FEBRUARY 2021 | CONSTRUCTIONBUSINESSOWNER.COM

CONSTRUCTION® BUSINESS OWNER

THE LEADING BUSINESS MAGAZINE FOR CONTRACTORS

CHARGING AHEAD

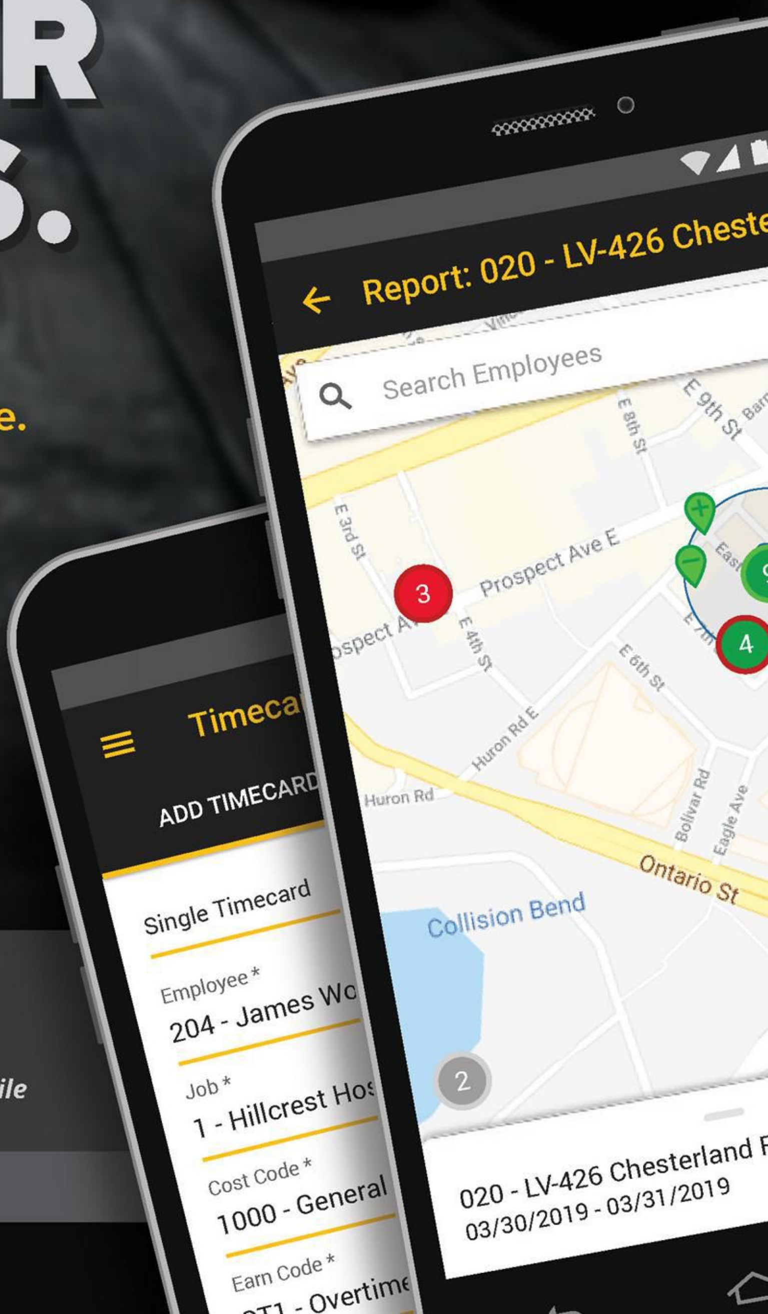
What's driving the electrification of equipment in the construction industry

IN THE OFFICE

When is enough enough?
Understanding the employer's legal duty to employee safety & health amid COVID-19

IN THE FIELD

Inside the One Tree Pledge
& other ways to reduce carbon emissions from the built world



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FROM THE EDITOR

KATHY WELLS

Last month, the United States saw the early stages of the administration and distribution of two different COVID-19 vaccines in phases among various risk groups—both aimed at shutting down the spread of the disease. According to Association of Equipment Manufacturers (AEM) President Dennis Slater, the focus on COVID-19 relief and the vaccine are just a few of the policies the association will be lobbying for with the Biden presidential administration. “We have to get ourselves back to business here, and we don’t really see our economy recovering until that’s done,” Slater said in a recent press conference.

Slater noted that while the construction industry has generally done well amid the pandemic, our economic recovery and getting ourselves back to business depends a lot on the vaccine rollout and its effectiveness after the fact. AEM forecasts some return to normalcy as early as mid-2021.

NTEA, The Association for the Work Truck Industry, provides a similar take on economic recovery. “From a public health perspective, ‘normal’ is going to take a long time to get back to, depending on how quickly vaccine deliveries can be ramped up,” said Steve Latin-Kasper, NTEA senior director of market data and research, who provides research and analysis on work truck industry markets. According to Latin-Kasper’s findings, getting back to our pre-pandemic routines doesn’t seem to be feasible until summer 2021, or even early fall, but that remains to be seen.

Also compounding the healthy recovery of both the economy and the construction industry are labor market imbalances; national, as well as state and local debt problems; and federal support of infrastructure investments. With the global domestic product taking a large downturn in Q2 2020, followed by a large upturn in Q3 2020, Latin-Kasper said, “in macroeconomic terms, now we’re almost back to normal.” He said economists are expecting to see something like 4% growth in Q4 2021, although we won’t have confirmation of that until around March 2021.

In addition, NTEA says the work truck industry forecasts for 2021 are calling for about 10% growth in units registered. And with historically low interest rates forecasted to last through the end of 2021, maybe even 2022, the residential corner of construction has been growing and is expected to continue to do so.

For more in economic forecasts, read “Vaccines, a New President & Construction: What’s on Deck in 2021” on page 22 for another look at potential growth in the industry this year. And hang in there!

Take good care,

Kathy Wells

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ON THE COVER
Image courtesy of Volvo CE

SPECIAL REPORT

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The Business Council

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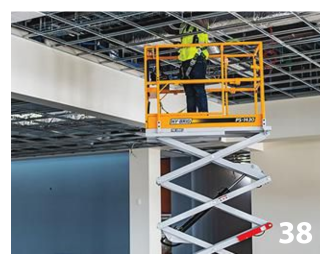

IN EVERY ISSUE

Brown & Caldwell Hires New Pittsburgh Leader

Heather Dodson

Leading environmental engineering and construction firm Brown and Caldwell has hired Heather Dodson as its new Pittsburgh, Pennsylvania, leader. With 17 years of extensive experience in water, wastewater and stormwater management design and permitting, land development and municipal engineering, Dodson brings technical expertise to Pennsylvania and the Northeast's most complex water and environmental challenges. As Pittsburgh leader, Dodson is responsible for operations management, providing client service, and expanding Brown and Caldwell's regional presence and talent pool to meet market and customer needs. She will provide marketing and technical leadership during the procurement and quality delivery of impactful water, wastewater and stormwater projects the firm is renowned for in the environmental market. "[Dodson's] skills and experience will be a great asset to our clients as the region continues to address aging infrastructure challenges, regulatory changes and environmental stewardship," said Brown and Caldwell Northeast Leader Lauren Fahnestock. Visit brownandcaldwell.com.

McShane Construction Company Announces Retirement of Current President & Names New President

After serving as president of McShane Construction Company for 22 years, Jeff Raday retired at the end of 2020. Upon Raday's retirement from the firm, Mat Dougherty, executive vice president at McShane, has transitioned into the president's role. Raday joined the firm in October 1996 as vice president and was promoted to president in March 1998. Under his leadership, the firm broadened its project portfolio and diversified geographically, expanding into new markets across the country. Raday led the establishment of the firm's four regional offices in Phoenix, Arizona; Irvine, California; Auburn, Alabama; and Madison, Wisconsin, and has grown the company's annual revenue from $60 million to $600 million. Dougherty joined McShane in June 2000 as a project engineer. "Dougherty has spent his entire career with McShane and worked his way up through the company at an impressive rate," said Molly McShane, chief executive officer (CEO). "His knowledge of the industry and our company make him uniquely qualified to serve as our next president and reinforces the strength and stability for the future of our company." Visit mcshane.com.

Hyundai Construction Equipment Americas Hires New Director of National Accounts

Matthew Gansser

Hyundai Construction Equipment Americas Inc. (HCEA) announced the addition of Matthew Gansser as director of national accounts. Gansser will be responsible for HCEA national account maintenance and development. Gansser joins HCEA with over 20 years of experience in the construction equipment sales industry. "I have always known Gansser as a great competitor and true sales professional whom I would love to see on my side of the aisle. I look forward to assisting Gansser in elevating Hyundai's national account sales with his tremendous industry knowledge and relationships," said Stan Park, HCEA vice president, distribution and marketing.

Skanska USA Names Vice President & Account Manager of Greater Washington, DC, Region

Gary Orton

Skanska announced that Gary Orton has joined the company as vice president and account manager for its building operations in the Baltimore, Maryland and Washington, D.C., metro regions. In this leadership role, Orton will be responsible for spearheading the regional building operation's strategic focus on the health-care and life sciences sectors. "With an in-depth knowledge of our market, [Orton] has been involved in every aspect of project delivery. He was with Skanska early in his career and it is great to have him back. We look forward to his contributions as he reinforces our local connections and strengthens our relationships in this region," said Dale Kopnitsky, executive vice president and general manager of Skanska USA Building's D.C. metro operations. Orton brings more than 30 years of experience in all phases of construction operations including: estimating, scheduling, quality, purchasing of major equipment and trade contracts, field supervision, project management expediting, cost control and safety training. Orton joins Skanska from Gilbane Building Company, where he was vice president and director of health care. Visit skanska.com.

Husqvarna Group Acquires Blastrac

Husqvarna Group's construction division has signed an agreement to acquire Blastrac. "The acquisition of Blastrac strengthens and complements our organic growth ambitions, as we are further expanding into complementary surface preparation solutions. This will enable us to provide customers with a complete range of solutions for any given surface preparation task," said Henric Andersson, president and CEO, Husqvarna Group. The Blastrac product portfolio includes efficient solutions for shot blasting, scarifying, scraping, grinding and polishing, and dust collection. The company has 380 employees globally with manufacturing and sales offices in North America, Europe and Asia with sales in more than 80 countries. Visit husqvarnagroup.com.

United Utility Services Acquires B&B Electrical & Utility Contractors

United Utility Services has acquired B&B Electrical & Utility Contractors, an electrical and utility contractor with operations throughout the southeast United States. The acquisition expands United Utility's national footprint while creating new growth opportunities for both companies. B&B Electrical & Utility Contractors is a family-owned company founded in 1982 and based in Canton, Mississippi. As a licensed contractor in numerous states, B&B offers a full array of electrical and utility services, including overhead and underground power distribution, substation services and disaster recovery. The company primarily serves regulated utility customers, cooperatives and municipal utilities throughout the southeast U.S. Under the new partnership, B&B will continue to operate under the same name while its management team and staff remain in place, working collaboratively with United Utility to serve customers and identify new opportunities to expand services. "B&B has established a strong presence and trusted reputation throughout nearly four decades of operations and will further enhance our suite of utility services, especially in the overhead and underground

100 years

2021 marks the 100th year of Autocar, which makes purpose-built vocational trucks. Autocar builds custom-engineered original equipment manufacturer trucks, collaborating with customers in refuse and recycling, terminal tractors, construction and concrete, road maintenance, aircraft support and military support. After the debut of "Autocar No. 1," a single-cylinder gasoline-powered tricycle in 1897, Founder Louis Semple Clarke saw a need to develop custom-engineered trucks to provide purpose-built tools for commercial and municipal customers. Today, Autocar is the only brand of Class-8, severe-duty, cab-over trucks that are both American-made and American-owned. Visit autocartruck.com.

power distribution, substation services and disaster recovery sectors. This acquisition aligns perfectly with our continued mission to expand opportunities, fuel growth and create value for those we serve," said Ali Azad, United Utility CEO. Based in Charlotte, North Carolina, United Utility was established in 2018 through the acquisition of W.A. Chester. Visit unitedutility.com.

▶ Case Names New Head of Sales & Marketing for CASE Construction Equipment in North America


Terry Dolan

Case Construction Equipment has introduced Terry Dolan as its new head of sales and marketing for Case in North America. Dolan is a longtime construction industry executive who previously worked in the Case organization in various strategic, sales, marketing and training roles. He has spent the last 20 years leading major global brands in sales and marketing positions and will now lead Case commercial operations in North America. Dolan lives in Wisconsin and will be based out of the brand's headquarters in Racine. He takes over for George Preocanin, who is retiring after more than 36 years in the CNH Industrial and Case organizations. Visit casece.com.

▶ Katerra Announces Recapitalization Plan

Katerra announced that its shareholders have approved a recapitalization of the business. With a focus on its core businesses, enhanced operational capabilities and the infusion of new capital, Katerra is positioned to continue its pursuit to transform the construction industry through innovation of process and technology. The approved recapitalization will strengthen Katerra's balance sheet by eliminating significant debt and providing $200 million of new funding, principally from SoftBank Vision Fund 1. Katerra exited 2020 with nearly $2 billion in revenue. The new funding enables Katerra to continue its focus on delivering design and construction for customers, with the growth capital to keep progressing its business lines. As a part of this new chapter, Katerra has strengthened its leadership team, drawing from highly industrialized sectors to bolster its capabilities in complex industrial orchestration. "The decision to recapitalize follows a thorough review of options available to us to enhance our financial strength and ensure Katerra's ability to continue to pursue our goal of transforming the construction industry," said Paal Kibsgaard, CEO. "Since taking over as CEO in July 2020, my team and I have been hard at work reducing costs and refocusing on our core businesses. We believe that this strategic and operational realignment, supported by SoftBank, is in the best interest of all stakeholders and will provide Katerra with the financial flexibility and resources needed to invest in areas that have the most promising growth trajectory." Visit katerra.com.

▶ Black & Veatch Names Chief Technology Officer


Christopher Murphy

Reflecting the increasing convergence of diverse technology platforms and the design, engineering and construction of critical infrastructure systems, Christopher Murphy has joined Black & Veatch as chief technology officer. Murphy will focus first on integrating hardware and software with Black & Veatch services to enhance client support. As leader of Black & Veatch's technology oversight team, Murphy will develop technology initiatives and align systems with Black & Veatch's business strategy, integrating digital optimization and transformation efforts with the company's broad portfolio of products and services. Murphy has experience in developing IT solution strategies, has aligned technologies across implementation teams and has furthered global business goals by challenging the status quo through creative approaches to technology planning. "As our clients and our industry adapt to an increasingly digital workforce, [Murphy's] expertise will be essential to driving the types of innovation that will propel our global growth strategies," said Irvin Bishop Jr., Black & Veatch's chief information officer. Before joining Black & Veatch, Murphy served as a global IT leader for solutions architecture at The Coca-Cola Company from 2011 to 2019. Murphy guided the strategic design, architecture and implementation of critical products and projects developed by regional development centers for marketing and public affairs, communications and sustainability (PACS). Prior to that, Murphy was an independent consultant at J3 Development Inc. for nearly 7 years. Visit bv.com.

▶ Groundworks Acquires Dry Pro Foundation & Crawlspace Specialists

Groundworks Companies announced its 18th acquisition since 2016 with the addition of North Carolina's Dry Pro Foundation and Crawlspace Specialists to its portfolio. Groundworks' footprint now spans 24 states and 35 offices, with over 3,000 employees and over $500 million in annual revenue under 16 locally operated brand names. Dry Pro is a 150-employee foundation services company that has served the greater Charlotte, North Carolina, area since 1999. Partnering with Groundworks will give the company access to capital to expand, a national warranty that transfers when a home is sold, enhanced employee training and development, and new technologies benefiting both customers and employees. Dry Pro will retain its brand identity to preserve the consumer recognition and goodwill established over its 22 years in business. Groundworks began acquiring strong local brands in 2016 to bring the fragmented foundation services industry under a single umbrella. Groundworks has continued its acquisition process as well as its organic expansion through a partnership it formed in 2020 with the Cortec Group. Visit groundworkscompanies.com.

