*	2017*	2018*	2019 Forecast	2020 Forecast
Total construction	689.8	739	788.3	815.1	808.7	776.4
	14%	7%	7%	3%	-1%	-4%
Single-family housing	186.2	201.1	218.4	230.1	223.5	216.8
	14%	8%	9%	5%	-3%	-3%
Multifamily housing	87.5	96.4	88.8	99.8	90.6	78.5
	24%	10%	-8%	12%	-9%	-13%
Commerical buildings	93.5	115.3	116.9	123.3	126.6	119.5
	12%	23%	1%	6%	-3%	-6%
Institutional buildings	110.1	122.7	144.8	140.5	142.7	142.5
	5%	11%	18%	-3%	2%	0%
Manufacturing buildings	25.3	20.3	26.2	32.8	23.1	22.7
	-29%	-19%	29%	25%	-29%	-2%
Public works	129.3	136	161.4	164.4	157.9	164.3
	6%	5%	19%	2%	-4%	4%
Electric power/utilities	58	47	31.8	24.1	44.2	32.2
	131%	-19%	-32%	-24%	83%	-27%

Figure 1. 2020 Dodge Construction Outlook/Dodge Data & Analytics historical data

1. GET AN INVITE TO THE TABLE

Today, the first step in winning new contracts is being prequalified for the bid. Even with a top-notch sales team hitting the pavement daily to grow existing client relationships and cultivate new ones, opportunities can be missed, especially when they are outside of the company's traditional area of focus. A well-developed marketing and public relations program establishes and protects a company's reputation far beyond the sales team's ability. Moreover, it can contribute to generating inquiries and leads outside of a company's primary market sector and improve the efficiency of your sales force by reducing the number of in-person meetings required to stay connected with clients and prospects.

2. MAKE THE SHIFT TO A MARKETING-BASED MENTALITY

To make the shift, leaders need to ask themselves the same questions they ask when planning any new project:

- Do we have the detailed knowledge to do it on our own?
- Are we current on the latest techniques, industry standards and best practices?
- Is this the best use of our time and that of our core team?

It's helpful to understand the activities that are part of a robust marketing and public relations plan, listed below.

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Construction Put in Place Estimated for the United States

Change From Prior Year - Current Dollar Basis
Q3 2019 Forecast (based on Q2 2019 Actuals)

	2014	2015	2016	2017	2018	2019E	2020F	2021F	2022F	2023F
RESIDENTIAL BUILDINGS										
Single-family	13%	14%	10%	11%	7%	-5%	1%	3%	4%	5%
Multifamily	32%	27%	14%	-1%	-1%	-2%	1%	3%	4%	5%
Improvements*	10%	11%	10%	19%	-2%	-3%	1%	2%	3%	4%
Total Residential Buildings	**14%**	**15%**	**10%**	**12%**	**3%**	**-4%**	**1%**	**3%**	**4%**	**5%**
NONRESIDENTIAL BUILDINGS										
Lodging	24%	32%	23%	6%	10%	7%	2%	-1%	-2%	4%
Office	23%	20%	21%	1%	8%	6%	3%	-1%	-2%	3%
Commercial	18%	7%	17%	11%	9%	-3%	-2%	-1%	1%	4%
Health care	-5%	3%	2%	6%	-1%	3%	5%	3%	-1%	1%
Educational	1%	7%	7%	6%	1%	0%	3%	4%	4%	3%
Religious	-6%	6%	4%	-4%	-9%	-6%	-6%	-1%	3%	5%
Public safety	-1%	-10%	-4%	4%	11%	9%	9%	1%	-3%	1%
Amusement and recreation	10%	22%	15%	12%	5%	2%	-1%	-4%	1%	3%
Transportation	7%	7%	-4%	6%	12%	8%	8%	7%	6%	2%
Communication	-3%	25%	2%	7%	4%	3%	4%	4%	4%	4%
Manufacturing	15%	37%	-4%	-11%	0%	3%	3%	1%	4%	4%
Total Nonresidential Buildings	**9%**	**15%**	**8%**	**4%**	**5%**	**2%**	**3%**	**1%**	**2%**	**3%**
NONBUILDING STRUCTURES										
Power	18%	1%	1%	-14%	-3%	5%	5%	4%	4%	4%
Highway and street	4%	8%	2%	-4%	2%	6%	5%	5%	4%	2%
Sewage and waste disposal	3%	6%	-2%	-5%	4%	8%	3%	5%	6%	4%
Water supply	-2%	0%	4%	2%	8%	9%	8%	6%	3%	5%
Conservation and development	23%	6%	0%	-4%	11%	10%	6%	5%	4%	5%
Total Nonbuilding Structures	**10%**	**4%**	**1%**	**-8%**	**1%**	**6%**	**5%**	**4%**	**4%**	**3%**
Total Put in Place	**11%**	**12%**	**7%**	**4%**	**3%**	**0%**	**2%**	**3%**	**3%**	**4%**

Figure 2. *Improvements include additions, alterations and major replacements. It does not include maintenance and repairs.

- Market research and strategic planning
- Project/subproject management
- Sales support and development of messages
- Copywriting and storytelling
- Naming and taglines
- Logos, graphics, imagery, videos and other visuals
- Marketing materials, signage and promotional product production
- Websites and social media development and management
- Search-engine optimization and search-engine marketing
- Media relations
- Article writing and placement
- Crisis communications
- Expert positioning and awards/recognitions submissions
- Event planning and management
- Advertising planning, design, purchasing and placement
- Community and stakeholder relationship building
- Membership, sponsorship and charity management

3. SCALE UP BOTH CAPABILITIES & CAPACITY

Depending on the size of the firm, there may be a designated marketing specialist or even a small team in place. However, relying solely on internal resources may be shortsighted. Short of investing in a large internal team of marketers, firms can apply a general contractor focus for the internal team and subcontract to agencies and freelancers for specialized support.

4. FIND THE RIGHT SUBCONTRACTOR

Just like in the trades, there are a variety of individual disciplines that fall within the marketing and communication categories, and firms can be highly specialized. It may be valuable to bring in a consultant first to help write a marketing plan. Consider the following when outsourcing marketing:

- Does the subcontractor have experience in marketing construction firms?
- What skill areas do they have the greatest depth of expertise?
- Who will be your primary contact for the agency?
- What level is the agency contact?
- How will success be measured?

By becoming known and establishing a reputation outside of their usual circles, firms can be invited, prequalified and able to bid on projects that they may have passed on during the boom times. CBO

Since 2007, Mike Gauss has served as an account director and media relations manager for Articulon, a public relations and branding firm specializing in construction. Previously, he ran a small business in construction repairs and remodeling, was a recruiter for architects and engineers, and managed client relations with a commercial materials supplier. Call 919-232-5008 or visit articulon.com.





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Making It Rain in a Labor Drought

How partnerships & employee development can change your employment forecast

BY MARDEE BILLINGSLEY

Whether you have experienced dwindling employment applications, a lack of management-level talent, and/or delayed or canceled work yourself, you've likely already felt the widening shortage of skilled workers in some capacity. With more students being pushed to pursue bachelor's degrees for white-collar jobs and the growing number of construction projects nationwide, recruiting a skilled workforce for your business is becoming increasingly challenging. In fact, the Associated General Contractors of America reported that 70% of construction companies nationwide are having difficulty finding qualified workers.

Not having enough workers on hand may cause long-term harm to your business, as you may not be able to effectively bid on projects. To survive the skilled labor drought, your business must adapt to modern recruiting and workforce trends, which revolve heavily around training and education. Below are a few strategies that can aid in recruiting—and retaining—a skilled workforce.



JOIN & EDUCATE

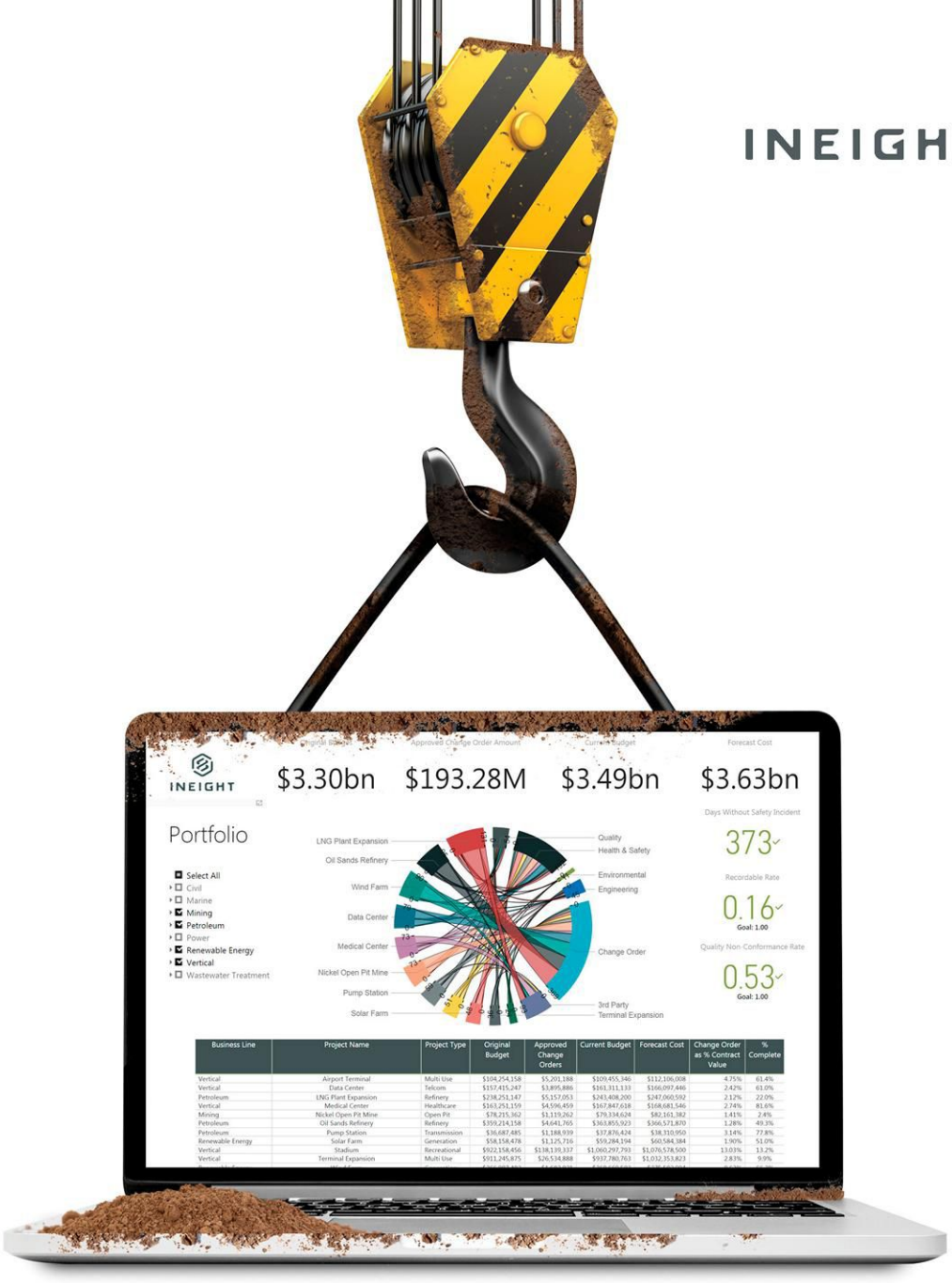
Joining technical organizations gives your business a platform to directly engage with a broad range of motivated individuals. From connecting with your local labor union to teaming up on national recruitment efforts, there are numerous technical organizations to join that can help build a pipeline of talent.

