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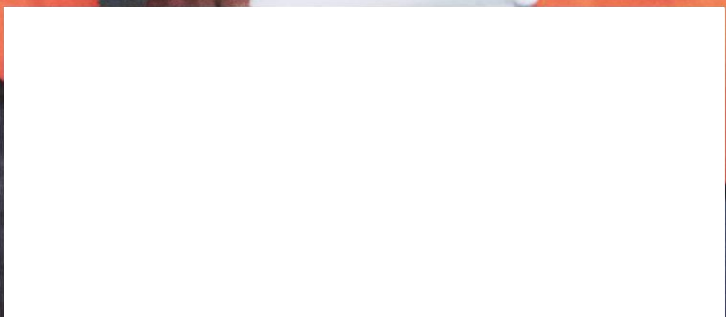
CONSTRUCTION BUSINESS OWNER

8 INDUSTRY WASTES TECH CAN ELIMINATE

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ditching inefficiencies &
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Examining construction's
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FROM THE EDITOR

KATHY WELLS



As 2022 comes to a close, I find myself reflecting on the year — the highs and the lows, the victories and the losses. This year has brought a great deal of change to not only the construction industry, but also our team here at Construction Business Owner (CBO). We've had the pleasure of welcoming several new faces to the CBO brand this year, including Art Director Jessi Tygielski, Associate Editor Carmen Capoccia, Account Executive Andrew Arnold and Digital Production Designer Matt Hodges. Each of them brings unique talent and expertise to their positions, and I look forward to seeing them continue to excel and make meaningful contributions to both our team and the industry. Speaking of looking forward, early next year, our team will be hitting the road to attend several upcoming trade shows and industry events.

World of Concrete will be held Jan. 17-19, 2023, at the Las Vegas Convention Center (LVCC) in Las Vegas. World of Concrete has served the global concrete and masonry construction industries for 49 years, providing connections, intelligence and opportunities that help customers grow, do business, and make better informed business decisions. If you're planning to attend the show, please stop by and visit with team CBO at booth N1855.

We'll be wheels up again in March to attend Work Truck Week at the Indiana Convention Center in Indianapolis, Indiana, taking place March 7-10, 2023. This opportunity brings together the people who design, build, use and maintain the work trucks and equipment to showcase the industry's latest products and technology, learn from one another and discuss how to improve the future. We invite you to stop by for a chat with the CBO team at booth 6435.

Next up is CONEXPO-CON/AGG, taking place at the LVCC March 14-18, 2023. As North America's largest construction trade show, CONEXPO-CON/AGG is held every three years and welcomes close to 130,000 attendees (with international attendees from 150 countries) and about 1,800 exhibitors, all constituents of the asphalt, aggregates, concrete, earthmoving, lifting, mining and utilities communities. Visit with our crew at booth SL60016.

We'll be sharing a live, inside look at the latest and greatest from each show via social media, so follow along on both Twitter and Instagram @cbomagazine and on Facebook at Construction Business Owner, and look for post-show coverage and more at constructionbusinessowner.com.