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

ASK THE EXPERTS

What is one of the most important aspects of a firm's succession plan?

Eric Seidman, CPA, MBA
Partner
Wouch, Maloney & Co. LLP

"The most crucial aspect of implementing a succession plan is establishing the overarching goals. We begin by asking:

- How does the owner want to structure the transition?
- How long will it take?
- How long will the owner work?
- To whom will the business be transitioned?

Once answered, we help the owner determine the mechanism by which the plan is implemented. Typically, succession plans involve a sale or a gift. In either scenario, the length of time is a major factor. A sale may result in an extended buyout with a promissory note, and a gifting structure may feature a longer transition time due to annual gifting limits.

In a sale, there are different tax consequences for selling assets or company stock. The sale of assets may result in more ordinary income tax, whereas the sale of stock, broadly speaking, is taxed at capital gain rates.

In the case of a gift, there are annual gifting limits and lifetime estate and gift exemptions to consider. A structure in which the business is gifted may decrease the owner's lifetime exemption and conflict with an estate plan. As we learned in 2020, plans change without notice. To transition properly, planning is paramount."

Shane Brown
Partner & Construction Practice Leader,
Rocky Mountain Region
Plante Moran

"Invest in developing your company's emerging and future leaders. Construction companies that wait to recognize and coach new leaders until the moment the owner says, "I've had enough and want out," or leave too many decision-making duties to rest on one individual, have a much harder time executing effective succession plans.

Most business owners are concerned with the company's continued success long after they have retired, and consistently focusing on leadership development will provide peace of mind and allow time for course correction, if needed.

Leadership transition is hard. The organizations that prioritize continual identification and development of their leaders throughout their careers are most successful in transitioning roles.

Asking each leader to identify their successor after they have held the role for 2 to 3 years allows for training, development, assessment and empowerment of all employees. Continual discussion about succession also shows less experienced employees that there is a path for their futures—and an organization that supports their growth and progression.

Clear succession plans also give external parties—lenders, the surety and others—comfort that the company will continue to perform strongly for years to come."

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.

The Ruling Is in the Review

The benefits of keeping field crew scorecards & job cost tracking systems

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.

Your business's purpose is not to build buildings, install pipe, hang drywall, pour concrete, erect steel or move dirt. You are in business to make a profit, build equity, seek wealth-building opportunities, and enjoy the benefits of owning a successful company. From a financial perspective, a perfect construction project is when the estimated labor and equipment hours equal the completed project job cost hours. When the final labor and equipment costs come in under the estimated budget, it results in cost savings.

But is that accomplishment the result of a great foreman or superintendent, or is it because the estimate was either inaccurate, padded or too conservative? And when a job finishes over budget, was it caused by a bad bid estimate, a bad customer, field issues or conditions, mistakes, overtime, an inexperienced crew, callbacks and rework, poor crew planning, or poor project management? Every contractor's impossible dream is to build every project perfectly and as planned. Completing projects perfectly would generate the following results:

- On-budget labor and equipment
- On-schedule completion
- Meet all contract requirements, targets and goals
- Safe with no accidents
- Quality workmanship without callbacks or punch-list items
- Proactive two-way communication
- Proper documentation and change-order approvals
- No conflicts, issues, delays or disputes
- Prompt and complete payment
- Satisfied repeat customer and referrals

That impossible dream isn't often a reality in the ever-changing world of construction. There are too many uncontrollable variables and things that can go wrong on a job. Potential problems include late material deliveries, bad weather, inaccurate plans, crew workloads, field conflicts and payment problems. In fact, construction is one of the most difficult processes to control, alongside many other manufacturing operations and assembly procedures.

THE LABOR & EQUIPMENT HOUR BUSINESS

In my experience as a business coach, I find the No. 1 common problem to be inaccurate estimates—which always means less profit. This happens as a result of labor and equipment costs varying significantly from their bid estimates to final costs, leaving the final markup and margin to vary greatly from the original.

This shrinking profit margin causes them to net a lot less than they expected—and it happens year after year. So why does this continue to happen? For most contractors, labor and equipment hours control their bottom lines. But they don't invest in systems, tracking reports or software focused on controlling these important costs. Too many construction business owners spend their time and money on buying new excavators or vehicles versus implementing integrated job cost tracking systems and software that can actually guarantee more profit.

SYSTEMS, STRATEGIES & SCORECARDS

How can you improve project performance and eliminate potential issues that occur on your jobs? Successful construction companies work hard to enforce standard systems and controls to lower risk factors, eliminate potential problems and improve their odds to achieve expected results. Written, implemented, trained and enforced systems may seem like a pain, but they improve the odds of success. Letting each foreman decide how to run their jobs without knowing the budget just doesn't work. And when there are updates delivered during the course of a project, how can anyone plan to achieve the completion goal or make any required adjustments to bring in the job on-budget?

WHAT'S REQUIRED TO HIT YOUR ESTIMATED LABOR & EQUIPMENT HOUR BUDGETS?

1. *Accurate estimates*

Labor and equipment hours based on actual cost history on completed jobs. This requires investing in a fully integrated estimating and accounting software, which tracks labor and equipment hours and job costs by job number and cost code. The estimator and project manager sit down to determine which construction trades, activities and phases they want to track in order to create accurate estimate templates, detailed job-cost tracking systems and simple timecards.

2. *Turnover preconstruction hand-off meeting*

Before each project starts, the estimator, project manager, superintendent and foreman meet to review the new job. Prior to the meeting, the project manager, superintendent and foreman visit the jobsite, review the plans, draft a preliminary schedule and estimate the crew hour budget. During the meeting, the team reviews the estimate, contract, scope of work, schedule, budget, terms, etc. They also set project goals including the budget and crew labor and equipment production goals; establish the schedule, deadlines and milestones; review the proposed subcontractors and suppliers; draft a project mobilization, staging and phasing plan; and create the project timecard, cost codes and change-order rates.

WEEKLY JOB Detailed SCORECARD Report - 1 Job

Job Name: JOB #: PM: SUPT: FORE:

WEEK ENDING: CREW LABOR HOURS

CONCRETE FOOTINGS								TO DATE	TO DATE		TO DATE
COST CODE	WORKTASK	Estimated Quantity	UNIT	TOTAL BUDGET CREW HOURS	UNIT	QUANTITY INSTALLED TO DATE	ESTIMATED ACTUAL % COMPLETE	BUDGET CREW HOURS TO DATE	CREW HOURS ACTUALLY USED	HOURS REMAINING To FINISH JOB	+ OVER + <UNDER> BUDGET HOURS
32002	LAYOUT	40,000	SF	160	Hours	20,000	50%	80	100	60	20
32005	EXCAVATE	300	CY	200	Hours	300	100%	200	160	40	(40)
32010	FORM	1,200	LF	400	Hours	400	33%	133	160	240	27
32015	SET EMBEDS	150	EA	150	Hours	75	50%	75	100	50	25
32020	POUR	300	CY	80	Hours	-	0%	-		80	-
32050	CLEANUP	40,000	SF	40	Hours	-	0%	-		40	-
TOTAL				1,030	Hours		47%	488	520	510	32

WEEKLY (OR MONTHLY) ALL JOB SUMMARY SCOREBOARD Report

WEEK ENDING: CREW LABOR HOURS

							TO DATE	TO DATE		TO DATE
Job Name:	PM	SUPT	FOREMAN	TOTAL BUDGET CREW HOURS	UNIT	ESTIMATED ACTUAL % COMPLETE	BUDGET CREW HOURS TO DATE	CREW HOURS ACTUALLY USED	HOURS REMAINING To FINISH JOB	+ OVER + <UNDER> BUDGET HOURS
Mission Plaza	Dan	Bill	Dave	2,000	Hours	50%	1,000	900	1,100	(100)
Main Street Center	Dan	Joe	Jose	8,000	Hours	60%	4,800	5,500	2,500	700
ABC Service Job	Dan	Ace	Wil	5,000	Hours	30%	1,500	1,350	3,650	(150)
Acme Warehouse Job	Bob	Bill	Arnie	4,000	Hours	50%	2,000	2,250	1,750	250
Jones Center Job	Bob	Dan	Cal	3,500	Hours	20%	700	1,000	2,500	300
Smith School Job	Bob	Fred	Hal	6,000	Hours	25%	1,500	1,400	4,600	(100)
TOTAL				28,500	Hours		11,500	12,400		900

3. *Job budget*

Finalize project budgets including crew labor and equipment hours for each activity cost code. Review this budget, including the inclusions, exclusions and scope, with the field superintendent and foreman before each job starts to clarify the job cost goals and target hours for the field crew.

4. *Electronic timecards*

It's time to do away with paper timecards. You must utilize fully integrated estimating and accounting software to track and update your job cost and crew hours on a weekly basis. Foremen submit their crew labor and company equipment hours daily using electronic tablets or cellphones applications with specific hours for each employee and equipment used with the right job number and activity cost codes.

5. *Job-cost field production scorecards*

In order to stay on budget, field foremen need to know their crew hour goals and get weekly scorecard crew production updates with budgeted hours versus actual crew hours used to date. This requires someone be assigned to creating these simple, one-page, weekly job scorecard reports every Monday morning and distributed to the project managers.

The project manager reviews these job cost labor and equipment production scorecards weekly with the general superintendent, job superintendent and foreman to develop plans to complete projects on-budget.

6. *On-site job scorecard meeting*

Every week, the project manager, superintendent and foreman meet at the jobsite to review the labor and equipment production hour scorecard and determine what's required to keep the job on or under budget.

7. *Look-ahead schedule*
Each foreman and superintendent prepare a weekly 2- to 4-week look-ahead schedule describing what work is scheduled over the next few weeks. This schedule is reviewed with the project manager at the on-site jobsite scorecard meeting every week. Look-ahead schedules include all labor, equipment, tools, materials, supplies, and subcontractors required for the next several weeks to eliminate last minute needs, which can delay projects and cause crew inefficiencies.

8. *Job scorecard results review meeting*
Hold weekly or biweekly all superintendent and foreman meeting to review all job scorecard reports with project labor and equipment hour production scorecards, results, schedule updates, safety issues, quality and punch-list updates, upcoming activities, job issues, areas for improvement and training topics.

9. *Proactive field supervision systems*
- Visit all projects 2 days before scheduling or mobilizing crews to start work and confirm the jobsite is ready.
- Verify change-order rates and number of mobilizations included in project budget.
- Prepare daily written electronic job reports with photos.
- Prepare weekly quality, cleanup and punch-list inspection report, and notify all subcontractors to complete report with 2 weeks.
- Prepare weekly safety job inspection report and correct all issues weekly.
- Meet with customer prior to moving off the project at each phase to get agreement on any outstanding items to avoid callbacks.
- Allow no more change orders, extra work or free work without prior authorized approval.
- Instruct the superintendent or foreman to never leave jobsite without lead or foreman in charge, and never to go to hardware store or supply house—send a crew member if required.
- Allow no overtime without prior authorized approval and within budgeted allowance.

To finish on budget and produce optimum results on projects, you must have a system that guarantees performance 95% of the time. Review the factors outlined above and decide which of them will improve your results. **CBO**

Focus on Fundamentals During Tumultuous Times

4 words to help reset your company's core business basics

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

Construction organizations continue to navigate challenging waters, seeking a delicate balance between an aggressive offense to stave off the lingering effects of COVID-19 and a long-term defense that must be defined today. Just like the great sports teams, you may be having a challenging third quarter, only to realize this is the fourth game in a season with an infinite number of games.

On the other hand, some firms have taken a "wait and see" approach, choosing a more defensive course. The challenge in hunkering down is that the talent development cycle does not recognize pandemics, succession planning does not acknowledge COVID-19, and balance sheets and income statements do not care about the plague, elections, civil unrest, etc. We can apply all of the asterisks we like to 2020, but the sand continues to pour through the hourglass.

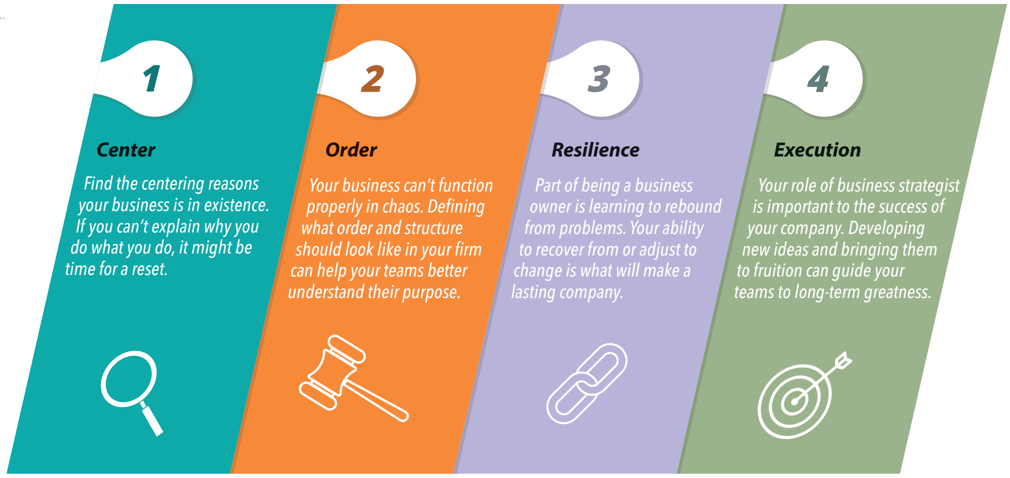
"We want to achieve the greatness we had over the last few years," is a common refrain from construction leaders, as if they were the all-star quarterback from high school, seeking to relive their glory days some 20 years after their last snap. Capturing lightning in a bottle twice is no easy task and, in some cases, it's impossible. The impossibility is tied to several key themes:

- *An unwillingness or lack of desire to change*—Put another way, complacency
- *A failure to recognize that markets and the competition evolve*—The world is in constant motion and it is easy to discount—albeit errantly—the way customers buy and how the competition reacts
- *A feeling that the market will come to them*—Call it entitlement; call it blind faith. Successful businesses make things happen rather than wait for their number to be called
- *The reality that the firm's greatness was less about business genius and more correlated to market conditions*—Rising tides raise all ships, and sometimes a strong economy can tend to exaggerate a firm's success

There is no silver bullet for success. Sure, all businesses love to see a strong economy with few distractions, but the reality for most businesses is there will always be something that creates angst or throws a rock in the road. The recipe card for success is about creating and/or reverting to the company's center, order, resilience and execution (CORE). This CORE is a focus or refocus on the blocking and tackling or business fundamentals. If a firm wants to reclaim its glory before pandemics or any other impasse, it should focus on its CORE.

CENTER

Consider the great words of Simon Sinek: "Start with why." Why does your business exist? There are thousands of electricians, masons, technicians, earthwork contractors, etc. Why should a customer or a candidate for employment choose you? If you cannot answer the question yourself, you might also wonder how your managers, supervisors, foremen and other leadership might reply. Consider these reflection questions:



- Where is your business going?
- What are you trying to be long term?
- Why should a customer choose you?
- What do your customers think of you?
- What do potential customers think of you?
- Where does your company provide value in the market?
- What niche do you fill that your competition cannot?
- Why should a candidate for employment choose you?
- How much time do you spend on your plan for the future?

ORDER

Structure is not about some fancy organization chart. True organizational design is about developing positions that supports the current core, but also creates the right depth to achieve strategic growth. Consider this: How many firms simply play defense, backfilling outdated positions with candidates that they hope will fill an immediate void? Examine the following questions to evaluate the order in an organization:

- Do you have an effective organizational structure for today's business?
- Do you have an effective organizational plan for tomorrow's business?
- Do your roles and responsibilities make sense, or have you simply checked boxes?
- How do you define success?
- Do things fall in the cracks of your organizational plan?
- How does your team view its role in the long view—does it see upward mobility that aligns with where the firm is going long term?