Equally important is committing your company to educating people both within and outside of your current workforce. For example, Tremco Roofing and Building Maintenance and its affiliate, Weatherproofing Technologies Inc. (WTI), are official business partners of SkillsUSA.

This nationwide high-school program works to ensure that the United States has a skilled workforce by educating high school students about rewarding careers in the trades. Through this partnership, Tremco Roofing and WTI can connect with students across the country and introduce them to roofing as a profession.

By having a dialogue with the next generation of professionals, Tremco Roofing and WTI can answer questions and tackle common misconceptions about trade jobs. Representatives discuss the demands of the job and potential growth opportunities and earnings.

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Students are pleased to discover that, with proper training, they can develop the physical and mental acumen for the job, as well as an exciting future, where earnings start at $16 per hour and can amount to as much as $70 per hour, depending on experience level, location and specialty. Empowering tens of thousands of students with this knowledge helps mitigate persistent stigmas about career projections within trade industries.

INVEST IN EMPLOYEE DEVELOPMENT

Considering how quickly technology is affecting the way the world and the construction industry operate, it's reassuring for skilled workers to know that their employer is invested in developing their skills for the future.

Simultaneously, investing in employee development will add long-term value for your business, as it provides your workforce with the knowledge needed to perform high-level tasks. Employee development efforts can range from one-day training sessions to full-scale programs that provide entry-level employees with a direct path to management.

One compelling initiative is WTI's Roofing Individuals Succeed through Education (RISE) program, which includes undergraduate degree and apprenticeship programs. Through a partnership with the University of Akron in Akron, Ohio, WTI employees can enroll in online college courses that they complete remotely whenever it fits into their schedules.

Employees are eligible to apply for the program after 90 days of employment and may enroll in the spring, summer or fall semesters. Students begin in the Associate of Science in Construction Management track. Upon completion, they can transition seamlessly to the Bachelor of Organizational Supervision in Construction Management, if they wish to do so.

This employee development initiative is uniquely successful because it meshes with an employee's lifestyle at no cost and with no strings attached. Employees have no obligation to pay tuition back at any time or commit to long-term employment. Additionally, employees who decide not to pursue a degree may transfer that benefit to a dependent.

WTI's RISE Apprenticeship program appeals to those seeking advanced opportunities in the roofing industry without pursuing a college degree. Apprentices receive up to 4,000 hours of paid, on-the-job training as well as 392 hours of online classroom instruction. Upon completion, students earn an apprenticeship completion certificate, which allows them to work anywhere in the U.S., and up to 17 college credit hours to use if they decide they want a degree. This federally accredited program is recognized in all 50 states and U.S. territories.

PRIORITIZE DIVERSITY & INCLUSION

Diversity and inclusion should be a cornerstone of your recruitment efforts. Because 88% of industry workers are white males, emphasizing recruiting and retaining minorities and women is critical to attracting more skilled workers. In addition, diverse thought drives innovation.

When the people in a company's workforce bring all different experiences to the job, their wide range of perspectives can be leveraged to determine the best solutions for any challenge in a project. Each worker's unique background may spark new ideas or lead the team to consider aspects of a project that may have otherwise been overlooked.

Making a coordinated effort to reach diverse populations beyond traditional recruitment strategies is a step in the right direction to expand your applicant pool, but you must also ensure your company has a safe and welcoming environment. This includes having and enforcing antidiscrimination and harassment policies, being stocked with safety attire and equipment that will fit any worker properly, and offering paid parental leave. These protections make careers in the construction industry more attractive to populations who are traditionally underrepresented in the industry.

To be actively involved in advancing diversity and inclusion efforts, Tremco Roofing and WTI are founding sponsors of National Women in Roofing (NWIR), a volunteer-based organization that provides educational and advancement opportunities for women in the roofing industry. Being involved in NWIR enables the sponsoring companies to be leaders in providing mentoring, education, networking and employment opportunities that will shape inclusion efforts across the industry.

The partnership also allows Tremco Roofing and WTI to have direct interactions with women regarding the challenges they face in the industry and what can be done to make the workplace more accommodating. Emphasizing diversity and inclusion has undoubtedly expanded the companies' reputation and reach—there has been a 95% increase in hiring over the last year.

Ultimately, investing in the growth of your employees is investing in the growth of your business. Especially in a labor drought, skilled workers will seek high-quality employers that support their long-term career aspirations.

Embracing partnerships, education, employee development and diversity will open multiple avenues for skilled workers to learn about careers in trades and find their way to your business. **CBO**

Mardee Billingsley is executive vice president at Tremco Roofing & Building Maintenance. She has 25 years of experience in the commercial roofing industry. Visit tremcoroofing.com.





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Back to Basics

A modern primer on how to lead a project like a true professional

BY CORY OLSON

As contractors gear up for warmer weather and a busy season filled with projects and clients, project management is a critical component for any successful business. A contractor who excels at project management reaps the benefit of more time to bring in new clients, as well as the added benefit of executing faster, more accurate timelines for clients. Accomplishing jobs in a timely manner while staying within budget is a great way to turn first-time customers into repeat clients.



TACKLE PRECONSTRUCTION PLANNING

Regardless of how much experience a contractor has, project management is not an easy task. With various moving parts and unforeseen environmental elements, such as severe weather or a challenging landscape, it's difficult to ensure that everything gets completed promptly. Planning and scheduling ahead, however, is a great way to save time on-site. By carefully reviewing the plans and specifications of a project, contractors can get a better understanding of the scope of work before they begin.

As most contractors know, it is impossible to predict what might actually happen on a construction site. From thunderstorms to cold fronts, the weather is always a potential threat to a contractor's plan. By mapping out the preconstruction phase, contractors can make predictions about the environment surrounding the project area. Historical data is an excellent resource for contractors to determine likely weather patterns during the construction of a project to prepare for potential issues.

Contractors should also avoid wasting time manually calculating product estimates, creating and tackling shopping lists, or, worst of all, correcting mistakes. Investing in training is key to ensuring the project stays on schedule. It might require additional time and capital upfront, but this investment will show its value by reducing the number of mistakes made and saving significant time and money in the long run. In addition, third-party resources like concrete calculators can be extremely beneficial for contractors by offloading repetitive and time-consuming tasks before the job even begins.

UTILIZE OUTSIDE RESOURCES FOR ON-SITE MANAGEMENT

Mobile applications are another resource that save time and money on the jobsite. With recent developments in this

technology, mobile applications using augmented reality (AR) allow contractors to determine the amount of product they will need for their projects more quickly than with a measuring tape, which can help contractors save time and costs on inaccurate calculations. Some versions of this tech can also allow contractors to show their clients how the final product will look.

Mobile applications also provide helpful resources, such as product recommendations, data sheets, and retailers in close proximity with available product to cut down on wasted trips. Apps can help contractors coordinate with their crew, providing shopping lists for streamlined communication. This type of usage allows team members to add products, tools or equipment to a shopping list for any additional on-site needs that may arise during a project.

BE A STRONG COMMUNICATOR

Being an effective communicator is key to success on the jobsite. The best way to ensure your project managers are communicating well with their team, as well as the client, is to create a communication plan. Contractors should determine what type of communication plan should be used based on the project's specific circumstance. Then, they should implement a chain of command for what information is shared and outline who it is shared with on or off the jobsite.

MANAGE TIME EFFECTIVELY

Time management is another skill that holds weight on the jobsite for contractors. There are many moving parts to a jobsite, and it is easy for contractors to lose sight of one aspect while focusing on something else. When issues arise, take the time to meet with the project team and discuss a game plan to avoid any further issues. Although it might take time away from the project initially, this communication will ensure the team is aligned, save time later and help avoid further issues.

LEARN FROM EXPERIENCE

After finishing a project, contractors should always take the time to review the team's performance. When discussing this with the team at large, contractors should emphasize successes, but also be sure to discuss areas of concern and determine the best next steps for improvement. CBO

Cory Olson is the senior vice president of Sakrete of North America. Olson leads the national product mix, independent sales and brand initiatives for Sakrete of North America. He has nearly 30 years of experience in the building materials space. Visit sakrete.com.





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World of Concrete 2020

Embracing change & a new decade of transformation

BY KATHY WELLS

World of Concrete (WOC) 2020 was held at the Las Vegas Convention Center in Las Vegas, Nevada, Feb. 4-7. After reaching a 10-year high in attendance last year, WOC 2020 drew approximately 54,000 registered professionals across more than 700,000 net square feet of exhibit space. Of the 1,310 exhibitors, 255 of those companies were new to the show this year, and 237 companies represented 29 countries outside of the United States.

"This year has been a very successful event—the industry continues to evolve and grow stronger as we enter a new decade," said Jackie James, group director at World of Concrete.