RESILIENCE

Everyone likes to think of themselves as being able to weather any storm. And this year has certainly culled the chaff from the grain. In a matter of months, the world saw cataclysmic changes to all sectors—some positive, some devastating.

Many firms do not like change. It is uncomfortable and requires action. However, the resilient firms are pivoting proactively and embarking on new market, customer, and strategic endeavors when others are holding tight. Questions to ask yourself include the following:

- How quickly does your firm make well-informed decisions?
- Does your organization rely simply on gut instinct, or does it examine multiple data points to support decision-making?
- Does the phrase, "This is just the way we do it at this firm," sound familiar?
- How much time does your team spend innovating its business?
- How much time and energy does your team examine the markets to find the next big thing?

EXECUTION

For some leaders, it is exciting to reflect on new strategies and tactics. Thinking about what the business could be is fresh and inviting. However, most strategic planning for firms falls flat because there is no executable plan.

Put another way, it is easy to talk about getting healthy in the new year, but the devil is in the details—or simply putting in the sweat equity on the treadmill. Additionally, execution is not limited to strategic planning but the thorough execution of projects, from inception to true closeout. Successful execution should involve the following:

- How consistent is the application of the firm's operational model?
- How do you measure compliance to the operational model?
- For the senior leadership team, how much time is spent on tactical day-to-day items versus strategic long-term thinking and planning?
- Does your firm have a strategic action plan that is utilized to support the initiatives it wishes to achieve?
- How does your firm measure success year over year, other than in terms of profit and loss and life safety?

It would be a strong understatement to say that 2020 was a challenging year. While we all hope for brighter times and increased prosperity going forward, success will not come by sitting idly by relying on the things that possibly created success in prior years. Reflecting and acting on the CORE is paramount to every firm's success in the short and, more importantly, long term. **CBO**

The New Rules of Succession

6 steps to consider when developing your company's future leaders

ABOUT THE AUTHORS

THE ABC SUPPLY PRO COUNCIL consists of experienced associates from across the United States. Its aim is to provide contractors nationwide with industry advice and insights to help them seize opportunities and overcome challenges they face as they manage successful businesses. ABC Supply Co., Inc. is a distributor of roofing, siding, windows and other select exterior and interior building products, tools and supplies in the United States. Visit abcsupply.com for additional tips and resources from the Pro Council.

Do you have business insight to share with our readers?

If you have business tips to share with Construction Business Owner's audience and would like to be considered as for a guest columnist opportunity, we want to hear from you. Contact Editor Kathy Wells at kwells@cahabamedia.com and tell us what makes you a business pro.

As a business owner, the day will come when you'll choose to either leave or retire from your company. Whether you decide to turn the company over to a current employee or to someone new you recruit, it's important to have a plan in place to ensure that your successor is properly prepared to run the business.

You'll also need to consider how different employees will be affected by your departure—especially if you have multiple generations of workers on your team. For the purposes of this article, we'll focus on six steps for how to develop future leaders from within your company.

1. START EARLY

A succession plan takes months to create and years to execute. It also requires significant communication and mentorship. Putting a plan in place now will ensure you're able to transition the day-to-day responsibilities and onboard the new leader gradually and thoroughly. The earlier you start, the more prepared for change your company will be.

2. EVALUATE YOUR INTERNAL TALENT POOL

It's crucial to evaluate the size and skills of your current team. Are there enough mid-level team members who would be prepared to replace your older employees as they follow you into retirement? If not, you may want to adjust your recruitment strategy to ensure that you bring in more mid-level team members. If you do have a large enough team, consider what skills each employee needs to be prepared to take on more responsibility.

When choosing your direct successor, it's important to think about not only their current skills but also their skills or potential as a future business leader. Ask yourself the following questions:

- Are they knowledgeable and passionate about the business?
- Are they entrepreneurial?
- Do they know how to lead a team?
- Do the rest of your current employees respect them?
- Are they a good communicator?
- Can they provide good service to your current and future customers?

If you answer "no" to any of these questions, that doesn't necessarily mean the person you have in mind won't make a good successor. You will just need to have a plan to develop the qualities they are missing—and that's why it is important to make your succession plan early.

3. INVEST IN EACH EMPLOYEE'S SUCCESS

Consider what skills each employee needs in order to move up and assume greater responsibility. If you have a multigenerational team, you'll also want to take into account how each generation prefers to develop their skills.

Don't wait until you decide to move on to start setting up your company for success. Having a solid succession plan in place will ensure that your employees will always be in good hands—even when those hands are not your own.

Employees from Generation X, who are in their 40s and 50s, often value relationships and look for a feeling of community. Take the time to get to know these employees and make sure they feel engaged in the development of their careers and the success of the company. Millennials (those in their late 20s and 30s) want to know that their work has meaning. When training those employees, explain the reason behind your actions and how it contributes to the overall success of the company.

Generation Z workers are in their early 20s. They typically value honesty and open communication, so be transparent about the state of the business and provide opportunities for them to both provide and receive feedback.

Even if your successor isn't from the millennial or Gen Z generations, working to develop younger employees will strengthen your team as a whole and make the transition to leader a smoother process for your replacement.

4. ESTABLISH GOALS

Part of successfully turning your business over to someone else is ensuring that your successor understands the business's philosophy and goals. Share your vision and objectives for your business and ensure that your successor believes in your company's core values. Identify the goals of your successor and discuss how reasonable they are. If you're leaving a family business—especially if the person taking it over isn't a family member—also discuss the importance of continued family involvement in leadership and ownership.

By starting your succession planning early, you'll also have time to consider any personal business goals you have before you retire or leave the company. Perhaps you're hoping to hit a certain profit goal or complete a specific number of jobs before your time at the business comes to an end. Outline these goals and consider how realistic they are.

5. MAP OUT YOUR PLAN

Important decisions shouldn't be made on the fly. Your succession plan needs to be documented clearly so that everyone involved understands their role. Write down each step that needs to be taken and add notes along the way to keep track of the details.

Writing your plan out will also help ensure that you're covering every necessary detail and not forgetting anything. Refer to the plan as necessary to make your transition as smooth as possible. If you're unsure of how to lay out your plan, many free and paid resources exist online to get you started.

6. ACCEPT THE CHANGE

As your plan turns to action, there will be a lot of shifting of roles and different people taking on new tasks. Change requires patience. Mistakes will happen as people learn the ropes of their new positions and your successor may perform certain tasks differently than you do. As your employees gain more responsibilities, yours will lessen, until it's finally time to give up all your tasks. Accept the new reality of the company as you and your employees move toward the future.

Don't wait until you decide to move on to start setting up your company for success. Having a solid succession plan in place will ensure that your employees will always be in good hands—even when those hands are not your own. **CBO**

Do You Qualify for the R&D Tax Credit?

Which construction activities make the cut & how you can realize the savings

BY KATHY WELLS

In a world of ever-evolving regulations and best practices, construction business owners need every tool possible to stay ahead of the competition and maintain a thriving business. Generally, while much commonsense business savings can be recognized in budgeting and revenue goals, there are other opportunities that are not paid as much attention, like the research and development (R&D) tax credit available to many construction firms.

For more advice on this credit, Construction Business Owner (CBO) spoke with Cole Marr, director of research tax credit services at California-based accounting firm Sensiba San Filippo LLP. Marr has focused exclusively on the R&D tax credit for 14 years, working with businesses of all sizes to identify, substantiate and validate their research tax credits. Read on for Marr's insight on how construction businesses can take advantage of the opportunity.

CBO: What is the R&D tax credit?
Marr: The federal research and development (R&D) tax credit, also known as the research and experimentation (R&E) tax credit, provides a general business credit for qualifying project expenditures. In addition, many states offer R&D credits that are very similar in nature to the federal credit. It is important to note that this is a general business credit, not a deduction or write-off. Many construction companies are performing R&D that qualifies for a credit in the eyes of the IRS but don't even realize it due to a lack of awareness and common misconceptions. But it can help you stay ahead of the competition and provide valuable savings, enabling reinvestment.

CBO: How much can it save business owners, if their business qualifies?
Marr: Thanks to the complexity of the formulas used to calculate the federal R&D credit, the benefit can range from approximately 6% to 10% of qualifying expenditures. In addition, state R&D tax credits can potentially double the overall benefit. So, a company can expect to see anywhere from 6% to 20% of their R&D expenses returned to them via tax credit depending on geographic location and individual business characteristics.

CBO: How can contractors assess what types of projects or expenses can qualify?
Marr: To determine if a project (or portion of a project) is eligible to generate an R&D credit, the business component (the R&D credit term for "project") and associated activities must satisfy four general requirements. The test consists of four separate qualifiers that the project must meet in order to qualify for the R&D credit.

Here's an overview of the four tests:

1. *Permitted purpose*—The activity must be intended to develop or improve the functionality, performance, reliability or quality of a business component (a product, process, technique, formula, invention or software).
2. *Elimination of uncertainty*—The activity must be intended to discover information to eliminate technical uncertainty concerning the capability or method for developing or improving a product or process or the appropriateness of the business component's design.
3. *Technical in nature*—The activity must be one of the "hard sciences" to qualify, which in the case of construction, almost exclusively means engineering.
4. *Process of experimentation*—Substantially all of the activities must be elements of a process of experimentation. These must involve the evaluation of one or more alternatives to achieve the desired end result.

When activities are determined to meet the above four criteria, the associated expenses for that project can be quantified and used to generate the R&D tax credit. Qualified research expenses consist of three basic expense categories:

- *Wages*—Consist of the taxable compensation paid to employees who spent a portion of time working on R&D. Their time spent working directly on a project, overseeing multiple projects, or assisting in a small component of one can all be included.
- *Supplies*—Consist of materials used up to build or test a new product or improvement. For example, if the R&D project is a new processing technique, the expenses associated with testing that technique may be includable.
- *Contract research*—Any outside vendor paid to provide assistance with an R&D project. Often these are individuals or companies that are paid to perform detailed engineering work, test and certify new product formulations, or calibrate and maintain equipment used for R&D.

CBO: What types of construction activities might qualify?

Marr: There are a number of possible activities in the industry that can be leading indicators of potential opportunity:

- Developing prototypes and modeling
- Development of new, improved or more reliable products or processes
- Design improvements for Leadership in Energy and Environmental Design (LEED) or energy efficient projects
- Development of a unique assembly or construction methods and processes
- Experimentation with new materials
- Complex systems integration design
- Developing or improving equipment
- Any project requiring an extra level of testing or certification upon completion

The above activities are meant as simplified examples to help construction companies identify if they may be performing activates that qualify for the R&D credit.

CBO: Are there any exclusions to what activities can qualify?

Marr: There are several exclusions you must keep in mind when considering what activities qualify. Examples of activities that do not qualify include:

- Efforts that would be considered "routine" engineering
- Research to improve style, taste, cosmetic or seasonal design factors
- Efficiency, management or consumer surveys
- Research in the social sciences, arts or humanities
- Research conducted outside the United States
- Projects funded by another entity

CBO: Why isn't this credit more widely used?

Marr: The R&D credit is an often overlooked and misunderstood tax incentive. Because the guidelines for what can be rewarded with the credit are broad, the requirements for demonstrating eligibility and quantifying the credit amounts are substantial. Frequently, when a business does not have R&D in a traditional sense, accountants overlook the pockets of potential opportunity within a client. This doesn't make them a bad accountant or even signal any particular cause for concern. Identifying R&D tax credit opportunities requires such a specific expertise it takes someone with highly specialized knowledge and experience to identify eligible activities. If a company has overlooked the R&D credit in the past, the potential exists to look back to prior years to recoup the missed credit amounts. Typically, the available look back period is 3 tax years. So, for example, if a company claims a credit for 2020, they may be able to go back and claim the missed credits for 2017, 2018 and 2019.

CBO: What are some next steps for contractors with work that qualifies?

Marr: The best course of action is to reach out to your tax advisor or an R&D tax credit specialist to discuss the opportunity. Typically, a short conversation with someone knowledgeable about the credit and the process of claiming it, will make clear the potential opportunity. If the R&D tax credit is something that makes sense for your business, it can become a valuable tax planning tool to factor into your annual analysis. The process of analyzing projects and the associated activities that may qualify for the R&D tax credit is a difficult task but can be navigated efficiently and effectively with guidance from an expert. **CBO**

Kathy Wells is the editor of Construction Business Owner magazine.

Who Assumes Responsibility for an Injured Worker?

How to navigate subcontracting & workers' compensation issues in the construction industry

BY RYAN M. HATHCOCK

In spring 2020, the world slowed to a halt as the coronavirus pandemic reared its head. Despite many industries shutting down, many construction projects continued to move forward—even in the face of concerns related to the ability of COVID-19 to spread among individuals in close proximity.

The owners of property where construction continued to take place (as well as the general contractors working at those sites) have not only had to be concerned about the possibility of general workplace injuries, but were also forced to consider the new threat that workers could contract and spread COVID-19—causing employees to miss work for an extended period of time and seek workers' compensation benefits. Regardless of the type of injury or illness causing employees to miss time from work, the analysis of who will ultimately be responsible for the injured employee's medical and income benefits does not change. However, the question of what company will be responsible for compensable work injuries becomes complicated in the context of larger construction projects with multiple tiers of subcontractors.

The first step in the analysis is to identify and characterize each potential liable party. This begins with determining which entity is the injured employee's "direct employer." In essence, the direct employer is the party that hired the employee, who instructed the employee to the jobsite, the party which may also be paying the employee, and in many cases, the party who is directly overseeing the employee's work. These aspects of the employment relationship may vary from case to case.

In Georgia, an employer with three or more employees is required to carry workers' compensation insurance. So, if a subcontractor—or in this instance, the direct employer—does not have valid insurance, it may be nearly impossible for an injured employee to obtain workers' compensation benefits from his direct employer. That is often seen where the direct employer is insolvent, skips town or even files for bankruptcy. As a result, the injured employee must look up the "contractual ladder" to a higher subcontractor or the general contractor to seek benefits.

The contractual ladder includes all parties directly contracted with one another, beginning with the owner or general contractor through subcontractors and down to the injured employee's direct employer. The simplest example demonstrating a contractual ladder would include the general contractor of a construction project, which hires a first-tier subcontractor, which, in turn, contracts with a second-tier contractor (the injured employee's direct employer).

Within this contractual ladder there may include additional intermediate contractors, increasing the number of potential liable parties. That is because all intermediate contractors and general contractors in the contractual ladder have the potential liability for workers' compensation benefits to the injured employee as what is referred to as a "statutory employer."

While there is only one direct employer, there can be several statutory employers involved. The number of statutory employers is dependent on how many intermediary employers there are in the chain of command. This can be complicated to determine. So, how is a statutory employer defined? For a party to be deemed a statutory employer, a statutory employer relationship must exist—that requires four specific elements to be met:

1. There must be a contractual relationship (as discussed above) or some type of agreement between the direct employer and the alleged statutory employer
2. The party must be covered by the Georgia Workers' Compensation Act (i.e., the party must employ three or more employees, requiring that party to have workers' compensation insurance)
3. The injured employee must have sustained the injury in question "on, in or about the premises" where the contractor has undertaken work
4. The injured employee must also have employee status and not be an independent contractor

Once all statutory employers are identified, the next question becomes, "Who is responsible?" The first answer is the direct employer, who is always

> For the ultimate liable party to be responsible for payment benefits, it must first be proven that the direct employer & all other lower-tier subcontractors were uninsured.

primarily responsible. However, if the direct employer has failed to obtain and keep valid workers' compensation insurance and is otherwise insolvent, the next party to be liable would be the intermediate contractor, which hired the direct employer.

That trend would continue up the contractual ladder if each next possible liable party is uninsured and otherwise insolvent. Therefore, if an intermediate contractor is also uninsured, then the injured employee would assert a claim for benefits at each level of contractor up the contractual ladder all the way to the general contractor, who would then be ultimately liable to the injured worker for the payment of benefits.

It is important to note, that there would be no division of liability amongst any parties within the ladder, only a linear progression of total liability. The first party for which liability would attach, would be the party to bear the entire cost of the benefits paid to the employee. There is a caveat to this, however.

If the general contractor or other intermediate contractor (i.e., any party other than the direct employer) is forced to be bear the costs for payment of benefits, that party is capable of recouping those amounts paid from the other parties back down the contractual ladder who would have otherwise been liable to the injured worker but for their insolvency and/or uninsured status.

Again, for the ultimate liable party to be responsible for payment benefits, it must first be proven that the direct employer and all other lower-tier subcontractors were uninsured. As such, the ability to recoup expenses from the uninsured (and likely insolvent) parties would be a rarity.

Determining which party is liable also requires that the injured work assert a claim for benefits against the direct employer first. If they do not, then the injured worker is unable to assert a claim for benefits against a statutory employer. Even where the employee knows its direct employer is uninsured, they're still required to first assert the claim for benefits at the bottom of the ladder before moving up.

If the employee mistakenly files a claim against a statutory employer instead of the direct employer, the employee will later see the claim dismissed for the running out of the statute of limitations, dissolving their right to assert a claim to other parties involved. This is another reason why properly determining the liable parties from the outset of the claim is the first step.

Understanding the ladder of liability in workers' compensation claims will help you better understand your liability as a contractor, which may ultimately protect you and your business from detrimental claims in the long run. **CBO**

Ryan M. Hathcock is an attorney and senior associate in the Atlanta, Georgia, office of Drew Eckl & Farnham. He has extensive experience representing companies in the construction industry and continues to stay up to date with workers' compensation and construction litigation trends in Georgia and surrounding states to assist individuals, companies and insurance carriers with various needs related to workers' compensation litigation, corporate formation, annual reporting and general litigation. Visit deflaw.com.

COVID-19 in the Workspace: Is Enough Enough?

Understanding the employer's legal duty to employee safety & health

BY E. MABRY ROGERS, JOHN W. HARGROVE, KEITH COVINGTON, J. CHRISTOPHER SELMAN & CHUCK MATAYA

You've attended the webinars on navigating COVID-19. You've read the trade publication tips. You have implemented measures to protect your workers. So, you're ahead of the game, right? Well, you're certainly ahead of the Florida sheriff who reportedly instructed his employees not to wear masks in the office. If a visitor entered Sheriff Billy Wood's office with a mask, they were reportedly instructed to remove it.

Employers generally have an obligation to provide a reasonably safe place for employees to work and for invited guests. In today's environment, this may involve daily temperature checks of employees and visitors, daily certifications by each employee that they have no COVID-19 symptoms or exposure, and a requirement that prudent distancing be maintained when possible. Guidance from the Centers for Disease Control and Prevention (CDC) suggests essential workers may not require quarantining after potential exposure. Nevertheless, an employer may consider quarantining crews exposed to an infected person, particularly if face masks were not being used or distancing was not followed or possible. Each of these safety steps is expensive, in additional check-in time for employees and in work efficiency. That expense should be measured first against the well-being of the workforce. If the employer has the duty to provide a reasonably safe place to work, then that duty is perhaps satisfied by these safety steps.

DOCUMENT THE COMPANY'S COVID-19 PRACTICES

So, you're ahead of the curve. You have gate monitoring in place; toolbox meetings to discuss COVID-19 issues each morning; your home-office employees are reminded about COVID-19 issues weekly; employees are sent home if they have symptoms; and you require certifications from each employee that they are symptom-free every day. Many of our readers have attended seminars emphasizing the importance of implementing good contractual and safety practices and of documenting them. An employer should consider whether it can put simple, effective documentation of its proactive COVID-19 prevention into place. Can the company computerize the morning representation by its employees? Can the temperature log be automated? How can the company confirm that it held regular meetings to stress practicable COVID-19 preventive measures?

Good recordkeeping can pay off in several important ways. It can help prevent employee infections because management is requiring attention to the issue through documentation. It may also minimize the isolation at home of entire crews or of a key member of the home-office staff. And it can allow the employer to prove it implemented and monitored the application of reasonable steps in the event of an employee who becomes infected with COVID-19 and claims it was caused at the workplace.

At least one state—Virginia—has issued a regulation classifying employers in construction jobs as medium risk and requiring those at medium risk with 11 or more employees to develop a preparedness and response plan that takes into account several factors, including the designation of a person responsible for administering the plan. Some companies are appointing such a person not because it is required by an express regulation, but for the reasons we mention above: the health and well-being of the workforce.

Should you take a deeper look at the impact of COVID-19 on your workforce? Are there safety measures that you can take that will make your employees feel safer? Does COVID-19 have a disproportionate effect on women or minorities? Because of the impact of childcare costs on women in the workplace, some recent findings indicate a disproportionate impact on women. Is that something you should study with respect to your workforce? Are there targeted measures you can take to help with this? Is it important enough to document any effort your company makes to analyze that impact, if any? Is there an obligation to do so? A document will not "vaccinate" your workforce. But it can serve at least three salutary purposes:

1. Encouraging your management to consider how to implement a COVID-19 plan
2. Lowering the risk of infections at your project
3. Allowing you to show third parties that your company was safety conscious during this "new normal"

Now that two approved vaccines are being distributed, there is a new question for employers: "Do I mandate COVID-19 vaccinations? And if I do, do I select the priority for who gets the vaccination or for exempting employees or classes of employees?" Objections are likely from some employees, and thus, the employer should consider how those might be handled if they arise.

TO MANDATE OR NOT TO MANDATE?

Assuming vaccinations are not already being required by federal or state authorities (something that is quite likely in some areas and in certain industries, such as health care), in most cases, the decision on whether to mandate COVID-19 vaccinations will generally be left to an employer's discretion. Exceptions to the policy may be necessary, but unless your employees are represented by a union, an employer may require vaccination.

If a union is involved, unilaterally implementing such a program may lead to a meritorious unfair labor practice charge if the collective bargaining agreement does not already address such an issue. When in doubt, bargain. At the very least, provide notice and an opportunity for the union to request bargaining. However, in an "at-will" employment scenario, an employer can make vaccination a condition of employment.

In deciding whether to mandate a COVID-19 vaccination for employees, an employer must balance the liberty interests of employees against the health and public safety benefits associated with the vaccination requirement. An employer should, of course, consider anything of relevance to the issue. One such factor is the workers' environment. Some jobs may be considered at higher risk for getting and transmitting COVID-19 than others.

For example, those working more closely together, such as in a meatpacking or manufacturing facility or in the accounting office or at a construction site, where distancing may not be feasible for all crews, may be considered more at risk than those working in an office where social distancing is more easily managed.

Similarly, a job requiring frequent interaction with customers, such as workers in the site trailer, may also be considered at higher risk for contracting or transmitting the virus than are workers without that interaction requirement.
The risk that an employee will contract or transmit the disease must also be weighed against the risks associated with requiring the vaccination, such as the risk of potential liability for an employee that is harmed by the vaccine.

In most states, such an injury would likely be covered by the applicable workers' compensation program, thereby limiting an employer's liability to the remedy provided by the workers' compensation statute. However, as has been seen with mandated COVID-19 testing programs, many enterprising plaintiffs' attorneys have brought challenges to such limitations. Similar challenges may be expected in the "required vaccination" arena.

Other factors for consideration include the potential for claims from customers and perhaps even your employees that they contracted the coronavirus from an unvaccinated employee. This potential risk increases in cases where other similar employers have already decided to mandate vaccines. Expectations on what a reasonable business should do can change over time, depending on changes in the industry. Beyond the legal issues raised by a compulsory vaccination program, an employer should also consider that such a program can negatively impact employee morale. These morale issues may be outweighed by other factors but should not be dismissed out of hand. As more is learned about

COVID-19, the calculations as to what is reasonable and how to address the risks associated with it may also change.

CONSIDERATIONS FOR A MANDATED COVID-19 VACCINATION PROGRAM

If an employer decides that compulsory vaccinations are the way to go, the employer must also account for the typical anti-discrimination protections that can impact its compulsory vaccination program. Assuming an employer is covered by either Title VII or a similar state anti-discrimination statute, the employer should administer the program in a nondiscriminatory manner, consistently requiring all employees with similar jobs under similar circumstances to be vaccinated. If an employer is going to require only certain employees to be vaccinated, there must be a legitimate, nondiscriminatory reason justifying the differing treatment between positions.

Similarly, assuming that an employer is covered by Title VII, the Americans with Disabilities Act (ADA) or similar federal or state accommodation requirements, an employer must include in its compulsory vaccination program a mechanism to carefully consider and decide religious or disability-related objections to the program's application to a specific employee. The Equal Employment Opportunity Commission (EEOC) highlighted this on Dec. 16, 2020, in its updated guidance What You Should Know About COVID-19 and the ADA, the Rehabilitation Act, and other Equal Employment Opportunity (EEO) Laws.

In that guidance, the EEOC explains that although EEO laws do not prevent employers from following CDC or other federal, state and local public health authorities' guidelines and suggestions relating to any approved vaccines, if an employer decides to require that its employees take a vaccine, those laws must be considered when administering the compulsory vaccine program. A review of all questions answered in the EEOC guidance is a must if a compulsory program is to be implemented. However, the basic principles are set out in part of the response to question K.5 as the EEOC discusses the ADA's requirements:

> *The ADA allows an employer to have a qualification standard that includes "a requirement that an individual shall not pose a direct threat to the health or safety of individuals in the workplace." However, if a safety-based qualification standard, such as a vaccination requirement, screens out or tends to screen out an individual with a disability, the employer must show that an unvaccinated employee would pose a direct threat due to a "significant risk of substantial harm to the health or safety of the individual or others that cannot be eliminated or reduced by reasonable accommodation." 29 C.F.R. 1630.2(r). Employers should conduct an individualized assessment of four factors in determining whether a direct threat exists: the duration of the risk; the nature and severity of the potential harm; the likelihood that the potential harm will occur; and the imminence of the potential harm. A conclusion that there is a direct threat would include a determination that an unvaccinated individual will expose others to the virus at the worksite. If an employer determines that an individual who cannot be vaccinated due to disability poses a direct threat at the worksite, the employer cannot exclude the employee from the workplace—or take any other action—unless there is no way to provide a reasonable accommodation (absent undue hardship) that would eliminate or reduce this risk, so the unvaccinated employee does not pose a direct threat. If there is a direct threat that cannot be reduced to an acceptable level, the employer can exclude the employee from physically entering the workplace, but this does not mean the employer may automatically terminate the worker. Employers will need to determine if any other rights apply under the EEO laws or other federal, state and local authorities. For example, if an employer excludes an employee based on an inability to accommodate a request to be exempt from a vaccination requirement, the employee may be entitled to accommodations, such as performing the current position remotely. This is the same step that employers take when physically excluding employees from a worksite due to a current COVID-19 diagnosis or symptoms; some workers may be entitled to telework or, if not, may be eligible to take leave under the Families First Coronavirus Response Act, under the Family and Medical Leave Act, or under the employer's policies. See also Section J, EEO rights relating to pregnancy.*

[Available on the Department of Labor website.]

A similar analysis must be performed in the "religious objection" context as well. Therefore, in either a religious-objection

> In considering whether to implement a compulsory vaccine program, an employer should compare the risks associated with implementing such a program with one that only recommends that employees take the vaccine.

scenario or a disability-related accommodation request scenario, an employer should engage in the "interactive process" with an employee to determine what accommodations are both necessary and available. Do not pre-judge the result when a request is made.

Rather, engage in the process through communication with the employee. If the predicate for requiring a reasonable accommodation exists, and a reasonable some accommodation is feasible, the reasonable accommodation must be made unless providing the accommodation would create an "undue hardship" for the employer. The potential accommodations could include considering anything from the use of personal protective equipment to permitting the employee to work remotely, if feasible.

Under the ADA, an accommodation poses an "undue hardship" if it results in significant difficulty or expense for the employer, taking into account the nature and cost of the accommodation, the resources available to the employer, and the operation of the employer's business. If a particular accommodation would result in an undue hardship, an employer is not required to provide it but still must consider other accommodations that do not pose an undue hardship. Note, however, that the EEOC has recognized that the undue hardship threshold under Title VII is a lower standard than that existing under the ADA. This may make it easier to meet, but an employer should not summarily dismiss religious objections to a COVID-19 vaccine requirement.

In sum, employers are in for a challenging time even as potentially lifesaving COVID-19 vaccines are rolled out to the public. The temptation to require all employees to take the vaccine will be great. Nonetheless, in considering whether to implement a compulsory vaccine program, an employer should compare the risks associated with implementing such a program with one that only recommends that employees take the vaccine.

The answer will not be the same for every employer. If a compulsory program is implemented, it should include recognition and appreciation for objections based on religious or medical/disability-related grounds. Failure to allow for such, or to handle these in a manner consistent with both Title VII and ADA obligations, may come back to haunt an employer even as the world begins to recover from the horrible effects of COVID-19. CBO

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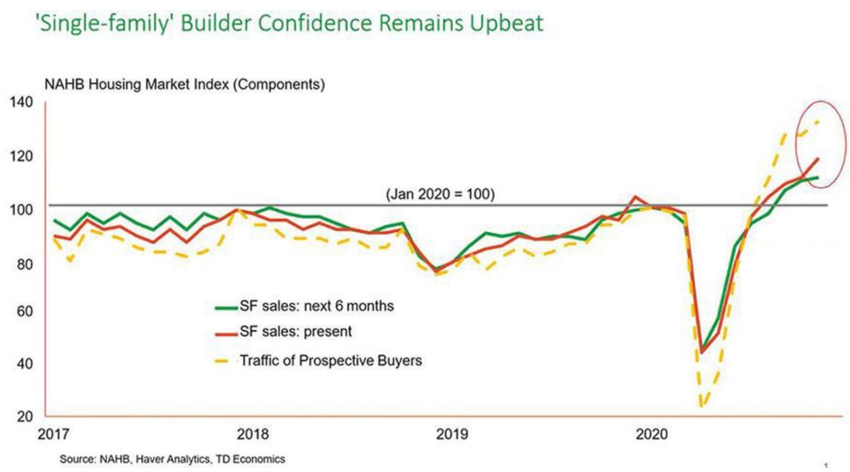
Vaccines, a New President & Construction: What's on Deck in 2021

Economist Admir Kolaj's take on potential growth in the industry



BY LAWRENCE D. COHEN & STEVEN F. BEPPEL

Like everything else, the pandemic has upended the construction industry, reshaping the labor market, job bidding, and even how contractors fund their operations and capital equipment purchases. Interestingly though, not everything has been negative. For all its impact on the economy at large, a pandemic, it seems, can give rise to certain bright spots that savvy contractors can use to increase business now and into the foreseeable future.

BCA Insurance, which focuses on the construction industry, Avrio Solutions, an industry-focused accounting firm, and TD Bank recently hosted a webinar in which Economist Admir Kolaj (from TD Bank) reviewed where the industry was in 2020 and what construction companies can expect in 2021, during the throes of vaccine distribution in the first two quarters of the year and even—hopefully—post-pandemic. He also looked at how President Joe Biden may impact the industry (although, at print time, the makeup of Biden's government was still in flux).

He noted that United States activity in terms of gross domestic product (GDP)—a key indicator of economic vitality—was actually better through the third quarter of 2020 than anyone had reason to expect, although it will take time before that metric returns to a pre-pandemic level. Indeed, he pointed out that the 10% drop in GDP in the first half of 2020 portends a giant hole the economy will need to dig out of in late 2021. The COVID-19 vaccines from Moderna and Pfizer will accelerate economic recovery this year. So, while the short-term outlook remains grim, GDP could grow by 4% or 5%, he said, depending on any additional economic relief packages are passed by Congress in the coming months.