Whether the new decade is what has sparked special interest in change, we're all part of an industry in transformation, and we're all facing new possibilities. For example, technology wasn't just recently introduced to the industry. But it's this editor's observation that "now" is when contractors have finally begun to embrace it. As evidenced at the show, industry professionals are beginning to tip the scales in favor of change. From manufacturers to users to chief executive officers (CEOs) to laborers, showgoers this year experienced a slew of updates to the old, standby equipment, tech and tools they used to know.









Over the past few years, we've seen technology play a more significant role in construction equipment, and that continued at the show, with a number of major manufacturers launching updates to improve the operator experience.

Case Construction Equipment's B-Series (skid steers and compact loaders) now offers an 8-inch, multifunction, in-cab display for greater control, performance and operational data; and Bobcat's R-Series boasts a 7-inch,

touch display option with Bluetooth and standard LED lighting. Both manufacturers mentioned studying user/operator feedback to improve engine performance and in-cab comfort.

A trend I can't wait to see more of, smarter and higher-tech tools, was on display for even the most skeptical of attendees to marvel at and test out. Two such solutions taking tools to the next level were Hilti's new Smart Fasteners using Tracefast technology that enables unique identification and digital documentation on the jobsite; and Bosch's X-Lock changing system for grinders that offers a wheel change that can be up to five times faster than conventional interfaces.

Throughout the show, topics like technology, connectivity and inclusivity and diversity were widespread. As a woman, I noticed far more female representation than in previous years—a theme supported by several major manufacturers, including Husqvarna and Hilti.

Hilti is a company that's reinvesting in founder Martin Hilti's vision: creating an environment where everybody can be innovative and have fun at work. Hilti strategically partners with organizations like Diversity and Inclusion in Construction and Engineering (DICE) and Catalyst (a nonprofit organization supporting the promotion of women into leadership positions), along with its own users to help them develop a stronger company culture. Currently at the helm of Hilti leadership is Region Head and CEO of North America Martina McIsaac, the company's first-ever female CEO. McIsaac describes the company as gender-blind and prides itself on continuing to support diversity both internally and externally.

And as we look ahead to the future of construction, it would seem than many throughout the industry have adopted the same outlook.

According to WOC's James, "The construction industry remains strong along with the economy and we cannot wait until WOC 2021, with the new expansion of the Las Vegas Convention Center West Hall to showcase our leading industry suppliers in this state-of-the-art facility."

According to show management, 77% of exhibit space for WOC 2021 was booked on-site at WOC 2020, projecting next year's show to be one of the largest events in over a decade. WOC 2021 will be held Jan.19-22. Visit worldofconcrete.com for more details. CBO

Kathy Wells is the editor of Construction Business Owner magazine.



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PROJECTS: Small Spaces, Tight Timelines | By Claudio Zamparini

HOW AA JEDSON COMPANY MANAGES CHALLENGES ON URBAN CONSTRUCTION PROJECTS

Urban space construction projects have different types of challenges, which propagate simply from the presence of construction itself and its proximity to homes and businesses. No one likes waking up to a neighbor hammering away early in the morning, or having a dinner ruined by loud concrete trucks delivering materials next door.

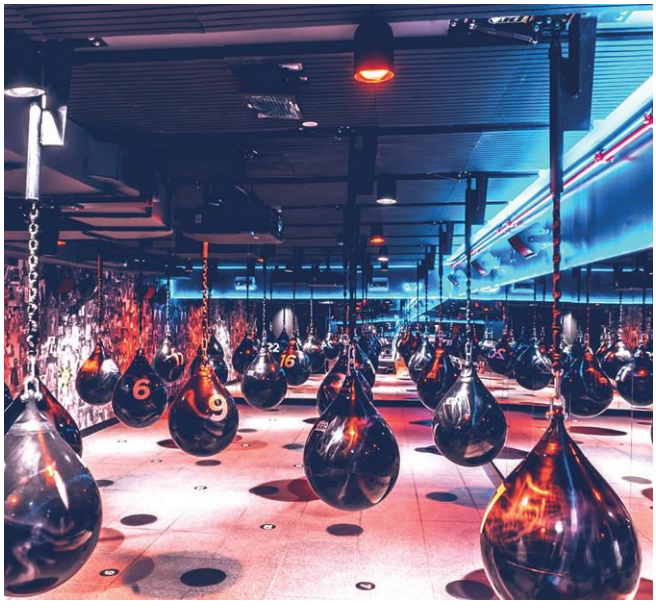
The experiences that the community may encounter, such as loud sounds, dust and smoke, all have stronger impacts on the project's direction than what might affect a project in a rural or industrial setting, where neighbors might not be as close.

These factors increase the urgency on a construction project in an urban environment to get out of that negative impact moment, which can become costly or detrimental to the timely completion and success of the project. One solution to preventing, or at least mitigating, these situations is forming strong business relationships—the fundamental needle in the haystack of navigating these challenges. Comprehensive communication is the foundation to any great relationship, and effective follow-through is the infrastructure supporting that bond.

Put yourself in the shoes of a neighbor impacted by your urban construction project. It's not difficult to understand how living in these conditions could be uncomfortable and stressful. You might also say that if you had input concerning the time frame during which these conditions occur, they would have less of an effect on you. This kind of rhetoric is why it may be in your company's best interest to build relationships with your project's neighbors in order to find reasonable solutions, minimizing the overall impact on their quality of life.

AA Jedson Company, a specialty contractor based in New York, has made this philosophy a key business strategy. During the buildout of an eight-story residential building in Brooklyn, a neighbor expressed concern with the company's working hours starting at





> Comprehensive communication is the foundation to any great relationship, & effective follow-through is the infrastructure supporting that bond.

7 a.m., since they worked into the late evenings and preferred to sleep in during the morning.

To find an evenhanded solution, the company decided to open the jobsite at 9 a.m., allowing the project's neighbors to sleep in without interruption from the construction going on at the jobsite. They determined that they would be able to build out the project within the same estimated schedule and within budget, virtually eliminating any interruption from an inconvenienced neighbor that might call in to the local authorities to company and impact the project negatively.

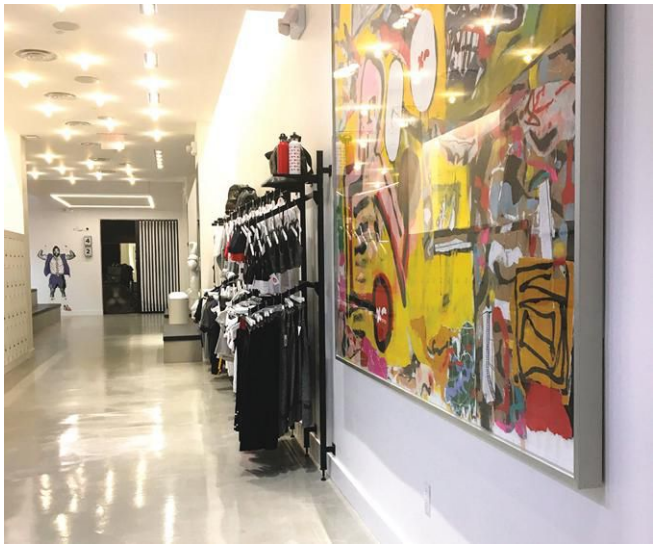
There are also times when the situation is reversed, and the client is affected by the already existing neighbors, rather than the neighbors being affected by a client's new buildout. In the buildout of a five-story, boutique fitness club in Manhattan, the smell of the neighboring restaurant began to seep into the construction project during the early stages of construction.

On multiple occasions, the project owner expressed worries that the smell of the restaurant's food would later creep into gym sessions. The penetration of smells from nearby buildings is something that is not very common and not so easily prevented—especially in an urban setting.

To remedy the problem, AA Jedson Company utilized its preexisting business relationships to bring in a second opinion from mechanical engineering consultants as they researched possible solutions to the client's dilemma. Based on the consultants' recommendations, AA Jedson Company facilitated the inquiry and redesign of specific elements in the ventilation and thoroughly sealed the structure from every opening as designated. They were able to offer a solution to the client that was viable, without any major impact to the overall budget and without affecting the critical timeline of the project schedule.

Of course, construction projects that take place in urban environments are typically closer together. In many cities, properties have structures that are constructed right up against the property line and are often adjacent to another structure. The means, methods and materials that a contractor chooses to build with, as well as the final structure designed for the space, can affect these adjacent structures.

There are times when a design may be rejected by neighboring property owners, especially in the case of underpinning. As exhibited on a recent AA Jedson Company eight-story, mixed-use



property buildout, a neighbor refused to accept the client's designed underpinning to support their property. AA Jedson Company worked specifically to maintain a relationship with the design team, the project clients and the group of affected neighbors.

Clear communication enabled the entire team to redesign quickly, calculate the impact on our project schedule impact using each alternative construction method, and minimize cost impacts to the client. To further ensure the safety of the plan, the client increased the amount of vibration and optical monitoring to document any changes in the structure.

Remember, it's not always what you say, but how you say it. AA Jedson Company believes in consistently improving its approach to how it works with project clients and neighbors in order to effectively find solutions to any issue that may arise on urban construction projects. Different perspectives bring varying concerns. Being prepared to effectively and positively communicate can resolve a majority of the concerns before they become significant problems.

Enabling the forum of open communication allows for these concerns to surface and for the entire team to work to find solutions. As concerns arise, they tend to be loaded with negative emotions, and it's important to not react with the same negative energy.

Bring positivity back into construction management, flip the potential negatives into positives, and turn concerns into solutions. Be impeccable with your communication as you invest in your client relationships. **CBO**

Claudio Zamparini is the vice president at AA Jedson Company. His previous roles at AA Jedson included construction project manager and accounting manager. Prior to AA Jedson, he worked as a laborer, carpenter, steel fabricator and erector, assistant project manager and junior draftsman. He is a graduate of Farmingdale State University of New York. Visit jedsoncompanyllc.com.



TURNER CONSTRUCTION COMPANY'S MANAGEMENT STRATEGY FOR VERTICAL HEALTH-CARE PROJECTS

Vertical expansions are impressive feats of construction and engineering that have become increasingly common in the industry. As building owners look for ways to add space without dramatically enlarging a building's current footprint, vertical expansions often are the most logical choice, despite the logistical hurdles that are frequently involved.

Although vertical expansions aren't exclusive to hospitals, the structures are great candidates for this type of augmentation, given that they usually have near-identical layouts from floor to floor. By adding additional levels, hospitals can maintain existing workflows and keep their patients within a short distance of lifesaving services. In fact, many hospitals are now designed with the intention of future vertical expansion.