HOME SALES HOLD STRONG

One sector bouncing back better than expected as the economy reopens is existing home sales, which are up about 20% over the pre-pandemic level. This marks the fastest pace since 2005, and, according to Kolaj, is attributable to three main factors:

- Pent-up demand accumulated during the shutdown
- The pandemic's uneven impact on the workforce, with low-wage workers, who are more likely to be renters, being hit harder than higher-income employees who in many cases can work from home and are more likely to own homes
- Interest rates hitting rock-bottom, about a full percentage point lower than 1 year ago, making home ownership more affordable

What's more, low inventory has helped prop up prices for existing homes, which is good for sellers, but not so much for buyers. Fast-rising prices and low inventory are generally good signs for home builders, and those focused on the single-family market are feeling very confident. According to the National Association of Home Builders (NAHB) and Haver Analytics, sales of single-family homes are up about 18% since mid-2020, after hitting a nadir of 60% below normal. Sales should hold steady for the first half of 2021, and the number of prospective buyers will continue to outpace the number of homes available during that time period.

Since the pandemic, single-family starts are up around 13% from the pre-pandemic peak, while multifamily starts are down about 40% from their pre-pandemic peak. Influenced by a virus that jumps between people in close contact, home buyers are gravitating toward less dense, more specious living, which is also why building in the suburbs is expected to outpace residential projects in cities. However, Kolaj said this trend was well underway even before the coronavirus pandemic, dating back to at least 2016.

As the economy continues to reopen, and with low inventory and high demand, he expects single-family starts to trend even higher upward in 2021, even as multifamily construction continues to stagnate.

NOT AS ROSY IN COMMERCIAL

While expectations and confidence in residential building is high, Kolaj pointed out that the short-term outlook for commercial isn't quite as hopeful, as various sectors continue to struggle under the weight of the pandemic. Enforced closures and consumers shopping much more online have contributed to increased vacancies in retail.

Office vacancies have risen too as more people work from home during COVID-19, a trend that will likely continue even after the pandemic ends. Apartment vacancies are far higher in cities than in the suburbs, going back to the beginning of 2020, again illustrating the ongoing shift away from higher-density living and accelerated by the virus.

THE IMPACT OF AN ELECTION

With a U.S. Congress controlled by the Democratic party, President Biden will likely take action on trade, immigration and environmental regulations. His administration promises to be much friendlier to immigration than the Trump administration was, for example, and a higher immigration rate has a positive long-term effect on GDP. This translates to more economic growth and a net positive on housing and construction.

A Democratic-controlled Senate will also allow President Biden to better implement his agenda, which includes a tax increase for the wealthy and resulting increased revenue that can be put back into the economy. That likely means more public projects would get off the ground, including $2 trillion dollars earmarked over the next 10 years for clean energy and infrastructure projects. Finally, the new administration plans a first-time homebuyer tax credit of $15,000. This will make home buying more affordable, as it can significantly help with down payments, and that will be a further boon to the housing market.

THE CONTINUED IMPACT OF LOW INTEREST

The historically low rates we have seen can help builders both directly and indirectly:

- *Direct help*—For companies that carry debt or leverage debt to finance their operations, lower rates cut down on their costs and boosts profit margin
- *Indirect help*—Lower rates help out other areas of economy, particularly consumers. Home buyers and homeowners, in particular, benefit from low interest, and that positively impacts the home construction industry

As more people work from home, they're seeking bigger homes with potential office space, or are renovating to add space; in either case, the home construction sector will benefit.

MOVE FORWARD, BUT CAUTIOUSLY

Contractors had a good year and should continue to thrive as we emerge from the economic slowdown. But there are cautions. While it's nice to use that increased profit to purchase new equipment, and thereby diminish your tax bite, construction companies need to tread carefully. Even if you're taking advantage of low interest rates, borrowing to finance equipment that's not going to be used much might not make sense and will certainly outweigh potential tax benefits.

Business owners also need to think about liquidity, which is very important for bonding, as well as cash flow on your projects. Are your customers going to take longer to pay you because of the soft economy? Will you have to price your projects more competitively based on the fact that in many sectors there is less work out there?

Finally, there's been significant tightening of the insurance market, and that's raising costs in certain areas like auto liability coverage and excess liability. With insurance usually being your second biggest expense behind labor, it's important to be mindful of potential cost increases coming in the middle of a job. This is partially due to the pandemic, but mostly it's just a result of the cycle of the insurance marketplace.

It's a balancing act, and you should consult your trusted professional advisor to figure out what's right for your business in terms of tax liability versus surety.

This past year has been difficult for just about every industry, but construction has largely forged ahead. As vaccines get administered and the economy begins shifting back into high gear, 2021 and beyond is looking bright. Contractors who are nimble and carefully weigh their options and all implications before making big decisions will continue to thrive. **CBO**

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BEHIND THE TECH THAT TAKES ON TRACKING & MONITORING OF WIDELY DISPERSED VEHICLES, EQUIPMENT & TOOLS

Maintaining asset visibility is one of the biggest challenges for construction fleet managers. Whether a manager is on the go, at the office or responsible for multiple locations, they must have a way to monitor assets in real time. While spreadsheets and whiteboards limit visibility and hinder communication, technology has made it easier for fleet managers to stay connected to their assets, equipment and team members.

THE POWER OF MOBILITY

Technology has transformed the way our society stays connected. With virtually everyone having access to a mobile device, it's easier than ever to communicate. Real-time communication enables fleet managers to monitor assets, collaborate with their team and measure key fleet metrics. Many business owners are taking advantage of mobile solutions like fleet and equipment management software. Eikenhout, a building materials provider that has been in operation since 1894, adopted fleet management software in 2016 and has used it to boost data visibility and ensure safety and compliance while streamlining collaboration on maintenance tasks.

As a building materials provider, Eikenhout operates over 160 assets across nine locations, including a variety of medium and heavy-duty trucks, specialized crane trucks, Moffett truck-mounted forklifts and SkyTraks. With many, widely dispersed assets, the company required a solution that would help them track assets in real time, automate maintenance workflows and improve team safety and compliance.

Although investing in software may seem like a substantial cost, an initial investment in construction fleet and equipment management software can produce a fruitful return on investment. Software provides increased data visibility, making it easier to manage daily operations and gain insight into maintenance, expense and performance metrics.

UNCOVERING ISSUES WITH ELECTRONIC INSPECTIONS

Staying informed of vehicle and equipment issues is difficult when you're managing a dispersed construction fleet. Not having a solution to conduct inspections or waiting on operators to deliver paper inspection forms at the end of the week isn't just inefficient—it can be costly. Issues can compound without your knowledge, causing extended downtime and expensive repairs.

Instead of waiting to sort through inspection results, managers can eliminate communication bottlenecks by having operators complete an electronic driver vehicle inspection report (eDVIR). Completing an eDVIR takes a fraction of the time of paper inspections and increases clarity in reporting by allowing operators to add photos and comments. Operators can identify issues and instantly relay information from the field to management or the back office.

Failure notifications allow managers to understand issues and launch maintenance workflows to avoid increased downtime. Going digital also enables managers to tailor inspection forms to specific equipment types. Having real-time inspection results with detailed, relevant information ensures you have all the information needed to manage repairs.

In addition to managing maintenance, eDVIR helps companies enforce safety measures and stay compliant. "Noncompliance is not an option for us," said Curt Van Heuvelen, Eikenhout safety and training coordinator. "[It] is a very easy system to access and helps make sure we are compliant with government regulations."

Tailoring inspection forms to cover specific criteria helps promote jobsite safety and compliance. To stay in line with government regulations, the Eikenhout leadership team created a custom form to ensure safety when bringing a piece of equipment onto a property.

IMPLEMENTING A PROACTIVE MAINTENANCE PROCESS

Yellow iron is expensive to repair, but it's even more expensive to replace. Construction fleet managers know the importance of maximizing equipment's life span, but keeping up with maintenance tasks is easier said than done when you're juggling a dozen other tasks. Utilizing mobile software to keep up with maintenance tasks and stay informed of issues is the easiest way construction fleet managers can proactively manage asset maintenance. Software and mobile apps automate repair workflows and keep an organized record of service history.

One of the best ways to proactively manage vehicle and heavy equipment maintenance is to create preventive maintenance schedules in fleet management software. Managers can automate service reminders based on meter or time intervals. A notification is sent when service is due soon, allowing managers to schedule maintenance around project needs to avoid costly downtime.

"The system automatically generates service reminders based on a time or mileage schedule, so the manager or dispatcher knows it's coming and can schedule that particular asset to be out of service on a particular day," said Van Heuvelen.

Whether your team is conducting routine or emergency maintenance, collaboration is essential. While you can't physically be everywhere at once, software allows you to collaborate with your team in real time and manage issues from anywhere. With software and a mobile app, your entire team can relay information instantly to solve issues. Users can comment on work orders, access service history and track issues from start to finish.

Fleet and equipment management software is a hub for all maintenance information, from work orders and issue management to expense tracking and inventory management. By managing asset maintenance in a single system, you can maintain a comprehensive view of operations and track expenses in granular detail or at a high level. Managers can calculate total cost of ownership and make data-driven decisions to improve their bottom line. "With just a few clicks we can get a lifetime cost for different assets within our fleet," said Van Heuvelen, "We can identify which truck, trailer or piece of equipment is costing us too much money. It's made the process much more scientific."

MAINTAINING VISIBILITY OF SMALL EQUIPMENT & TOOLS

Construction fleet managers aren't just responsible for rolling assets. Small equipment and power tools are just as important and treating them similarly to your equipment and vehicles ensures you maintain an accurate inventory count and keep your team productive.

Leveraging a solution that allows you to track both heavy construction equipment and small construction tools centralizes asset data helps to keep you well-informed. Managing the details of your tools and equipment with equipment management software provides comprehensive visibility and expedites processes like tool checkouts to increase team productivity.

Mobile equipment management apps enable operators to conveniently check out equipment without being particularly tech-savvy. Instead of paper sign-in sheets or cumbersome barcode scanners, operators can use their phone or tablet to scan equipment tags, barcodes, QR codes or near field communication (NFC) stickers. Once scanned, operators can quickly assign themselves to a piece of equipment and begin their day. Not only does this increase their productivity, but it also provides managers complete visibility into equipment status and records an audit trail of tool usage.

By overseeing operator assignments in equipment management software, you know where your tools are and who is using them at all times. Not only does this provide you with peace of mind, but it makes it easier to hold your team accountable.

Replacing a tool or piece of equipment may not seem like a big deal on its own, but prices add up quickly. With software, managers can easily see who used a piece of equipment last, and when items are missing or damaged, the right person can be held accountable. Centralizing small equipment data in software allows managers to easily control inventory and ensure accuracy. Managers can maintain a bird's-eye view of inventory, including equipment location, status and value, in a configurable dashboard.

Whether you manage heavy machinery, small equipment or a mix of the two, leveraging technology is the best way to collaborate with your team and monitor your dispersed fleet. Aggregating fleet information in an easy-to-use software gives you the tools you need to increase efficiency and make informed decisions to improve operations and maximize your return on investment. CBO

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A LOOK AT WHAT'S DRIVING THE ELECTRIFICATION OF EQUIPMENT IN THE CONSTRUCTION INDUSTRY

Each year, we see exciting innovations move from conception to implementation on construction jobsites and in construction businesses. As more original equipment manufacturers (OEMs) make progress toward equipment electrification, it is essential to understand the research and development that led us here and what challenges and opportunities exist moving forward.

Four major trends drive the shift toward electromobility—or electrification—as a possible alternative fuel in many industries. The one that everyone is currently talking about is the push toward sustainability. Electric vehicles significantly reduce machine emissions, which alone is a worthy enough reason to continue the work. However, it's also important to ensure that the new sustainable paths are economically sustainable as well.

The second major driver—related to sustainability—is political change. Over the past decade, we have seen a number of government programs and incentives come out to promote sustainable changes. A recent example: 15 states and the District of Columbia have committed to being 100% emission-free by the year 2050. If we're going to meet those targets or even come close, technology and research have to get behind the effort.

The third trend is urbanization. In 1950, the United Nations estimated that 30% of the population was urban-based and 70% was agrarian. Today, it has basically reversed. This means that the processing of raw materials at rural sites is done by 30% of the population, and those goods are shipped for consumption by the urban 70% in the cities.

That is a massive change in transportation needs, raw material processing and where we see work taking place. This trend could lead to things like remote operations, where the operator controls a machine from a simulator at an urban office many miles away. Alternatively, jobsites may evolve to fully autonomous operations, where no operators are present.

And the final trend is, of course, technology. As electrification and automation technologies develop, we are able to produce efficient, workable machines that we couldn't have built just 10 years ago. The exciting thing is that innovation opens up new business opportunities and ways of using equipment.

Equipment customers will be the ones to discover a lot of those new applications and bring them forward. New applications for electric equipment are already prevalent because it's silent and emission-free. So, the future is not so much how we can do today's jobs better, but how we can do new jobs and what new technologies are going to come along and complement these starting points.

WHAT'S NEXT?

Considering all of this, we must keep our research and development focused on what society needs. It is not research for research's sake or

to discover new things—it is applied research to solve real problems. There will be several different technologies and companies coming together and figuring out new and better ways to do what they do today, plus new applications at the same time. It's an industrywide effort, and every company plays a part in that movement.

Volvo has done a lot of work on electrification over the last few years. For example, the company ran the electric site in Sweden. It took an actual working quarry and electrified all the machines on that quarry and then ran the operation the same way conventional machines would have done it to see how they compared. Volvo had automated machines, grid-connected machines, battery-powered machines and hybrid machines.

With that site, the company proved that technology has matured to the point where you can be competitive with a conventional site and take advantage of some of the efficiencies and benefits of this new technology.

The OEM is now working on commercializing other jobsites, and has opened up prebooking on the first two fully electric machines: a compact excavator and a compact wheel loader. Customers have many questions on how these machines compare to conventional diesel machines. The truth is that they have comparable power, digging capabilities for the excavator and tipping loads and dump heights for the loader.

But what gets really interesting is during conversations with customers about the unique features of an electric machine. Not only can it do everything a diesel machine does, but it can also do other jobs that a diesel can't do, thanks to reduced noise and emissions. And when they get thinking about that, that's where the creative ideas come out.

Some contractors question how electrification influences the machines' maintenance and, ultimately, the total cost of ownership (TCO). When you consider that these are the first machines going out into the market, the TCO comparisons and the maintenance comparisons are actually very good. In the testing, they're coming

As electrification & automation technologies develop, we are able to produce efficient, workable machines that we couldn't have built just 10 years ago. The exciting thing is that innovation opens up new business opportunities & ways of using equipment.

out superior to a lot of diesel machines because electric machines have fewer moving parts, and using connective technologies, we can monitor the function of these machines very closely to fix any issues before downtime occurs.

The more we develop these new technologies, the lower the cost of ownership will go. They are expensive machines, but the benefit is the long-term return on investment and what they can do that conventional diesel machines can't do. We're not, by any stretch, saying diesel machines will disappear (though we hope to see increased use of alternative fuels), but there is also a place for these new technologies to come into the construction market.

THERE'S STILL WORK TO DO

There are still challenges to keep working on as electrification evolves. For example, electric components may not be from the same suppliers that OEMs use for diesel components, so entirely new supply chains and companies will be coming to the market.

Wireless service to connect all of this equipment is another huge task to organize. It's easy to gather information, but it is a waste of time if you can't do anything smart with it. Furthermore, the charging infrastructure will need to grow exponentially. Several cities have initiatives to develop their own charging infrastructure that we will have to make sure equipment can plug into in the near future.

Finally, we will need to educate and adapt our workforce to new jobs and a new way of working. Some people are afraid of this, but I see it as a tremendous opportunity because the jobs will be safer, more comfortable, more productive and use new technologies that the newer generations are comfortable with and enjoy. **CBO**

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FLEETS: Strategy for Safeguarding Machinery | By Grzegorz Harsze

VEHICLE DAMAGE PROTECTION & PREVENTION TO TAKE YOUR TRUCKS THROUGH THE NEXT PROJECT & BEYOND

Work trucks and other essential construction vehicles are an integral part of any productive jobsite. After all, it's the indispensable role of transportation equipment to move new materials, supplies and machinery in and unwanted excess dirt, debris and other refuse out.

When these construction workhorses break down, so does the potential to maintain effective, on-the-job project management protocols. And once the ability to adhere to tight and demanding deadlines begins to slip, the entire construction project—not to mention every team involved in the process—is at risk for becoming less effective.

Just imagine the chaos that would ensue on any residential or commercial build if the work vehicles and machinery that operations managers and foremen depend on were to become nonoperational or damaged for any number of reasons. Activity would literally grind to a virtual halt within hours, if not minutes—costing project managers time and money.

It's critical for the building industry to make construction truck and vehicle management a top priority. Ensuring that your company's fleet is looking sharp, in prime mechanical condition, and job-ready at all times is a pivotal part of managing a streamlined construction operation.

Proper management of a larger fleet line especially isn't cheap—but when mismanaged, it can quickly drain a disproportionate amount of allocated project funds. And that's a major headache for operations managers.

It's understandable that when budgets are tight in the construction field—as they are at present (especially during the financially challenging climate imposed by the coronavirus pandemic)—project managers may look to ease back on proactive measures wherever feasibly possible. But a little advanced planning is always a good dose of prevention. This is especially true when it comes to stealth transportation & fleet equipment management.

There are number of areas in which fleet supervisors can keep a watchful eye to help keep their trucks in top working and aesthetic condition, starting with protecting vehicle exteriors to extend the life cycle of key equipment—and improve their safe use.

SAFEGUARDING WORK TRUCK EXTERIORS

Construction truck fleets require a major investment and significant upkeep. Work vehicles are often required to perform in formidable weather extremes—enduring blistering heat in the summer months and degrading climate conditions in the winter. Both of these temperate conditions can quickly erode paint surfaces and cause peeling, flaking and deterioration.

Because a construction company's fleet serves as a virtual, on-the-road, moving billboard for its brand, keeping vehicle exterior surfaces looking clean and tidy—with sharp, easily visible logos—is important for both maintaining the firm's reputation and for gaining new and potential customers.

Additionally, in order to better protect your overall fleet truck financial investment and extend the life cycle and value of the vehicles in your line—it's imperative to keep each piece of machinery free of the dents, dings and abrasions that can typically occur in and around a busy construction environment.

One option is to treat your entire fleet with a polyurea-based elastomer coating. This and other similar high tensile-strength sealants can apply an added layer of protection to vehicle exteriors, which safeguards overall exposed surfaces, including wheel wells, fenders, bumpers and truck beds. This same material can also coat and protect interior surfaces such as flooring, dashes, steering wheels and even seats.

Protective coating administered in the form of a spray-on application is affordable and can help to mitigate the road damage that can denigrate your fleets' appearance and reduce resale value. A premier polyurethane-based solution won't bubble or flake off, even after prolonged use.

The solution can also help to preserve a vehicle's color and ward off the affects from ultraviolet sun ray penetration in the warmer months and cold weathering in the winter. This results in a uniform, consistent look across your fleet that can send other prospective clients a positive brand message about your organization.

Additionally, spray-on elastomer coating provides a nonslip grip on flatbed surfaces, which helps to reduce accidents and injury during cargo loading and unloading—creating a safer work environment for your fleet team that is responsible for hauling and moving materials that can shift and slide during transit.

THEFT DETERRENCE

While environmental damage can cause premature physical aging on your fleet, there is nothing more detrimental to your investment than outright theft or vandalism. There are myriad ways that burglars can wreak havoc on construction vehicles and other resources that aren't properly monitored, especially during off-hours.

Of course, raw materials sitting around a construction jobsite (piles of valuable plywood, electrical tools and other supplies) are always especially vulnerable targets.

Most operators today are savvy when it comes to locking down these worksite essentials, but one area of jobsite maintenance that is often overlooked revolves around construction vehicles, including trucks, cargo vans, flatbeds and other load-carrying equipment. These vehicles are all at risk for potential theft whenever they are left unattended.

Smash-and-grab break-ins aren't just petty crimes. On a large jobsite—or when carried out across multiple worksite locations—they can have a strong impact on the operational bottom line and the already stretched-thin pocketbooks of investors.

Valuable tools, electronics and even competitive blueprints can easily be taken, without the possibility of recovery. To reduce the risk of fleet theft, the following are a few tips to keep work trucks safe from criminal activity.

- Keep work truck windows as darkly tinted as local and state requirements will allow. Items that are harder to spot make for less attractive targets.
- Consider metal mesh placements inside the windows. Even if they're vulnerable to break-ins, most burglars will likely be deterred by this "second barrier" and less inclined to risk the extra complication.
- Install break-resistant safety glass to deter quick and easy window smashing (most construction equipment theft comes as a result of potential burglars spotting a speedy means of accessing the items that they want to steal). Any investment that will hinder the swiftness of the would-be thief's actions will help keep your company's equipment safer in the long run and amount to a good decision overall.
- In larger vehicles, consider utilizing an internal cage for extra precaution and theft protection.
- Make certain to keep valuables out of sight and compartmentalized in locked cases using a digital entry keypad. Also, consider creating a visor adhesive "reminder" for work truck fleet drivers that prompts employees and contractors, such as: "Please keep all valuables, tools and plans in a secure compartment."

UNNECESSARY VEHICLE OVERSTOCK

One of the more obvious, but often overlooked, areas where construction fleet managers can hemorrhage additional expense—as well as time—is to maintain a larger-than-necessary equipment operation.

While it's essential to not be under-supported and left without adequate transportation resources, many operators fail to carefully track workflow requirements—and end up keeping excess fleet truck inventory on their balance sheet.

Underutilized trucks carry heavy overhead (in terms of maintenance requirements, insurance and other upkeep) that can drain already strapped project budgets.

Adhering to good resource management and keeping tabs on under- and over-vehicle utilization versus anticipated and actual production needs is just one other essential way to achieve better fiscal management on the job.

REGULAR MAINTENANCE REPAIRS

While it sounds like a no-brainer, too many work truck fleet owners and providers forget or bypass the regular steps necessary to ensure their fleet lineup is fail-safe before an accident or breakdown occurs.

It's understandable that when budgets are tight in the construction field—as they are at present (especially during the financially challenging climate imposed by the coronavirus pandemic)—project managers may look to ease back on proactive measures wherever feasibly possible. But a little advance planning is always a good dose of prevention. This is especially true when it comes to stealth transportation and fleet equipment management.

Construction fleet vehicles of all kinds—from pickup trucks to dump trucks, tractors, trailers, service bodies and stake bed trucks—are invaluable tools across the entire building and development spectrum.

When critical transportation machinery goes down, construction jobsite productivity can rapidly stall—costing operators dearly, not to mention leaving a potentially large workforce of full-time employees, contractors and skilled trade partners sitting idle when they don't receive an expected materials delivery.

Basic equipment repair essentials should always include an assessment of the following:

- Tire safety and repair
- Checking all valves, gaskets, switches, pumps and seals thoroughly
- Inspecting critical components that can denigrate with use

Smart operators will make proactive adjustments or replacements an essential part of ongoing maintenance and accident prevention.

While work vehicles and moving machinery are just one line item on a larger accounting ledger, jobsite transportation is nonetheless an absolutely key component to maintaining a productive project schedule for a firm.

By following some basic guidelines when it comes to best practices for work truck fleet management, construction operators can ensure a safer and more fiscally responsible outcome—both for their clients and the many employees and contractors who depend on smooth, deadline-focused project management. CBO

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HOW MONITORING VEHICLE & DRIVER WELLNESS IS THE FOUNDATION FOR SAFETY & SUCCESS

When it comes to construction fleet management, drivers, technicians, maintenance supervisors and managers each have an integral role to play to ensure their vehicles, equipment and assets are up to code by conducting frequent inspections, or they risk being shut down by regulatory government bodies. In addition to asset management and life cycle, safety is an integral purpose behind any inspection—leaders know that if their company isn't operating safely, it not only puts their fleet drivers and operators at risk, but it also risks public safety, the health of their vehicles, equipment and assets, business productivity, and ultimately, the bottom line.

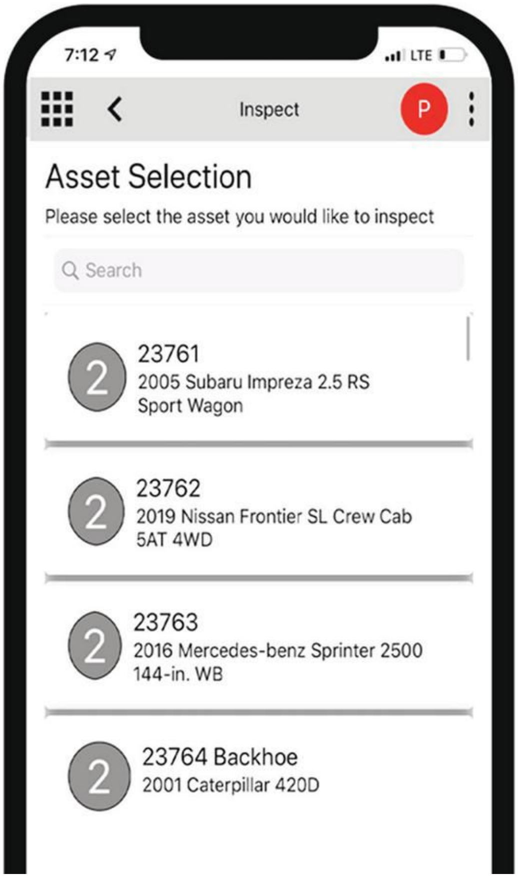
To put it in perspective: Having a comprehensive fleet roadside inspection program in place can prevent an estimated 14,000 accidents and 9,000 injuries in a year. And this doesn't even take into account the safety benefits of using a digital inspections tool for your equipment.

Today, safety inspections should look a little different than normal—they no longer need to just account for safety when behind the wheel, but safety as it applies to the health of drivers and operators as COVID-19 cases continue to surge. It's important that frequent health checks are made a part of the larger inspection process for construction fleets, as companies have a due diligence to ensure they're operating in the safest way possible.

THE EVOLUTION OF INSPECTIONS

Luckily, inspections today are not what they were a few decades ago, having come a long way with advanced technologies and efficient, streamlined processes. With connected operations technologies, site managers can now use configurable, digital solutions to ensure compliance with inspection protocols of their vehicle, equipment and assets as well as COVID-19 protocols for each individual employee, parting ways with the pen and paper method that many still use today.

Conducting routine inspections allows managers to spot issues before they snowball into bigger problems and not only prevents unnecessary maintenance spend, but also allows construction and fleet leaders to better manage vehicle, asset, equipment and worker availability by preventing unexpected downtime and lost productivity. With the added complication of COVID-19 this past year, incorporating health checks into larger digital inspections processes ensures individual drivers are healthy before they begin a job and potentially violate government compliance protocols.



Frequent health checks & inspections through advanced digital solutions enable faster equipment defect reporting, proof of due diligence & the ability to uphold compliance regulations, ensuring all employees are as safe as possible.

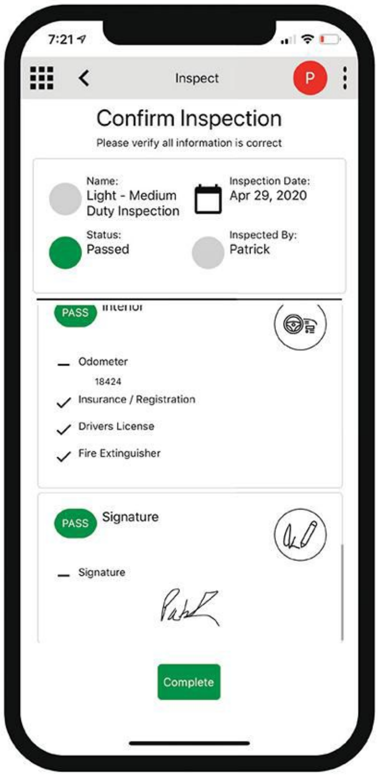
ENSURE 360-DEGREE SAFETY FOR YOUR FIRM'S ASSETS & YOUR WORKFORCE

When it comes to safety, fleet and construction site managers have plenty to be worried about. But, with the help of modern, digital inspection solutions, managers can ensure their operators are complying with their inspection processes, and that the data from every inspection report is getting back to managers and the maintenance team in real time.

It's easy to think safety is only a concern when drivers or equipment operators are behind the wheel of dangerous machinery, but managers should include a pre- and post-operations health protocol checklist in their process to account for all COVID-19 safety risks. With the help of configurable, automated technology solutions, managers can account for every single factor that poses a safety risk and check off each box on their inspection checklist:

- Before driving or operating machinery, the driver's inspection checklist should include adhering to COVID-19 protocols, such as entering their temperature, and attesting to the fact that they are wearing a mask when mandated and have had no contact with an infected person. This also includes inspections of every facet of the vehicle. Drivers should be required to include photo evidence at certain checkpoints and signature sign-off of the overall inspection report. This should kick off a notification to the manager if any issues were reported—whether a violation of a COVID-19 protocol or maintenance issue.
- After the drive, drivers should incorporate a COVID-19 sanitation checklist, including wiping down the interior of the vehicle, retaking a temperature (especially on longer trips) and confirming a mask was worn when required. They should also plan to conduct a post-use inspection and, as mentioned

earlier, no post-trip inspection should be able to be marked as completed without photo evidence and driver signature. As with the pre-trip inspection, managers and maintenance will be alerted in real time to any issues.



PROACTIVE SAFETY MEANS COMPLIANCE TO REGULATORY LAWS & COVID-19 PROTOCOLS

With the help of advanced, data-driven connected operations solutions, managers can easily perform inspections and health checks to ensure their assets and workforce comply completely with government regulations, such as Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA) laws, which can mean hefty fines for those found in violation.

For example, OSHA serves fines of up to $132,598 if a flagrant violation occurs and violating COVID-19 safety procedures would certainly fall in this bucket. This is a steep price to pay, when it could be easily avoided through routine health checks and an inspection checklist.

When it comes to health checks and COVID-19 protocols, much can be done by companies to ensure compliance and government regulations are being followed. These protocols can include—but aren't limited to—ensuring clean driver hygiene, abiding by the maximum number of people allowed per vehicle (limiting it to only one or two when possible), wearing disposable gloves, frequent sanitations with disinfectant cleaners and frequent communication with the full team. Though seemingly small things, all are necessary for compliance and business continuity.

ASSET LONGEVITY & COST SAVINGS

Cost savings, while always top of mind, has become increasingly important during the ongoing pandemic—as many companies have to be extra cognizant of every single dollar spent, eliminating unnecessary costs when possible. By integrating frequent health checks into larger inspection programs, companies can optimize their assets, productivity and maximize return on investment.

A modern inspection solution is one that is integrated into an overall connected vehicle and asset operations solution, providing further capabilities to reduce overall spend and extend the life cycle of a construction firm's vehicles, equipment and assets, while maximizing productivity of the workforce.

New digitized inspection solutions include predictive analytics to help managers make informed recommendations for when a routine maintenance function should be performed, on a specific area before an issue goes undetected and the vehicle or asset is out of commission altogether. They also can alert managers right away if an employee is sick, or a health protocol unaccounted for, saving the company from the possibility of large fines later on for violation.