Construction of any kind is a complex process, but a vertical expansion on top of an operating hospital is increasingly more complex than a traditional greenfield project. As you might expect, there is a significant amount of planning needed on the front end in order to minimize any impact to the hospital's patients, providers and workflow. For any project, good communication is integral to success. This is especially true for vertical expansions. Turner Construction Company walks its clients through every step of the project with the help of 3D rendering technology.

This strategy has made a significant difference on one current project. It was determined that the physicians' parking lot was the only place to locate a crane with the radius to reach the entire construction area. The alternative would be to use multiple cranes, which would cause even more disruption. The company realized that taking over the physicians' parking lot, even on a temporary basis, could be a hard sell. But, by showing the hospital administrators a 3D depiction of how the process would work and what the alternatives would look like, they agreed that it was the best option available.

It is imperative that both the contractor and design team perform their due diligence during the discovery phase to uncover and incorporate existing conditions, including with the structure and utilities. Ensuring that your structure tie-in point elevations are accurately documented, utility sizing is appropriate and that utility tie-in points are accurately identified are critical to the launch of any vertical expansion project. Turner utilizes 3D rendering and virtual reality as significant resources during this process. Various technologies, including BIM, virtual reality and laser scanning, can



Turner's vertical expansion construction project at the Monroe Carell Jr. Children's Hospital at Vanderbilt University in Nashville, Tennessee. Photo taken Oct. 31, 2017.



Construction taking place at the Monroe Carell Jr. Children's Hospital on Oct. 2, 2018

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help take real-time images of the existing conditions and convert them to drawing files to help better inform the planning, design and construction team.

It's important to do a deep dive into an expansion's effect on a facility and its workflows, then develop a detailed logistics plan to minimize that impact to both the hospital's daily operations and, more importantly, its patients. Steps should be taken to minimize noise so as to not disturb a patient's stay. If a portion of the project will create a high level of noise, coordination with hospital management should take place beforehand to make sure it's being done at the least intrusive time.

As a result, a construction company's schedule on these projects should be more flexible to accommodate these kinds of unexpected changes. Additional measures may include utilizing high, Sound-Transmission-Class-rated, temporary barriers and/or white noise in sensitive locations to minimize the noise of certain activities.

Frequently, because much of the space around an existing building is already in use, there may be a limited amount of laydown area to accommodate materials. In those cases, construction companies can coordinate with suppliers to schedule just-in-time delivery, where materials are delivered only as needed, eliminating the need to store them for a long period of time. Prefabrication or modular construction may also be utilized to reduce material laydown requirements as well.

When working in an occupied facility, both the patient experience and patient safety are of the utmost concern. It is often standard practice to isolate the construction environment and its tradesmen from the operating facility, in an effort to avoid the disruption of workers entering and exiting a hospital all day. Limiting access to the facility can prove to be difficult. However, there are many avenues to do so if planned appropriately early on in the project. On a current project, Turner designed and built a scaffolding system that allows the tradesmen to enter the project from the ground, then enter a bulk hoist on the second floor that vertically transports them six floors to the project site—eliminating the interface and intrusion of tradesmen inside the operating facility.



The completed Monroe Carell Jr. Children's Hospital on Sept. 3, 2019

Although each vertical expansion poses its own set of challenges, by enlisting a skilled team, you'll be more than capable of taking them on.

One of the most critical parts of the process is when the facility's roof is initially opened up in multiple locations to tie in to the existing structure. To ensure that these roof openings don't admit wind, rain and other debris, the contractor must be proactive in planning those activities and have the appropriate measures in place to mitigate the chance of water intrusion into the facility.

Often, temporary measures, like an enclosure over the columns or beams, will be built in place to allow the contractor to open and close those tie-in points as needed and maintain the integrity of the envelope. Construction companies will also often have a crew of roofers on-site every day. As soon as a cut in the roof is made to extend a column or to tie in to an existing utility system, the roofing crew patches it immediately. In a health-care facility, it is also important that the proper infection prevention measures be implemented in an effort to keep the existing structure weatherproof and insulated from noise, dust and debris.

One way to do this is by creating an anteroom between the construction site and the existing patient area. This not only isolates the public from the construction site, but also ensures that the space under construction may maintain negative pressure to avoid dust and debris being transmitted into the occupied space.

The most effective way to build these anterooms is through the use of modular quick-connect wall partitions to tie the construction space and occupied space together without creating additional debris. Throughout the construction process, remote air quality monitoring systems are used to protect patients from any dust and debris that could cause infection.

Although each vertical expansion poses its own set of challenges, by enlisting a skilled team, you'll be more than capable of taking them on. The result will be a facility that is better equipped to serve the needs of its patients—now and far into the future. **CBO**

Paul Lawson is a health-care project executive for Turner Construction Company in Nashville, Tennessee. Lawson joined Turner in 2005 as a project engineer. He previously served as the special projects division senior project manager. Lawson has played a significant role in Turner's recent health-care work, including a $48 million, 95,623-square-foot vertical expansion of Saint Thomas Rutherford Hospital in Tennessee that is now under construction. Visit turnerconstruction.com.





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EXAMINING THE PAST, PRESENT & FUTURE OF THE AVIATION CONSTRUCTION BUSINESS

In President Donald Trump's assessment, the condition of America's airports is equivalent to that of a third-world country. It's not the first time the political realm has commented on the deteriorating conditions of the airports in the country's major hubs, such as New York, New York; Los Angeles, California; and Washington, D.C. During his campaign for president, Trump said that infrastructure was "obsolete" and vowed to overhaul airports.

With more than 3,000 public-use airports in the country, United States airports desperately need updating. Federal grants from the Federal Aviation Administration (FAA) offer some funding for planning, development and/or noise compatibility projects. The FAA's Airport Improvement Program (AIP) provides "grants to public agencies—and, in some cases, to private owners and entities—for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS)."

A public-use airport is an airport open to the public that is publicly owned, privately owned but designated by the FAA as a reliever, or privately owned but having scheduled service and at least 2,500 annual enplanements. According to the FAA, to be eligible to receive a grant, "an airport must be included in the NPIAS. The NPIAS, which is prepared and published every 2 years, identifies public-use airports that are important to public transportation and contribute to the needs of civil aviation, national defense and the Postal Service."

According to the 2019-2023 NPIAS, there are 19,627 airports in the U.S. Currently, 5,099 of those airports are open to the general public, and 506 of them serve commercial flights.

THE PAST

"We need to make long-overdue investments in America's airports, roads, rail system and other assets that encourage travel," Roger Dow, president of the U.S. Travel Association, said in a speech on the state of the U.S. travel industry at the National Press Club in February. "Travel and commerce are inextricably linked," he added, noting that "travel is the front door to economic development," which further emphasizes the need for infrastructure improvements to better accommodate that development.

"America was once the global leader of transportation and infrastructure innovation, from the development of the Interstate Highway System to the first commercial flight," Dow said in 2018. "Outdated, inefficient and deteriorating infrastructure is a drag on our economy and way of life, and that's what U.S. travelers have dealt with over several decades."

In the U.S., many airports are more than 40 years old. In fact, Denver International Airport (DEN) was the last new major airport built … in 1995. According to The Brookings Institution, spending on transportation infrastructure in the U.S. has dropped $4.2 billion since 2007.

THE PRESENT

Record traveler volumes over the past few years have made updates to the aging infrastructure imperative. "With major terminal construction projects now underway in L.A., Boston, Chicago, Atlanta and many other airports, it is becoming impossible for travelers not to experience some form of disruption," said Michael Taylor, travel intelligence lead at J.D. Power, in a recent press release. Key findings from the J.D. Power "2019 North America Airport Satisfaction Study" include stagnant traveler satisfaction rates after several years of growth. The study attributes this factor to lower-than-average facility access scores, owing to airport accessibility and construction delays.

Newsweek's coverage of "The Worst Airports in the U.S." makes mention of the country's most failing campuses. Unfortunately for travelers, much of the 2017 rankings still hold up. According to the American Society of Civil Engineers, the U.S. airports that need the most infrastructure spending currently are:

- *LaGuardia Airport (LGA)*—As a major Northeast hub, LGA serves around 28 million people each year, but was ranked the worst in the U.S. in J.D. Power's "2016 North American Airport

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Satisfaction Study." However, last fall, Delta's first new concourse opened as part of a complete rebuild of LGA.

- *Newark Liberty International Airport (EWR)*—Also low in the ranks according to J.D. Power, EWR is reputed to have one of the highest rates of flight cancellations in the country.
- *Chicago O'Hare International Airport (ORD)*—With 867,635 flights in 2019, ORD suffers long delays and boasts some of the longest security-line wait times of any airport. According to MiFlight, ORD's average wait is about 24 minutes, and the longest is over 3.5 hours.
- *John F. Kennedy International Airport (JFK)*—As the busiest airport in the country, JFK also ranks low for reasons like including customs wait times, which average 55 minutes.
- *Philadelphia International Airport (PHL)*—Ranked third worst by J.D. Power, PHL is working on some improvements and recently completed a runway expansion to accommodate more international long-haul flights.

To exacerbate the situation, listed below are the top market pressures on all U.S. airports.

- New safety and security requirements from federal authorities, including the FAA, Transportation Security Administration (TSA) and U.S. Customs and Border Protection (CBP)
- New design guidelines from airport authorities
- Changes in the fleet mix

The good news? Almost every major airport in the U.S. has a multibillion capital improvement program underway.

THE FUTURE

Current market pressures and the U.S. Department of Transportation's 2019 announcement of the release of $478 million in airport infrastructure grants to 232 airports in 43 states (including American Samoa, Puerto Rico and the Northern Mariana Islands) has spurred movement where renovation and expansion projects are concerned. This is the fourth allotment of $3.18 billion in FAA Airport Improvement Program funding for airports across the U.S.



At press time, Trump had announced a proposed budget for the upcoming fiscal year that included $1 billion for federal infrastructure spending, much of which will go toward surface transportation improvements. While many in the industry remain hopeful that a federal infrastructure plan will come to fruition in the coming year, the plan remains a bipartisan issue held up in Congress.