DOUBLE & TRIPLE CHECK

Frequent health checks and inspections through advanced digital solutions enable faster equipment defect reporting, proof of due diligence and the ability to uphold compliance regulations, ensuring all employees are as safe as possible. With connected operations technologies and automated, real-time alerts, managers can initiate service requests and detect potential protocol breaches the moment an issue is spotted during an inspection or health check, allowing them to run both a responsive and truly preventative maintenance process, while keeping employees' safety as their No. 1 priority. **CBO**

Ryan Wilkinson has over 10 years of experience in the IoT, cloud computing and enterprise SaaS market leading teams in delivering solutions that transform how businesses use technology and operate. In his current role as chief technology officer of IntelliShift, Wilkinson's expertise in applying geospatial technology, machine learning and IoT solutions has helped propel the IntelliShift platform to the forefront of the connected fleet world. Visit intellishift.com.

How to Choose the Right Excavator

5 areas to consider before you add to your fleet

BY JASON BOERGER

Excavators are more powerful, productive and durable than ever before. To keep up with their continued popularity, equipment manufacturers have introduced models that can be tailored to your specific needs. But with so many options, how do you select an excavator that's right for you?

If you frequently rent excavators or hire subcontractors who use them, look closely at the tasks they perform. This will help you anticipate what you need from a machine of your own. It's also important to think about how adding a variety of attachments to your excavator could create new business opportunities. To get started, consider the following five factors.

1. SIZE, WEIGHT CLASS & TAIL SWING

Size is one of the most important specifications to consider when comparing excavator models. To get the most out of your machine, ask whether the desired excavator is the right size to perform the tasks at hand. Can it access your required jobsites? Can it achieve the expected performance regarding dig depth, reach and dump height? Your ideal excavator needs to be able to access your jobsites and then also have the capacity in terms of width, height and weight to do the work once it's there. Each jobsite demands different features. If you work in confined areas like residential properties or commercial jobsites, every inch matters. Larger excavators can weigh more than 10 tons, so make sure your jobsite can accommodate the overall size and weight of a larger machine.

However, height, width and weight are only part of the equation. Tail swing configuration is another feature to assess before committing to a machine. A zero- or minimal-tail-swing excavator of a given size will generally be wider than its conventional-tail-swing counterpart. If you anticipate routine work where you or your operators must pass through narrow property lines or gates, a conventional-tail-swing excavator may be a better fit.

The typical width of a conventional tail swing, such as a 3- to 4-metric ton compact excavator, will be about 60 inches, whereas a zero and minimal tail swing excavator with similar performance will have a width of about 70 inches. Some manufacturers also offer a retractable undercarriage in select compact models when you need a machine that won't sacrifice over-the-side lift capacity for accessibility through tight entryways like fence gates.

2. ARM CONFIGURATIONS

Standard arm configurations come with every excavator model, giving you maximum breakout force and lifting ability with greater digging performance. However, if you need greater reach and dig depth, some compact excavators can be equipped with a long-arm option.

Extra reach, combined with higher dump height, allows you to do more work without repositioning the machine and helps load trucks easier. The long-arm option includes additional counterweight to enhance your excavator's lifting capabilities.

If you need even more reach, some manufacturers offer extendable arm option for select compact excavators. It offers the best of both worlds: power and lifting performance combined with the ability to extend the machine's dig depth and reach when you need it.

3. POWER & PERFORMANCE

Next, you should consider the specific tasks you need a compact or large excavator to perform. Smaller compact excavators can bring precision and power to confined areas, but they will offer less digging force and lower lift capacity than midsize excavators.

Larger models can push through more demanding tasks with powerful hydraulics and higher horsepower. At this stage of the decision-making process, pay attention to equipment specifications like horsepower, rated lift capacity, digging force and dig depth.

4. COMFORT FEATURES & TECHNOLOGIES

Your operators spend the majority of their time in the cab of a machine, so it's important to consider comfort features before adding an excavator to your fleet. Simple features like an enclosed cab with heating and air conditioning, operator-friendly controls and overall ergonomics go a long way in promoting a comfortable work environment.

An essential feature in the compact equipment industry is wireless communication technology—also referred to as telematics—which allows you and your operators to maximize uptime and provide better peace of mind. The technology works with electronic sensors in your equipment to collect machine-specific data and sends it out via a wireless network to a mobile device or computer.

In-cab displays enhance a machine's functionality to provide critical information to you and your operators. Some solutions offer device connectivity, which can improve security and can be paired with a rearview camera.

With some of the higher-end display technology, you can observe fuel levels, coolant temperature, engine revolutions per minute, hydraulic flow and on-board diagnostics, which will allow you to optimize uptime and serviceability. Additionally, with select displays you can monitor and position machine attachments and track operator productivity in detail.

Advanced attachment mounting systems can match operator preference to the task and act as the ultimate timesaver. Hydraulic activated systems allow you and your operators to secure attachments within seconds by pressing a switch inside the cab that automatically connects the machine's attachment.

5. TRANSPORTATION CONSIDERATIONS

The weight and size of an excavator is just as important when you're not operating. It impacts how you will transport the machine to and from jobsites. Double check the weight limits of any vehicle you plan to use and think about how you plan to haul your excavator before selecting a machine size.

Due to their size, large excavators require different transportation equipment than compact excavators. If you are used to hauling your compact excavator with a three-fourths-ton pickup truck, you'll have to adjust your line of thinking when looking at an excavator in the 10-ton plus size range. The size and weight of these machines often calls for a larger truck-and-trailer combination compared to a compact excavator.

In addition to securing the proper transportation, it's important to take weight-limited roads or bridges into account. Once you start considering excavators larger than 10 to 15 tons, you may need to assess local, state, province and national weight limits. If it's over the weight limit, a special transportation permit may be required when moving the equipment. Each model is different, so it's important to confirm and check the weight against all legal requirements.

DO A REAL-LIFE DEMO

Above all, the best way for you to compare excavator models is to operate them on your jobsite. Not all excavators are created equal and operating a machine in everyday situations goes a long way in helping you see how it would perform as a member of your fleet.

During the demo, be sure to examine the machine's versatility, operator comfort, ease of routine maintenance and, of course, performance, so you know exactly what to expect from your most recent equipment purchase.

The addition of an excavator could drastically improve your fleet's productivity and versatility. But, before you buy, make sure you have considered all the factors involved, so you can find the best fit for you and your equipment operators. **CBO**

Jason Boerger is a marketing manager for Bobcat Company. Boerger has spent 7 years at Bobcat Company. During that time, he has held positions in the product training and marketing departments. Visit bobcat.com.

Elevating Safety to a New Level

The scoop on scissor lifts & how they can improve work at height

BY JUSTIN KISSINGER

Every tool has its own guidelines for safe and proper use. Some are complex and require a detailed understanding, while others might seem more common sense. Ladders are one of those basic tools that may seem like they would not require training. However, according to the Occupational Safety and Health Administration (OSHA), falls remain the No. 1 cause of death in the construction industry. Many falls are preventable, making low-level scissor lifts a great ally to contractors.

THE TRADITIONAL METHOD

The simplicity of ladders in their most basic form have made them the longstanding, go-to tools for work at height. They are inexpensive, compact and convenient, and will always have a time and place on the jobsite—as long as they are set up and used correctly. However, setup and usage are also where problems arise—not following proper guidelines can often lead to costly injuries. OSHA recommends users place extension ladders at a 75-degree angle, set it one-quarter of the working height away from a wall, and ensure the top of the ladder extends 3 feet higher than the elevated surface. Users must also choose ladders with the appropriate duty rating for the task, which ensures it can hold your weight and the weight of your load. And while working on or climbing up and down a ladder, the “three-point rule” should always be enforced. This means users must maintain three points of contact at all times to minimize the risk of slipping and falling. Ladder setup and usage doesn’t sound so common sense anymore, and these are just a few guidelines. It’s no wonder training on proper ladder setup and usage gets overlooked. According to a Bureau of Labor Statistics study of 1,400 ladder accidents, 66% who were injured had not been trained on how to inspect and set up the ladder.

A HIGHER-TECH ALTERNATIVE

Low-level scissor lifts allow workers to reach up to 25-foot working heights, which is enough for the majority of high-reach work. While many may think a scissor lift’s overall size is a setback, low-level units can be quite compact and, in some cases, take up less space than a ladder. For instance, the legs of a 12-foot stepladder spread nearly 80 inches apart, which means the ladder covers about 19.43 square feet of floor space. A low-level push-around lift with a 10-foot platform, however, takes up just 10.45 square feet of space. Both offer 16-foot working heights, yet the scissor lift has a 46% smaller footprint, enabling it to be used in more confined areas. When it comes to navigating through doorways, around tight corners or throughout confined areas? A ladder may be easy to move by collapsing or folding it, but the taller it gets, the more cumbersome it becomes. Not only do ladders get heavier as they get taller, but those taller heights also make it challenging in corners and tight spaces.

With low-level lifts, lifting and awkward maneuvering are removed from the equation. Operators can simply lower the units down to an overall height as low as 63.6 inches, and if it's a self-propelled lift, use the controls on the platform to navigate to the next area. In addition, a zero-turn radius feature on some lifts, coupled with widths as narrow as 30 inches, means maneuvering around 32-inch doorways and down hallways is hassle-free. A lift also eliminates the risk of a strain associated with lugging around a heavy ladder.

A low-level scissor lifts can't compete with a ladder's light weight, but some of the lightest scissor lift models can be used on tile, laminate and raised floors without the risk of damage. Some push-around units weigh just 575 pounds and have wheel loads as low as 115 pounds per square inch (psi). Some self-propelled units are more impressive yet, with dual front wheels that enable them to achieve wheel loads as light as 75.8 psi.

Generally, low-level scissor lifts can get into nearly all the same areas as ladders, and that's big, but the impact these small machines can have on worker safety is even bigger.

DANGEROUS TASKS

Just like any task, high-reach work comes with challenges. But when using a ladder to perform that work, those challenges become compounded and can test the human body. For example, heating, ventilation and air conditioning and plumbing technicians installing pipes and ductwork overhead need a fair amount of materials and tools as the job progresses.

When they've completed one section, they must step down, move the ladder, grab more materials and climb back up. This is not only inefficient, but the repetitive climbing can cause injuries to knees and hips and standing on the rungs for long periods can lead to painful plantar fasciitis. This scenario also sets up the installer for the possibility of a fall. In fact, ladder users should never carry heavy objects or tools up the ladder.

In addition, a worker's lateral reach is limited once they are on the ladder. This restricts how much work they can accomplish in one spot. As a result, many are tempted to overreach and risk the ladder toppling over. This is why improper ladder usage continues to make OSHA's top 10 most-cited violations year after year. According to a study provided by the Centers for Disease Control and Prevention, 81% of all fall injuries among construction workers in 2011 involved a ladder. All of those injuries likely could have been prevented with a low-level lift.

Some self-propelled low-level scissor lifts can hold as much as 750 pounds and offer as much as 15 square feet of platform space, including their extensions. That's plenty of capacity for ample materials and supplies. Also, loading the lift with those supplies is substantially easier and less taxing on the body due to lower platform heights.

Operators simply load the lift, step up the 20 or so inches to get on the lift, then drive and elevate. And because workers can load the lift with more materials, they make fewer trips up and down, which enhances productivity. In addition, some units feature integrated pipe racks, which give installers a place to rest longer materials, while ensuring the lift stays balanced even with two people. These types of features help boost efficiency while maintaining safety.

THE COSTLY PROBLEM

If you consider a low-level lift to be substantially safer and more efficient than a ladder, there is still one problem—accessibility. If a lift isn't available, an employee isn't likely to ask for it and then wait around for it to show up. Instead, the employee might decide to move ahead using what they have, which is often a stepladder; and just like that, the risk of injuries from a fall increases.

It's not just injuries employers must worry about. Those falls aren't cheap for a company to handle. Just one workers' compensation claim can cost tens of thousands of dollars, which is only a fraction of the United States Consumer Product Safety Commission's estimated $24 billion in annual costs associated with ladder injuries.

Under the Occupational Safety and Health Act, employers are responsible for providing employees with a safe workplace. Making safer equipment available to employees is just one part of the equation. Employers must also train employees on when and where to use that equipment. Considering some of the risks and associated expenses of ladders, some contractors simply do not allow them on the jobsite unless absolutely necessary and with specific protocols enforced.

Ladders aren't going anywhere anytime soon, but that doesn't guarantee safe usage by the workers who climb them. With the option of a low-level scissor lift's safe and spacious platforms, easy maneuverability and ergonomics, you have a few more benefits to consider when choosing your next at-height helper. **CBO**

Justin Kissinger is the vice president of marketing for Hy-Brid Lifts. He has been with the family-owned business since 1998, and during that time has gained knowledge from all areas of the company, including assembly, engineering, service and sales. Contact him at 262-644-1300, ext. 5214, or justin@hybridlifts.com. Visit hybridlifts.com.

A Strategy for Sustainable Structures

Inside the One Tree Pledge & reducing carbon emissions from the built world

BY MICHAEL ZIMAN

In 2020, 6 weeks into being quarantined due to the COVID-19 pandemic, on morning news, I saw a photo of the Himalayan Mountains taken from over 100 miles away. Because of smog and pollution, the site had not been viewed from this distance for over 30 years. The same news story also showed other images of heavily polluted cities around the world as they experienced crystal-clear blue skies for the first time in decades as a result of the decrease in emissions. That moment highlighted for me the impact that human activity has had on the planet—or better yet—the impact of the lack of human activity. According to CBS, the world has had twice the number of weather disasters than in the previous 20 years, at a cost of $3 trillion. And recently, 40 million acres burned in California. Scientists predict that if we continue on our current course, agriculture yields will be cut by half in the not-so-distant future. These staggering facts inspired me to look for ways to make my building projects at Ziman Development more sustainable.

PLANTING TREES TO NEGATE CARBON EMISSIONS

In my research, I was blown away by the evidence and the science. We have pumped more carbon into the atmosphere in the last 20 years than we have over the previous 800,000 years combined. And the business of building is contributing greatly to the carbon being released into the atmosphere. As builders, we are part of the problem. The good news is that many builders are now actively seeking ways to be part of the solution. I decided for my business the best and most natural method of carbon capture is through trees. Nature provides the perfect solution to climate change and global warming. Trees naturally breath in carbon dioxide and expel clean oxygen, and they live, on average, for more than 50 years.

In crunching the numbers, I discovered I could offset all the greenhouse gas emissions from my buildings by planting just one tree for each square foot of structure that I build. Trees capture 10 pounds of carbon every year and the average home emits 20,260 pounds of carbon per year from electricity and natural gas usage. The average home measures 2,368 square feet. By planting one tree for every one square foot (for the average home, that would be 2,368 trees), I could make the home carbon neutral.

Those 2,368 trees will consume 23,680 pounds of carbon each year for approximately 50 years, which is more than the 20,260 pounds of carbon that the home will emit. And this does not factor in renewable energy or sustainable building practices. The question then became how to plant that volume of trees.

I created a partnership with American Forests, the nation's oldest preservation organization, to do the tree planting at a cost of only $1 per tree. Working closely with the United States Department of Forest Services, the organization plants native species of trees on federally protected land in areas of need. For the cost of only $1 per square foot, I am now building homes that will be carbon neutral for approximately 50 years. I started the One Tree Pledge to invite other business owners to join me.

As builders, we can offset the emissions from the homes, offices and commercial structures we erect by planting just one tree per square foot. Make the pledge now at onetreepledge.org and plant a better future for the families and companies who will be living and working in the structures you build.

ENERGY EFFICIENCY RATINGS

Many builders are now focusing on energy efficiency to reduce the amount of electricity used in the home. Builders like Ziman Development and Point B Properties both aim to make homes as airtight as possible to prevent the loss of energy, thereby reducing the quantity of natural gas and electricity used for the home.

According to Robert Linn, owner of Point B Properties in Chicago, Illinois, "At Point B, we focus on the energy efficiency of our developments as part of our triple bottom line. An energy-efficient building improves the life of the occupant by saving them money and improving their health, and it improves the health of the planet by reducing the carbon footprint."

In addition, builders are carefully selecting their materials, using less plastic and more biodegradable products, such as petroleum-based siding and decking made of lower quantities of petroleum byproducts. Sourcing as close as possible to the building site is also beneficial.

Local sourcing reduces fuel consumption and carbon emissions related to freight shipping. Many construction companies are also now using renewable energy systems on-site, such as wind turbines and solar water heating. These factors are considered in the energy ratings systems.

The Residential Energy Services Network (RESNET) is a not-for-profit, nationally recognized standards-making body for building energy efficiency ratings and certification systems in the U.S. RESNET's Home Energy Rating System (HERS) Index rates the energy efficiency of the new homes being built.

Considered the gold standard of home energy efficiency, the HERS Index gives builders a specific rating for the home being built, based on a wide variety of factors including the carbon footprint, annual projected energy savings of the home and the cost savings gained by the greater energy efficiency.

According to RESNET Communications Director Valerie Briggs, “RESNET certified raters have rated the energy efficiency levels of nearly 3 million homes in America. We are proud to work with some of the largest builders in the country, as well as smaller independent custom builders, all of whom are working hard to reduce the amount of energy used in our homes, creating not only cost efficiency, but also a lesser carbon footprint for the homes.”

RESNET has over 2,000 raters who rate homes across the country based on many factors such as heating, ventilation and air conditioning (HVAC), duct work, window quality and installation and more. Other rating systems include the Leadership in Energy and Environmental Design (LEED) certification, Excellence in Design for Greater Efficiency (EDGE) and EnergyStar. The LEED certification provides independent verification of the green features in a given building’s design, construction, operation and maintenance. Energystar.gov also provides third-party ratings that certify a home or building’s energy efficiency, similar to the grading given to home appliances. A building must earn an Energy Star score of 75 or higher to receive certification, indicating that it performs better than 75% of similar buildings nationwide. Achieving these types of certifications not only reduces the environmental impact, but also increases the value of the building and helps it sell for a higher price.

SMART HOME TECHNOLOGIES

Builders can also incorporate the latest technology into the structures being built to manage energy more efficiently and create a more sustainable future. An added benefit is that using energy efficient options also creates cost savings for the people who will ultimately use the homes and buildings.

LED lights last longer, and they use a fraction of the electricity of an incandescent bulb, creating a smaller carbon footprint and cost savings. Smart thermostats and smart home technologies like Amazon’s Nest learn the habits of the people using the building to automate power usage. The system automatically shuts off electrical power when not in use, creating a 16% to 22% reduction in electricity and natural gas usage.

Energy-efficient appliances also reduce carbon emissions. Opt for only Energy Star appliances to reduce both energy and resources (for example, Energy Star washing machines reduce the electricity use, as well as the amount of water used in each load of laundry). Consider new options like tankless hot water systems that heat water on demand, reducing the use of gas and electricity. Windows are also rated for efficiency and heat loss.

In the second-home market, smart switches and leak-prevention detection devices help to avoid or mitigate water damage and unnecessary water usage. Sourcing windows and appliances with the latest technology ensures a lesser carbon footprint and long-term cost savings on utility bills.

Building structures with greater climate resiliency is another effective method of reducing waste. Particularly in coastal cities, flood zones or tornado alleys, builders are creating stronger frames and using better windows to mitigate weather damage and reduce insurance costs. Hurricane-ready windows are rated by design pressure (DP) and performance grade (PG), measuring the window's air infiltration, water infiltration and structural load. A window must meet specified criteria in all three aspects to achieve a hurricane-ready PG rating.

ECONOMY & VALUES ALIGN

Today, there are so many options available to builders for creating more efficient homes and buildings. From nature's solution of tree-planting to technological enhancements and energy-efficiency certification, there exists a wide variety of best practices that modern builders can use to reduce the carbon footprint of their homes and buildings and to be a part of the solution to the existential threat of climate change. The market continues to prove that homes and buildings with greater energy efficiency can be sold or leased at higher prices and can be operated at lower rates. Not only is it right for the planet, but it is also what is best for our businesses.

Pursuing opportunities like the ones covered here and making an effort to go green is a scalable game-changer—and it cannot wait. Make a commitment today to start reducing the carbon footprint of the structures you build. Let's build a better tomorrow for everyone. **CBO**

Michael Ziman is co-owner and president of Ziman Development and has completed over 150 home building projects for families in Long Beach Island, New Jersey. In 2020, Ziman realigned his company's mission with his environmental activism and founded the One Tree Pledge. Moving forward, all of his properties will have a carbon negative footprint. Visit onetreepledge.org.

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.

BRIGADE ELECTRONICS

Brigade Shutter Camera

Released: 11/1/20

Availability: U.S., Canadian & European markets

What's new? The cameras have an automatic shutter to protect the camera when it's not in use. The shutter is only triggered to open when a vehicle enters reverse gear.

Specs: Features a wide dynamic range for improved detail in shadows and highlights; five infrared LEDs for ultra-low light performance; a day/night sensor; an automatic shutter; a heater; a microphone; both a mirror and standard view; backlight compensation; automatic white balance; and a Sony CMOS sensor.

Check 200 on index.

ERGODYNE

Arsenal Nylon Hoist Bucket

Released: 11/9/20

Availability: U.S. & Canadian markets

What's new? With a permanently attached zipper top, this is one of the industry's first hoist buckets to be approved to the American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) 121-2018 dropped object prevention standard.

Specs: Features a maximum safe working capacity of 100 pounds; a 1200D nylon with 840D nylon top, heavy-gauge nylon stitching and reinforced synthetic leather base; a permanently attached zipper closure; a swiveling carabiner for hoisting; a molded top ring; interior pocket; a patented nickel-plated storm drain; and measures 12.5 inches in diameter and 17 inches in height.

Check 201 on index.

XL FLEET

XLP Chevrolet Silverado & GMC Sierra 2500 HD & 3500 HD

Released: 11/16/20

Availability: U.S. & Canadian markets

What's new? This product offering expands a growing lineup of plug-in hybrid electric drive systems, which can improve fuel economy by increasing miles per gallon by up to 50% and reducing carbon dioxide.

Specs: XLP plug-in hybrid electric drive technology is being expanded for use across a range of fleet vehicles from General Motors. The platform is expected to begin shipping on select configurations of the Chevrolet and GMC Silverado/Sierra 2500 HD and 3500 HD pickup trucks in the first quarter of 2021, and on Chevrolet and GMC 3500 and 4500 cutaway chassis in the second quarter of 2021.

Check 202 on index.

CHICAGO PNEUMATIC POWER TECHNIQUE ▶

CPG 150 and CPG 200

Released: 12/16/20

Availability: U.S. & Canadian markets

What's new? The CPG models are now equipped with a John Deere 6068 Tier 4 Final diesel engine. An internal, 335-gallon fuel tank provides power for 44 hours at 75% load on the CPG 150 or 37 hours at 100%.

Specs: The CPG 150 has a rated prime power of 150 kilovolt-ampere (kVA) or 120 kilowatts (kW). The QAS 200 delivers a rated prime power of 200 kVA/160 kW. Both units offer dual frequency capabilities. An AREP alternator excitation system allows for an outstanding starting capability, even on the toughest jobsites.

Check 203 on index.

◀ DOOSAN INFRACORE NORTH AMERICA LLC

Doosan DX800LC-7 Crawler Excavator

Released: 12/15/20

Availability: U.S. & Canadian markets

What's new? The crawler excavator's size makes it ideal for heavy construction and infrastructure work. The unique double-boom foot design improves stress distribution to reduce single-side wear.

Specs: Features a Tier 4 emission-compliant engine; 539 horsepower; an operating weight of 181,000 pounds; a bucket breakout force of 70,107 pounds of force; arm breakout force of 63,714 pounds of force; maximum digging depth of 27 feet, 10 inches; and a maximum digging reach of 42 feet, 9 inches.

Check 204 on index.

▲ KNAACK

Knaack Safety Kage Industrial Cabinet

Released: 12/7/20

Availability: U.S. market

What's new? Designed for industrial users with a long list of jobsite storage needs, the new model helps optimize the jobsite by maximizing fall protection and other personal protective equipment (PPE) storage.

Specs: The 139-SK-02 is designed with 32 hooks in the main compartment, providing storage for more harnesses, lanyards and gear. Ventilated doors ensure airflow and allow equipment to dry between shifts. A welded upper shelf and extra hooks on the doors provide quick access to helmets and other PPE.

Check 205 on index.

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- ❑ 12 General Contractor – Commercial
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- ❑ 10 Construction – Special Trade Contractors
- ❑ 03 Highway and Street Construction
- ❑ 04 Water, Sewer and Utility Construction
- ❑ 05 Heavy Construction
- ❑ 06 Concrete Work
- ❑ 07 Excavation Work
- ❑ 08 Wrecking and Demolition Work
- ❑ 13 Architecture, Engineering and Construction Management Services
- ❑ 11 Consulting Contractor
- ❑ 99 Other (please specify)

____

2. Your primary job title is: *(Check Only One)*

- ❑ 10 Owner, Partner, President, CEO, CFO, COO, Vice President, Director
- ❑ 11 General Manager, Manager, Foreman, Superintendent, Purchasing Agent, Controller, Accountant
- ❑ 12 Engineer, Architect
- ❑ 06 Consultant
- ❑ 99 Other (please specify)

____

3. Approximate annual contract sales volume:

(Check Only One)

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

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

(Check All That Apply)

- ❑ 01 Earthmoving Equipment
- ❑ 02 Trucks, Trailers and Accessories
- ❑ 03 Compact Equipment
- ❑ 04 Lifting and Hoisting Equipment
- ❑ 05 Safety Equipment and Apparel
- ❑ 06 Attachments
- ❑ 07 Concrete and Paving Equipment
- ❑ 08 Survey and Site Prep
- ❑ 09 Compressors, Generators and Pumps
- ❑ 10 Financing and Accounting Services
- ❑ 11 Software and Technology
- ❑ 12 Insurance and Bonding
- ❑ 13 Training and Education
- ❑ 14 Telecommunications
- ❑ 16 Greases, Lubricants and Filters
- ❑ 17 Jobsite Lighting
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Annual Value of Construction Put in Place

November 2018/2019/2020 Annual Rate Comparison

This chart compares the two previous years' total value of construction put in place to an annual forecast based on November 2020 figures. (Millions of dollars. Totals may not add up perfectly due to rounding.)

	2018*	2019*	2020
Total Private Construction	**993,363**	**985,483**	**1,111,840**
Residential	542,534	536,089	658,086
Nonresidential	450,829	449,394	453,754
Total Public Construction	**306,512**	**338,639**	**347,600**
Residential	5,846	6,970	8,904
Nonresidential	300,666	331,669	338,697
TOTAL Construction	**1,299,875**	**1,324,122**	**1,459,440**

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

$1,459,440

NOVEMBER 2020 TOTAL ANNUAL VALUE OF CONSTRUCTION PUT IN PLACE

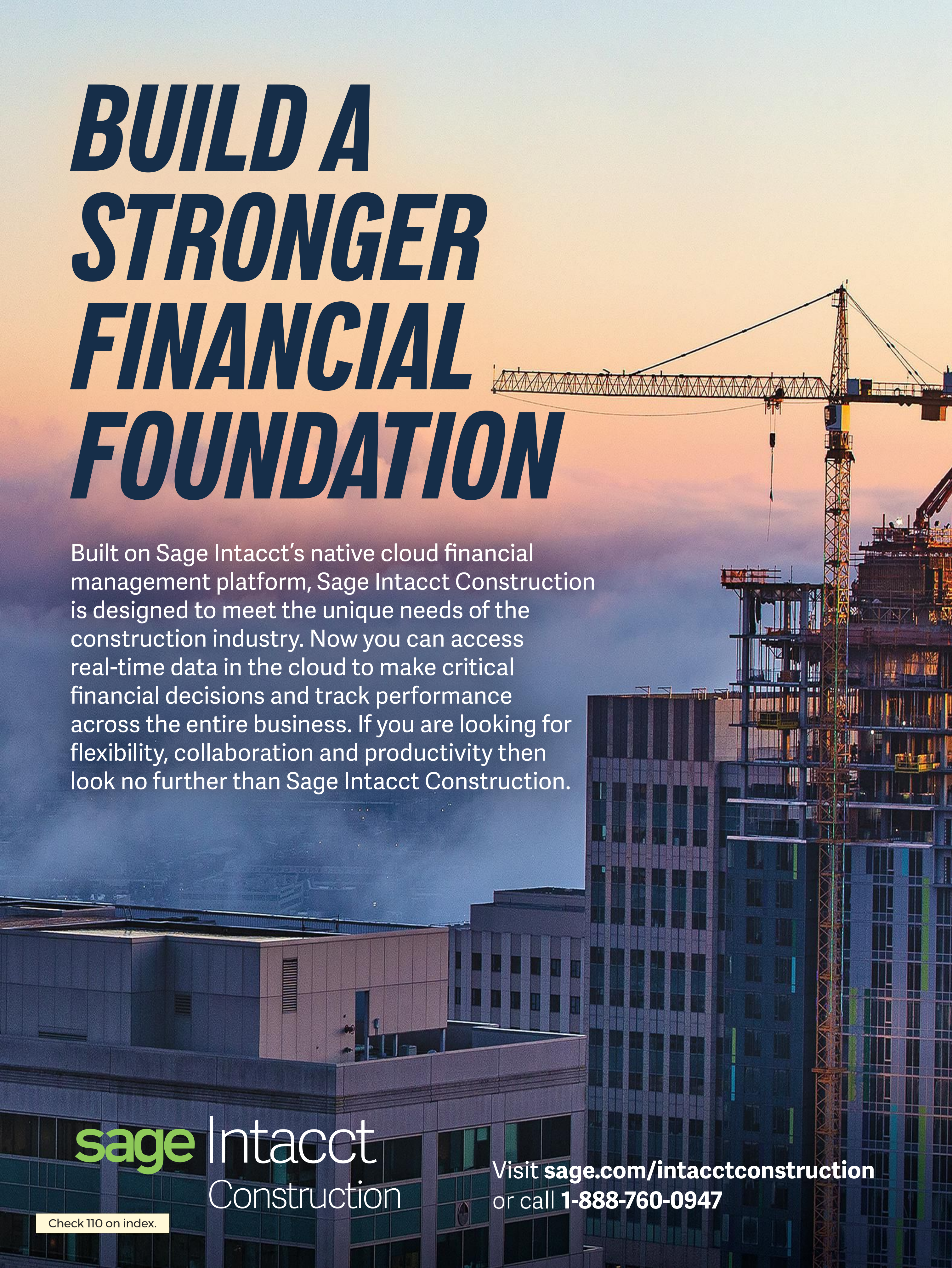
"In previous design cycles, we typically have not seen a straight line back to growth after a downturn hits," said AIA Chief Economist Kermit Baker, Hon. AIA, Ph.D. "The path to recovery is shaping up to be bumpier than we hoped for. While there are pockets of optimism in design services demand, the overall construction landscape remains depressed."

AIA Architectural Billings Index (ABI)

National			*Regional - Billings				*Sectors - Billings			
Month	Billings	Inquiries	Northeast	Midwest	South	West	Multifamily Residential	Commercial/ Industrial	Institutional	Mixed
Jun-20	40.0	49.3	34.2	36.8	35.9	36.8	44.7	30.1	38.9	35.3
Jul-20	40.0	49.1	36.8	40.1	40.7	40.9	47.5	35.4	39.5	44.0
Aug-20	40.0	51.6	33.9	41.7	41.6	41.3	49.4	35.5	40.2	41.9
Sep-20	47.0	57.2	41.5	45.6	43.7	45.6	54.0	43.3	40.5	47.3
Oct-20	47.5	59.1	44.9	49.4	45.8	50.4	55.1	48.0	42.2	52.7
Nov-20	46.3	52.0	38.7	50.1	46.7	48.3	52.2	47.5	41.9	49.5

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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