AVIATION PROJECTS IN THE HEADLINES

Moving forward, the greatest airport investments will likely be in terminals—whether new, expanded and/or renovated—with the primary objective being capacity enhancement to meet the new demand for air travel. Airfield pavement projects are ubiquitous, but don't represent the largest investment category. Most of these efforts are rehabilitative in nature, with few new runway projects planned.

The 2017–2021 NPIAS identified an investment need of $32.5 billion in projects eligible for federal funding for public-use airports (3,332 existing and 8 proposed). According to the NPIAS report, there is currently a national initiative to improve nonstandard airfield geometry (think surface markings on airport taxiways) beginning, which should increase development costs in the next NPIAS report.

Design-build and construction manager at-risk models are gaining interest by airport sponsors, where available. Public-private partnerships (P3) for components of U.S. airports continue to increase in frequency, while airportwide P3s continue to be rare due to higher cost of capital.

Some U.S. airports are finally getting the capital improvement funding they so desperately need. A prime example of this are at Miami International Airport, which has announced $5 billion for a terminal optimization program and a cargo optimization, redevelopment and expansion. And Orlando International Airport's multi-phase project has $2.15 billion in play at its new South Terminal Complex, which will comprise 19 gate terminals upon its 2021 completion.

The construction industry remains bullish where aviation construction is concerned. It is a sophisticated business and requires the best professionals at all levels. But the profit margins are better, too. **CBO**

Eugenio "Geno" Jaramillo is a professional speaker, a construction consultant, a mentorship and networking expert and a public speaking coach. Jaramillo is an adjunct professor at Florida International University in the College of Engineering and Computing in the Moss School of Construction, Infrastructure and Sustainability.



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Speaker
Mathew Moreau
Product Manager
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Mathew Moreau has been involved in dropped objects prevention for over 10 years. As product manager for Pure Safety Group, he has had the opportunity to work specifically in dropped object prevention environments across countless facilities in the United States. He has developed dropped objects prevention training programs and is the 2020 vice chair of the ISEA Dropped Objects Product Group.

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The Shift From Browser to Dealer

Tips for staying one click ahead of the equipment purchasing landscape

BY AARON KLEINGARTNER

The internet has upended how we buy everything, construction equipment included. And while contractors still look to tried-and-true methods—think brochures and trade publications—when shopping, the wealth of information online empowers business owners like never before.

Today, independent blogs join manufacturers and trusted magazines in giving side-by-side analyses of excavators, wheel loaders and more, while contractors offer unfiltered opinions about equipment on industry web forums. And as the gap between specifications on heavy equipment narrows, customers aren't just looking online for a machine. Increasingly, they are shopping for a dealer, too. From the internet to the dealership, here's how to best navigate the equipment-buying landscape in 2020.



FIND TRUSTED SPECS & UNFILTERED REVIEWS

The journey to a new machine begins with online specs. The gold standard for equipment specs is still numbers straight from the manufacturer, but the internet allows access to those specs like never before. Most original equipment manufacturers (OEMs) let you at least see and download digital brochures. Many OEMs even let you size up their machines side by side with competitive models right on their website.

Established trade publications leverage relationships with these companies to get specs directly, often presenting them in comparison tools and detailed spreads. But look out for data from less-established online sites and comparison tools—many lack the relationship with OEMs to obtain data directly, and instead gather them secondhand from trade shows and other sources. At the end of all your research, the goal is to narrow your search to three or four models that might work for your company's needs.

And while OEMs provide the most accurate specs, online industry forums offer the most honest equipment reviews. There, contractors will offer up frank, firsthand accounts of both the equipment and the dealers that sold them.

Did the machine perform as expected? Did the dealer go above and beyond to deliver parts? You'll find answers to all this

and more on the forums. Just take posts with a grain of salt; like with online reviews at Yelp, customers are more apt to share a negative experience than a positive one.

SHOP FOR A DEALER, TOO

First and foremost, a machine must fit the bill. But contractors increasingly must ask, "What does the dealer offer on top of that?" Gone are the days when dealers would simply sell you a machine. Now, they're partners in your business and your first point of contact for maintenance, telematics and more.

And the bigger the machine, the more your dealership matters. Regional contractors needing bigger machines to work in multistate areas may need multisite support that only enterprise dealers provide. When you're changing six gallons of engine oil on a large-frame machine, solid maintenance is that much more important. Make sure the machine and the service capabilities are a match for your specific needs.

Ask about telematics, too. What is available; who has access; and how much support does the dealer offer through it? Don't forget payment options. Can the lease be a fixed monthly payment?

IT'S NOT THE PRICE, BUT THE COST

And finally, there's the question behind all these questions. What's your true total cost of ownership? That, more than a sticker price, is the dollar amount that matters. And this calculation has changed in recent years.

Cost of ownership used to be a simple equation: fixed costs (monthly payment and insurance) plus operation costs (operator, fuel and maintenance). But over the past 5 years, keen contractors have transitioned to a more accurate operating cost. This number incorporates the machine's presumed resale value given a dollar-per-hour cost for using the machine. A good dealer can help you determine your cost of ownership, which matters more than any machine's sticker price.

But ultimately, after all the online research and dealer talks, the best comparison tool is your gut. What's your innate read of a dealership's offer? What about its sales specialist? Always stay on your toes when working with a new dealership. And if it seems too good to be true, keep shopping. **CBO**

Aaron Kleingartner is the marketing manager for Doosan Infracore North America LLC, headquartered in Suwanee, Georgia. Kleingartner has 17 years of product development, analytics and strategic marketing experience with Doosan. Visit doosan.com.





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What's Trending in Equipment Rental

Why many contractors are planning to increase their sharing-economy spending in 2020

BY BETH HOFF BLACKMER

Recent research shows that construction contractors are increasing their reliance on rental partners. According to the 2019 American Rental Association (ARA) "Rental Customer Needs Study," 93% of professional contractors rented equipment in the past year. Of those, 92% planned to rent in 2020 as least as much as they did last year, and 52% expected to increase rental use over the next year.

As contractors have increased dependence on equipment rental, and as rental stores have evolved in recent years, several trends have emerged.



CONVENIENCE THROUGH TECHNOLOGY

Technology is making it easier than ever to rent and monitor construction equipment. Mobile-friendly websites, online booking, customer portals and text-messaging services are just a few of the advancements many rental stores have made in recent years.

Contractors are often able to reserve construction equipment any time of the day, online or via text. Some rental stores even offer portals to enable renters to check balances and get copies of past receipts for those who sign up. Most renters are using these tools on mobile devices, making ease of use paramount.

ARA offers rentalhq.com, an online rental store locator that helps contractors find rental partners. By entering a ZIP code and the type of equipment needed, website visitors can view a list of local, ARA-member rental companies that can assist their specific needs.

New technology is offering convenience for managing equipment fleets, too. For contractors renting equipment for days, weeks and months, telematics offerings are making it easier to monitor the equipment remotely and predict when it will need service. Most rental stores will monitor the equipment for the contractor and will take care of any maintenance issues that may arise over the course of the equipment rental.

Additionally, GPS locators help both contractors and rental stores crack down on equipment theft. Many of the locators are able to send a notification when a piece of equipment moves so immediate action may be taken.

RENTAL STORES AS PARTNERS

As new products and technologies emerge, contractors are turning to the experts at rental stores for advice on maximizing productivity. It's challenging for a contractor to stay on top of every new piece of equipment in the marketplace. More and more rental stores are focusing on being partners for contractors, and part of that role involves helping them determine the best tool for the job.

Rental stores can also transform a rented or owned piece of equipment, like a skid steer, into a multitool through attachments. It makes equipment more versatile and can save contractors time and money. In addition to having a handle on available products, rental stores also have extensive knowledge on the tools they offer.

Personnel often receive training from manufacturer representatives on product use, best practices and ways to maximize safety and efficiency. According to the ARA study, more than 90% of participants said rental locations are doing an excellent job of providing their customers with satisfying rental experiences.

RELIANCE FOR COMPLIANCE

Adhering to regulations like those concerning silica dust and aerial platform training requires research and implementation by contractors. Rental stores are helping lift that burden to make adapting to regulations and standards easier. In addition to supplying compliant equipment, rental stores are also educating contractors on the additional pieces required for equipment, proper usage of equipment, and the training necessary for compliance with Occupational Safety and Health Administration laws, American National Standards Institute standards and more.

SAVING BY SHARING

Sharing-economy businesses, such as Uber and Airbnb, have proven to be popular, especially among younger generations. Those who understand the value of the sharing economy see rental as an extension of that same concept. For these contractors, renting equipment is an automatic decision. While the sharing economy may be classified as a new trend, rental has certainly been around for a long time and is popular with both new and experienced contractors. According to the ARA study, the top reasons contractors have rented are as follows:

- It made more financial sense than buying equipment (45%)
- They needed equipment for immediate use and didn't want to purchase (43%)
- They needed to use the equipment infrequently or only for a short time period (43%)

Access to more frequent use of items contractors already rent and the ability to take on additional projects with a quick turnaround are the top two reasons contractors expect to rent more in 2020, according to the study.

The growth in rental demonstrates contractors recognize the value of having access to equipment, while at the same time eliminating the need for storage and maintenance for equipment that is not used every day. CBO

Beth Hoff Blackmer is president and owner of Aspen Rent-All, based in Basalt, Colorado, and president-elect of the American Rental Association. Hoff Blackmer has extensive knowledge of market trends and rental equipment solutions. She holds a bachelor's degree in marketing from the University of Colorado Business School. Her background and experience give her unique insight into the rental process. Visit ararental.org.





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Gearing Up for Growth

Tips & tricks for staying safe, healthy & busy this spring

BY BEN PRESTON

With winter coming to an end, contractors across the country should be aware of the potential risks that working in the cold, rainy environments of spring may bring. The weather has an effect on everything from employee wellness to the quality of concrete. The following guide provides tips, tricks, and gear recommendations to ensure your company is prepared for the start of busy season.



THE EFFECT ON WORKER HEALTH

COMBATTING RAIN

The Occupational Safety and Health Administration (OSHA) is cracking down on enforcing employer regulations to protect the health of workers in the cold. In the spring, conditions are still dangerous to be working outdoors due to the potential of cold stress from rain. Cotton loses its insulation when wet, so it matters what you wear. Trench foot, for instance, can still occur in temperatures up to 60 degrees Fahrenheit.

According to OSHA, "Non-freezing injury occurs because wet feet lose heat 25 times faster than dry feet. To prevent heat loss, the body constricts the blood vessels to shut down circulation in the feet. The skin tissue begins to die because of a lack of oxygen and nutrients and due to the buildup of toxic products."

To make matters worse, 37.5% of construction laborers say they do not have health insurance, according to MarketWatch. It's important to get high-quality rain gear that is specifically designed for construction workers. A jacket must be waterproof (not water resistant) and mobile, yet heavy-duty, and lightweight, yet durable. When coupled with a pair of bib pants, you can be sure your workers will stay dry. The key is to pay attention to the material. Look for rain gear made of polyvinyl chloride (PVC). PVC is a synthetic plastic polymer that is waterproof and highly durable.

The Carhartt Surrey line of rain gear is a popular choice for nonresidential construction workers. Made from PVC fabric, the Surrey line is lightweight but waterproof and breathable. Some other highly regarded rain gear brands for construction are Milwaukee Tool, DeWalt and Makita.

For road work, your workers will need more protection. Bulwark has a reputation for some of the safest, most durable gear for road work. Not only is it waterproof and high visibility, but it's also flame resistant and meets the proper American National Standards Institute guidelines.

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Lastly, your workers need the right boots. Muck Boot has built a well-respected name within construction for boots that stand up to any conditions. The Muck Chore or Arctic Pro, both with steel toes, meet American Society for Testing and Materials (ASTM) F2413-11 M I/75 C/75 EH regulations and will keep your workers safe and warm. For female workers, make sure they have access to proper footwear that is female-specific. Manufacturers like KEEN Utility are making strides in offering female-specific personal protective equipment (PPE).

Encourage your workers to bring a second set of clothes to change into during lunch. Finishing out a day in wet clothes puts your workers at further risk.

COMBATTING WIND

Spring is the windiest time of the year, with March being the windiest month. The spring winds are 3 to 5 times stronger than in July and August. For jobsite employees working at height, particularly those working on scaffolding, spring can be the most dangerous time of the year to be working. Protecting these workers would prevent an estimated 4,500 injuries and 50 fatalities a year, according to OSHA.

Falls are the biggest risk to construction workers. To make matters worse, having the proper fall protection is the most common OSHA violation (standard number 1926). OSHA also states that workers are not permitted to work on scaffolds in high winds or in slippery conditions unless a competent person has said it is safe to do so.

These decision-makers have to be especially diligent during the spring. Scaffolding on a particular jobsite needs slip-resistant treads on all stairs and landings, needs to be set up on sound footing, and should not carry more weight than it is designed to hold. Contractors working on boom and scissor lifts should also be protected with guardrails, fall-arrest systems, safety nets, covers and restraint systems. Make sure you prioritize your workers' safety over downtime.

THE EFFECT ON MATERIALS

The spring weather can expose a lot of mistakes made during groundwork that is completed in the winter. For instance, if concrete is poured on frozen ground, the ground will loosen in the spring and could compromise the concrete bearing. The durability of concrete is lowered by 40% to 60% when it freezes and then thaws, which ultimately reduces its strength by up to 40%. Contractors can combat this issue by using products like antifreezing components mixed into the concrete or blankets meant to trap the heat

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for the concrete to bind properly. Both have allowed contractors to counter this potential cold-weather challenge. By using these admixtures, it ultimately accelerates the cement hydration when temperatures are below freezing.

Also, low temperatures can impact successful and timely drywall and paint installation. For example, joint compound used on drywall becomes more brittle in the cold and won't dry correctly. Paint also thickens when cold and will take longer to dry, which can add time to projected production. When using a sealant outside of the preferred 39- to 100-degree F range, manufacturers can offer suggestions as to how to prepare for proper adhesion.

When it comes to cementitious fireproofing on structural steel, the steel must maintain a minimum of 40 degrees F for 24 hours before application, during the application, and for a minimum of 24 hours after the application. If this temperature is not maintained, you risk failed adhesion. Each jobsite that is completing this phase of work in cold weather should take proper precautions to keep the area warm. Have someone on fire watch at all times if your team is using space heaters to do so.

THE EFFECT ON EQUIPMENT

The end of the winter season is a major relief for most contractors. It not only has a major impact on the productivity and psyche of your workers, but it also impacts your equipment. Jobsite managers should continue their habit of routinely checking equipment that has been on the jobsite through the winter. The most commonly overlooked issue cold weather brings to a jobsite is tire pressure. For every 10-degree F drop, your tire pressure drops 1 pounds per square inch (psi). Equipment with air tires that has been on a jobsite all winter long is likely at risk of tire failure from underinflated tires.

Second, make sure to check the battery life of your equipment so that you don't run into unexpected downtime during busy season. Cold weather causes batteries to die, typically because of damage done during the warmer months. The cold causes a reduced cranking power and slower chemical reaction inside the battery, making it harder for the engine to turnover. The fluids inside the engine thicken, which can impact seals and joints causing friction. CBO

Ben Preston is the co-founder of Gearflow.com, a marketplace for all things construction. Gearflow's goal is to make it easier for contractors to work with the thousands of suppliers that make up the construction equipment industry.





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Upgrading Your Trucks & Why it Matters

3 ways new equipment can help to realize hard- & soft-cost savings

BY KATERINA JONES

Construction companies with heavy-duty trucks are increasingly realizing the need to upgrade the trucks in their fleet more frequently, replacing older, less-efficient units that cost more to operate and produce harmful emissions. According to the Truck Lifecycle Data Index, construction companies with heavy-duty truck equipment can realize a first-year, per-truck savings of $16,928 when upgrading from a 2015 Class 8 sleeper-model truck to a 2020 model. For a fleet of 100 vehicles, the savings can reach $1.7 million. Fuel efficiency and maintenance expenditures are much lower on new trucks and account for a large portion of "hard-cost" savings, which are critically important to distinguish, especially when every organization is laser-focused on their total cost of ownership to be competitive. However, aside from these hard-cost savings, there are also several soft-cost benefits that contribute to an organization and its bottom line when making acquisition decisions.



1. NEWER TRUCKS ARE SAFER

More fleet managers are now paying attention to their trucks' safety obsolescence in addition to their economic obsolescence—it's just as important to replace an older truck for safety benefits as it is for economic reasons. From truck components that have been around for decades, such as brakes and tires, to the latest technological advancements, like stability control and lane-departure systems, safety tech has made drivers and roads safer.

According to the National Transportation Safety Board (NTSB), close to half of all two-vehicle crashes from 2012 to 2014 were described as rear-end collisions. Of these crashes, 87% were the result of drivers not paying attention to the traffic ahead. In a 2015 study, the National Transportation Safety Board found that collision avoidance systems could have prevented 1,700 fatal rear-end collisions annually. As a result of this increased visibility, the inclusion of collision warning systems on heavy-duty trucks saw a 28% increase in 2017 and a 39% increase in 2018. Volvo was early to adopt electronic stability control and equip their trucks with updates made as early as model year 2006, prior to the Federal Motor Vehicle Safety Standards No. 136 Mandate in 2017. By model year 2018, all major original equipment manufacturers (OEMs)

started adding collision avoidance and lane departure to their standard package offerings. Confirmed by the Virginia Tech Transportation Institute, 6 out of 9 carriers reported that adopting at least one advanced safety technology significantly improved safety outcomes. Therefore, prioritizing safety and adding advanced technologies can have a significant effect on improving a construction fleet overall. OEMs are all major contributors to and proponents of safety. Many OEMs include safety features as a part of their standard specifications and require end users to opt out if they are declining these features. Eventually, OEM standards will include forward video monitoring, blind-stop monitoring and lane correction.

2. OLDER TRUCKS MAKE IT DIFFICULT TO ATTRACT DRIVERS

In addition to better safety, drivers and technicians want to drive and work on newer trucks that come with advanced technology. Drivers want more comfort, less fatigue and more time at home. Newer trucks allow companies to entice new drivers with advanced vehicles, rather than use expensive sign-on bonuses when hiring. The new equipment can also play a major role in preventing drivers from leaving to go work for other companies. Aside from sign-on bonuses, it can be expensive to onboard new drivers. In a recent webinar titled "Addressing Today's Transportation Challenges," Paul Mugerditchian, president of Dot Transportation Inc., stated that it can cost up to $10,000 to onboard a new driver.

3. CORPORATE IMAGE & SUSTAINABILITY

With the push to move toward greener business methods, clients want to conduct business with companies that emphasize their commitment to sustainability. Continuously updating a fleet encompasses many facets of sustainability, including optimizing vehicle specification to be more fuel efficient and aligned to the duty cycle and geographic locale; specifying lighter components and allowing for longer maintenance intervals while also reducing hazmat disposal; and disposing of pre-owned equipment to a secondary market, providing more fuel-efficient vehicles. A shorter life cycle conserves fuel resources, reduces emissions and provides a cleaner environment. Upgrading to a 2020 Class 8 model year truck from a 2015 unit, for example, would reduce carbon emissions by 126 metric tons and nitrogen oxide emissions by 12%. **CBO**



Katerina Jones is senior director of marketing and business development at Fleet Advantage, an innovator in truck fleet business analytics, equipment financing and life-cycle cost management. Visit fleetadvantage.com.



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The Buzz About Boundary Monitoring

How to reduce disturbances & take on environmental risks on jobsites

BY JUSTIN STEWART



Boundary monitoring is an important factor in construction site control in terms of minimizing potential contamination, protecting the public from jobsite hazards and adhering to the appropriate public health requirements. Construction dust can compromise air quality, environmental noise pollution can be harmful to workers and local residents, and vibration can cause damage. Monitoring for noise, dust, vibration and harmful emissions makes it possible to manage the impact of the construction site. Site management has a duty of care to protect against potentially dangerous conditions. However, this can be difficult to manage without reliable data streams and instrumentation that gathers the environmental information. Consequently, more companies are turning to boundary monitoring technology to measure the level of risk present and make sure they adhere to environmental limits and guidelines.

STAY INFORMED ABOUT SITE EMISSIONS

Boundary monitoring refers to measurement of noise, dust, vibration and the short-term detection of harmful contaminants in the soil around a jobsite to ensure that companies are complying with all applicable limits at work. Real-time air quality monitoring systems are a cost-effective alternative to having on-site experts conduct manual monitoring. These solutions require little upkeep or maintenance while continually measuring conditions on or around a jobsite, and are designed for easy setup and use.

CONTROL, COMPLIANCE & REPUTATION

Perimeter air monitoring and noise measurement are important components of a construction jobsite, helping companies remain compliant with control measures required for them to carry out the project. If complaints arise, responsible companies using boundary monitoring have proof that they've been diligent with their monitoring of operations and are abiding by operational requirements. Data evidence from a boundary monitoring system is also helpful if a jobsite is blamed for issues caused by another operation, allowing site managers to respond rapidly and minimize damage. Email and text alerts can also be set up to alert site managers when noise, dust or vibration levels are above prescribed

levels, allowing preventive action to be taken before complaints arise. This allows management on jobsites to help maintain good relationships with their neighbors.

ENVIRONMENTAL RISKS & HEALTH IMPLICATIONS

There are thousands of contaminated sites in the United States, varying in size and significance, ranging from abandoned buildings to large tracts of land saturated with toxic materials from past industrial or mining activity. Some sites are of great concern because of the chemicals present in the soil and the locality of the land, exposing humans or the environment to hazards. When under redevelopment, these sites pose a major hazard for new construction operations. However, effective boundary monitoring solutions can help to mitigate environmental issues during construction by effectively measuring toxic compound exposure.

An environmental monitor should be used for the short-term detection of emissions from site-related chemicals. The early detection of these emissions will help site management in mitigating and reducing the emissions exposure to surrounding communities in accordance with regulatory and guideline limits. Effective monitoring solutions are available, like those fixed with a photoionization detector that measures for volatile organic compounds (VOCs) up to 6,000 parts per million, assessing the emissions limits and air quality of an area.

VOCs are organic chemicals known for harmful properties that can leak into the ground, leaving the topsoil of the land polluted by the site's previous occupants. The levels need to be assessed and monitored to ensure the site is safe for operation and to safeguard the health of the workforce and surrounding area. Not only is the exposure to VOCs harmful to the environment, but these emissions can lead to lasting health implications.

Site boundary monitors are designed to help companies remain compliant with emissions levels, using remote monitoring and reporting of noise, dust and vibration levels. These solutions are easy to transport and install and are cost-effective. Reporting is made easy with the ability to readily produce reports for jobsite dust or noise compliance purposes that can be sent to multiple users. **CBO**

Justin Stewart is Casella's area sales manager. He supports Casella's health, safety and environmental boundary monitoring solutions. Stewart assists in the reduction of workplace and environmental health exposures through the supply of effective monitoring solutions for noise and dust. Visit casellasolutions.com.



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New Products to Watch

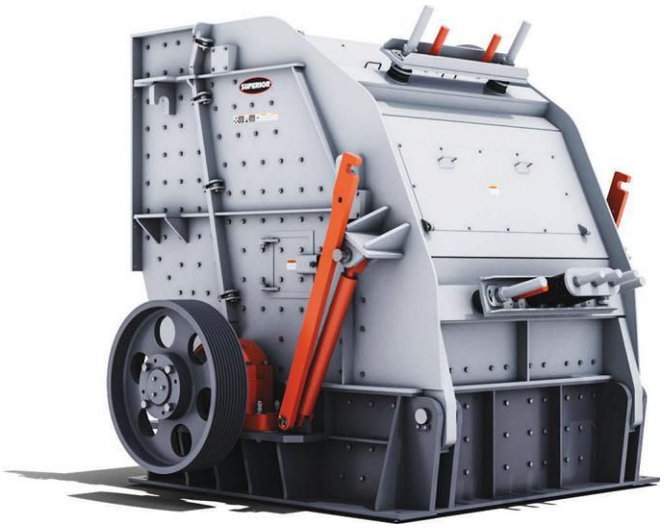
Selected by the editors of Construction Business Owner, these new-to-the-market products are just a few of our favorites recently released to the construction community. Stay tuned in every issue to find out what you need to know about the latest gear, solutions & industry-leading innovations.



WERNER

Welding High Heat Harness

Released: 12/12/19
Availability: U.S. market
What's new? Equipped with Relief Handles designed to protect professionals against weld spatter and high-heat applications while working at height
Specs: Developed to perform in post-fall situations, the Welding High Heat Harness is equipped with easy-to-grab patented Relief Handles to help users shift into a "chair in the air" position, relieving pressure on femoral arteries. The Occupational Safety and Health Administration- and American National Standards Institute-compliant harness is comprised entirely of Kevlar webbing, a superior material for high heat due to its char resistance of up to 700 degrees Fahrenheit.
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SUPERIOR INDUSTRIES

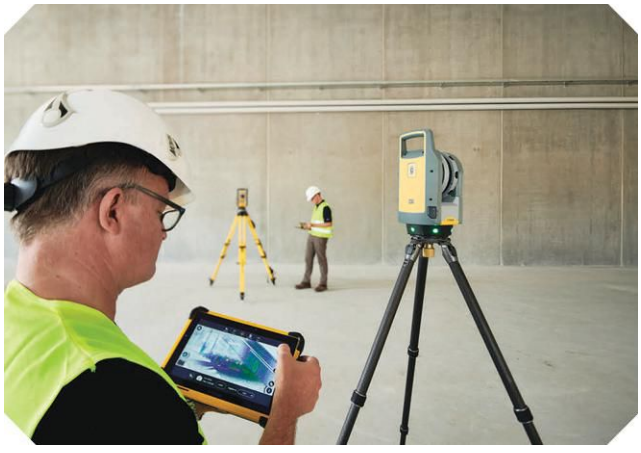
Sentry Horizontal Shaft Impact Crusher

Released: 3/1/20
Availability: U.S., Canadian & European markets
What's new? Fully-fabricated, open-style rotor, which produces low inertia energy for low cost of ownership. Proper spacing inside the crusher's chamber creates more area for processing larger feed sizes.
Specs: Superior defines its new line of Sentry Horizontal Shaft Impact Crushers by rotor size and has 15 models available for manufacturing. Production capacities range from 90 to 990 tons per hour, with maximum feed sizes from 15 to 40 inches.
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TRIMBLE

X7 3D Laser Scanning System

Released: 9/16/19
Availability: U.S., Canadian & European markets
What's new? Enables professionals of all scanning levels to quickly and easily capture precise 3D scanning data to produce high-quality deliverables. The X7 solution is fully integrated with Trimble Field Link software to provide streamlined workflows specific to the construction industry—from scanning to modeling to field layout. The solution also includes a first-of-its-kind laser pointer using scan data to improve communication between stakeholders and reduce rework.
Specs: Features a scanning speed of up to 500 kilohertz and a fastest scan duration of one minute, 34 seconds without images and 2 minutes, 34 seconds with images. The system's imaging sensors are three coaxial, calibrated, 10-megapixel cameras. Weighing in at 12.78 pounds (lbs.), the system is controlled by a Trimble T10 tablet with Trimble Field Link over Wi-Fi or cable.
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GENERAL SESSION I

SEBASTIAN TERRY

100 THINGS: WHAT'S ON YOUR LIST?



GENERAL SESSION III

NEIL PASRICHA

BE HAPPY FIRST: RESILIENCE & BREAKTHROUGH PERFORMANCE IN TIMES OF CHANGE



GENERAL SESSION II

ERIK QUALMAN

FOCUS: HOW TO FOCUS IN AN UNFOCUSED WORLD



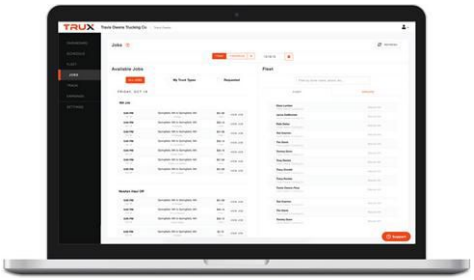
GENERAL SESSION IV

ANIRBAN BASU

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▲ TRUX

TRUX Fleet Management

Released: 11/20/19
Availability: U.S. market
What's new? Provides the following benefits to dump-truck owners: dispatch more efficiently; digitally access documentation; visualize truck locations and schedules; and manage a more flexible fleet
Specs: TRUX developed these fleet management tools by studying user patterns and listening to feedback from large fleet owners and brokers who wanted robust fleet management tools. TRUX has broadened the scope of functionality for managing larger fleets with a robust web application. Fleet owners can spend less time with administrative tasks and more time running their business.
Check 203 on index.



▲ JOHN DEERE

Small-Frame G-Series Skid Steers & Compact Track Loaders

Released: 11/21/19
Availability: U.S. & Canadian markets
What's new? Five small-frame G-Series skid steers and compact track loaders, providing operators with even more power and efficiency on the jobsite
Specs: Equipment features increased productivity and timesaving options. They can be equipped with an optional rearview camera and easy-to-clean windows for additional visibility, safety and speed on the jobsite. The upgraded cab offers more comfort so operators can easily maneuver the machine and remain in the cab for longer durations on the job.
Check 204 on index.



▲ GENERAL EQUIPMENT COMPANY

EP30 TEMP-BUST-R

Released: 11/1/19
Availability: U.S. & Canadian markets
What's new? When it comes to air ventilation equipment, it's difficult to be innovative. This product is notable for its high air output and durability.
Specs: Featuring heavy-duty construction, the EP30 is ideal for a variety of ventilation and climate-control applications. Producing up to 13,000 cubic feet per minute, the EP30 has a 1.5-horsepower (hp), electric single-speed motor and a six-blade propeller made from reinforced composite material.
Check 205 on index.



▲ JLG

SkyTrak Ultra Compact Telehandler

Released: 2/1/20
Availability: U.S., Canadian & European markets
What's new? Ideal for professionals needing to handle and transport materials in small spaces
Specs: The machine weighs approximately 5,300 lbs., with a load capacity of 2,700 lbs. and a 13-foot lift height. Its light weight allows for transport on small, tow-behind trailers. Additionally, the new model features four-wheel drive, two-wheel rear steer, a hydrostatic drive system and two coupler options, all supported by a Kubota V-1505 diesel engine with 30.8 hp.
Check 206 on index.



▲ ATLAS COPCO POWER TECHNIQUE

QAS 250 & QAS 330 Generator

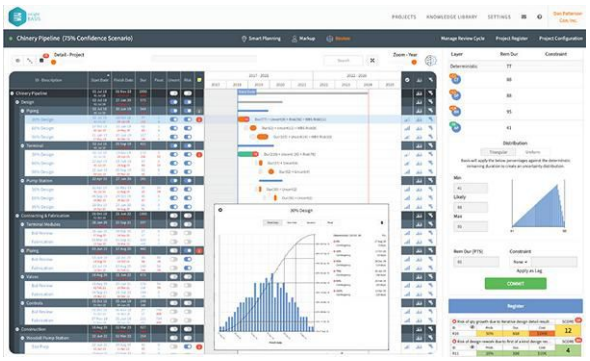
Released: 11/12/19

Availability: U.S., Canadian & European markets

What's new? Updated engines with a more powerful John Deere 6090 engine This allows the QAS 250 to run at 290 hp and the QAS 330 to run at 399 hp.

Specs: Features include powder-coated steel that is corrosion resistant; unique foam and a layering system inside the doors that ensures water-tightness; and improved sound attenuation. The generators boast 110% fluid containment. An AREP alternator excitation system allows for outstanding startup on the most demanding jobsites. The 385-gallon fuel tank on the 250 runs for 34 hours at 75% load, and the 330 runs nearly 26 hours.

Check 207 on index.



▲ INEIGHT

InEight Basis

Released: 10/10/19

Availability: U.S., Canadian & Asian-Pacific markets

What's new? Includes a risk module, which delivers risk and confidence management capabilities for the construction and engineering industries.

Specs: Basis combines artificial intelligence and human intelligence to create true risk intelligence. By bringing together historical project data and human expertise, planners and project teams can produce more accurate and fully risk-adjusted schedules for construction and other capital projects. Using Basis, planners can spend up to 40% less time building schedules.

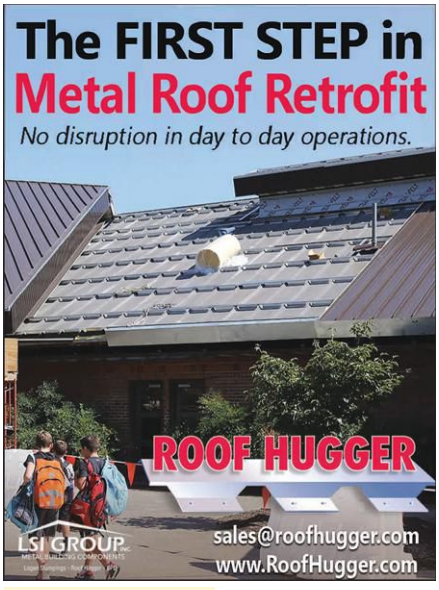
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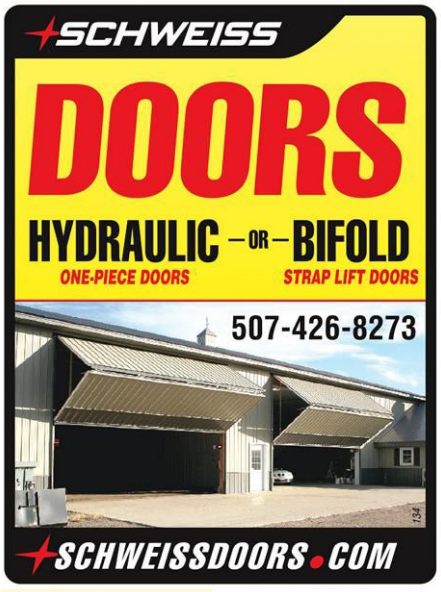
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❑ 08 Wrecking and Demolition Work
❑ 13 Architecture, Engineering and Construction Management Services
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❑ 99 Other (please specify) _____

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❑ 12 Engineer, Architect
❑ 06 Consultant
❑ 99 Other (please specify) _____

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❑ 02 $500,001 – $1,000,000
❑ 03 $1,000,001 – $2,500,000
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❑ 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

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❑ 12 Insurance and Bonding
❑ 13 Training and Education
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Annual Value of Construction Put in Place

December 2017/2018/2019 Annual Rate Comparison

This chart compares the two previous years' total value of construction put in place to an annual forecast based on December 2019 figures. (Millions of dollars. Totals may not add up perfectly due to rounding.)

	2017*	2018**	Dec 19
Total Private Construction	**963,247**	**991,171**	**991,218**
Residential	526,134	536,655	540,734
Nonresidential	437,113	454,516	450,484
Total Public Construction	**290,047**	**301,546**	**336,445**
Residential	6,790	5,522	7,293
Nonresidential	283,257	296,024	329,152
TOTAL Construction	**1,253,294**	**1,292,717**	**1,327,663**

**Seasonally Adjusted Annual Rates. Source: U.S. Census Bureau.*
***With the May 2018 release, unadjusted data will be revised back to January 2016 and seasonally adjusted data will be revised back to January 2011. With each May release, seasonally adjusted data will now be revised for an additional 5 years beyond the revision period for unadjusted data. Research has shown that this revision span should produce more reliable seasonally adjusted time series.*

$1,327,663

DECEMBER 2019 TOTAL ANNUAL VALUE OF CONSTRUCTION PUT IN PLACE

"Despite the ongoing slowdown in billings in the Northeast, balanced growth across sectors & regions looks more positive for the coming year," said AIA Chief Economist Kermit Baker, Hon. AIA, Ph.D. "Factors outside of the construction sector ... could still impact demand for design services; however, recent fears about a downturn in construction activity have largely subsided."

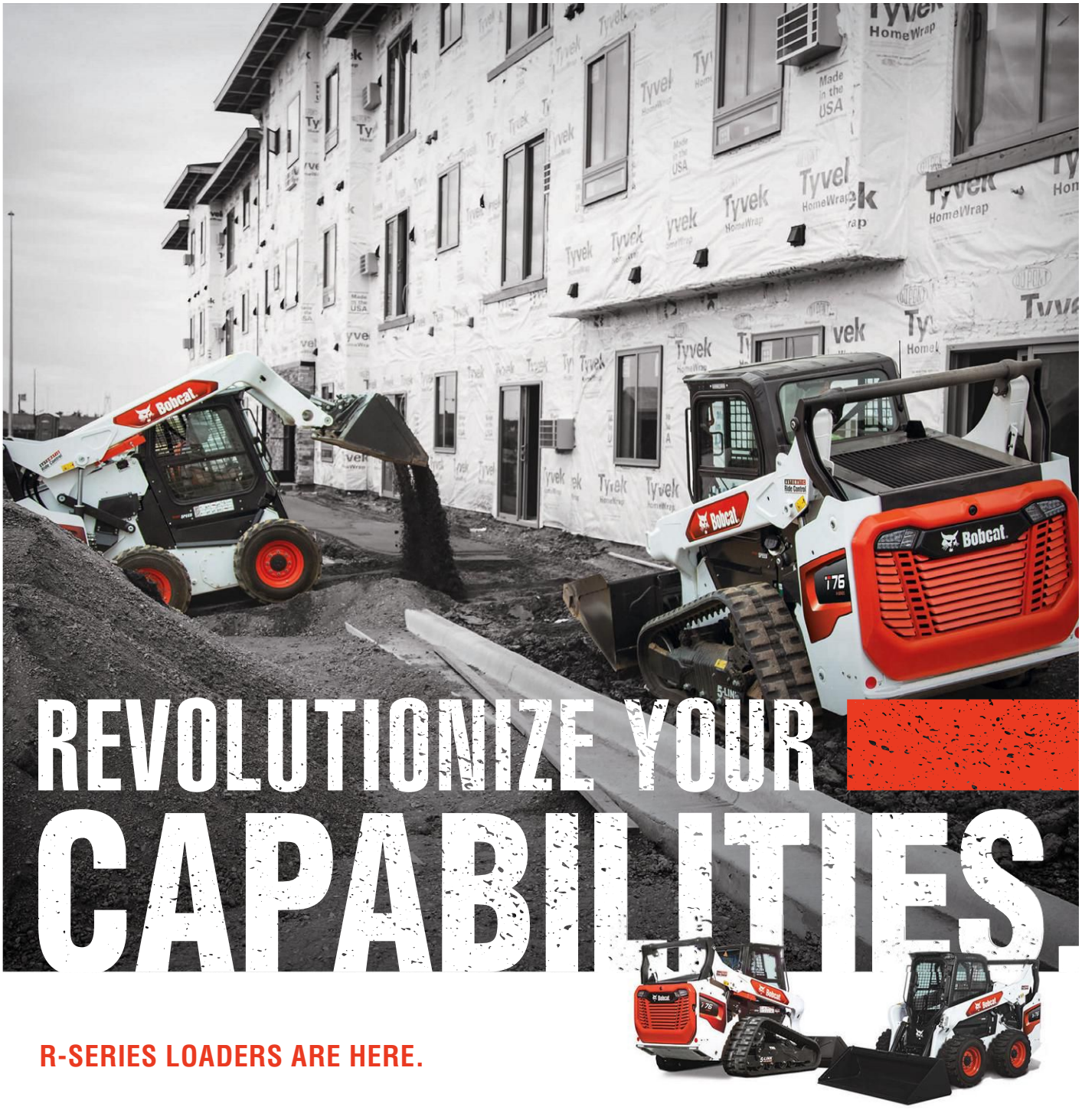
AIA Architectural Billings Index (ABI)

	National		*Regional - Billings				*Sectors - Billings			
Month	Billings	Inquiries	Northeast	Midwest	South	West	Multifamily Residential	Commercial/ Industrial	Institutional	Mixed
Jul-19	50.1	54.9	48.3	48.9	48.3	51.2	50.6	49.2	49.8	48.9
Aug-19	47.2	54.5	49.1	46.4	48.2	51.2	50.5	46.9	50.6	46.3
Sep-19	49.7	59.0	46.3	45.3	52.3	51.3	53.2	45.3	48.5	53.0
Oct-19	52.0	57.9	47.2	49.9	55.5	51.3	54.0	49.3	49.9	55.2
Nov-19	51.9	60.9	47.5	51.1	54.5	51.3	51.5	52.9	50.1	52.2
Dec-19	52.5	58.7	44.0	51.9	52.2	54.0	51.0	54.0	50.8	50.8

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

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