Take good care,

CONSTRUCTION BUSINESS OWNER

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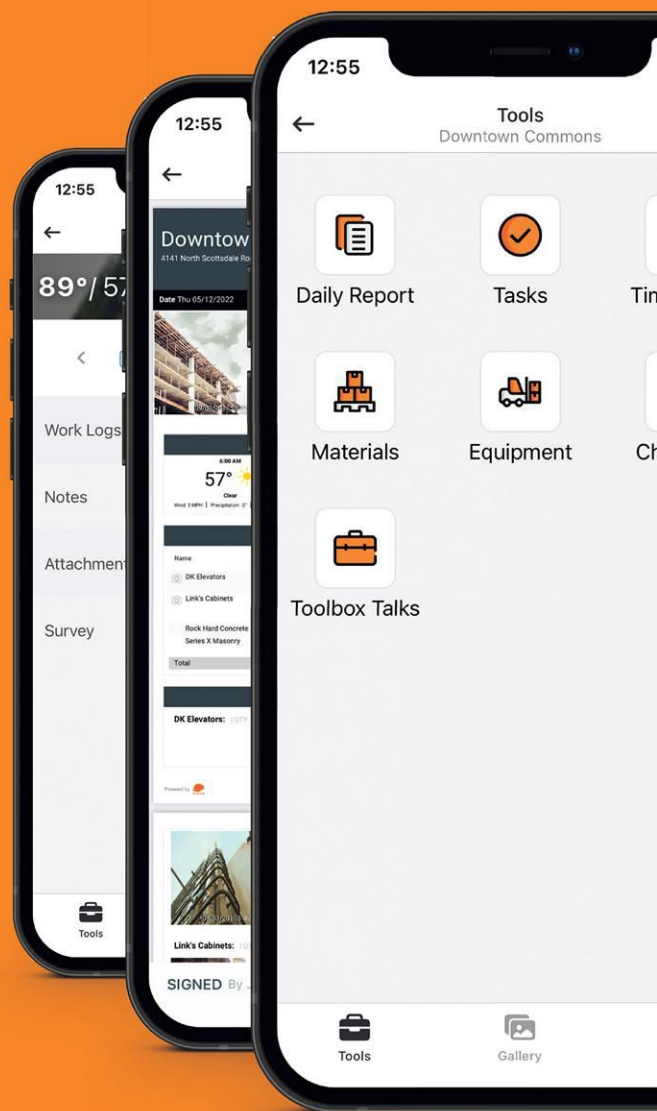
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► Brown & Caldwell Promotes Geoff Grant to Chief Growth Officer



Geoff Grant

Environmental engineering and construction services firm Brown and Caldwell announced the creation of a new C-suite role to direct its long-term growth strategy. Senior Vice President (SVP) Geoff Grant has been

promoted to chief growth officer responsible for developing and implementing sustainable client-focused growth plans. Grant is a professional engineer with more than 20 years of experience in the planning, design and construction of critical water and wastewater infrastructure. He has helped utilities nationwide solve highly technical wet-weather and aging-infrastructure challenges, including technical and project director roles for several multibillion-dollar stormwater abatement projects in New York. In recent years, Grant has served on Brown and Caldwell's executive committee as SVP of sales, leading its sales program and establishing region-specific business development strategies throughout North America and the Pacific. Grant will direct the firm's long-term growth strategy, strengthening its connections with clients and industry partners to solve complex water and environmental challenges. He will oversee sales and marketing functions to ensure the continuation of year-over-year progress. Visit brownandcaldwell.com.

► Holt Launches Holt Industrial Rentals

Seeking to address the growing needs of the \$52 billion U.S. equipment rental market, Holt Industrial Rentals, a Holt company, launched to provide specialty industrial equipment solutions throughout Texas. The increased needs associated with expanding facilities, construction, and climate-based challenges have caused industries — including oil and gas, events, and manufacturing — to turn to

full-service rental solutions, as opposed to purchasing and maintaining the equipment themselves. This is on top of the need for temporary equipment to support outages, maintenance, equipment reconditioning and business expansion. Holt Industrial Rentals offers turnkey solutions centered around industrial power (power generators, distribution, load banks, etc.), climate (chillers, air conditioners, heaters, etc.), and air (compressors, desiccant dryers, etc.) — often combining multiple elements for one holistic answer to customers' challenges. In addition to the larger scale of operations and increased speed of business, companies are also feeling the strain of increased inclement weather such as freezes, heat waves and natural disasters that can bring business to a halt. Visit holtindustrialrentals.com.

► Curry Supply Hires Tim Henry as Director of Continuous Improvement, Quality & Customer Service



Tim Henry

Curry Supply Co. has announced new hire Tim Henry as director of continuous improvement, quality and customer service. In this role, Henry will be responsible for innovation and continuous improvement initiatives across multi-jurisdictions. He will play a crucial part in helping to foster a culture of sustainable change by creating and embedding lean methodology and creating a framework for business transformation to improve the company. Henry holds a bachelor's degree in economics from Indiana University of Pennsylvania and a master's degree in national defense and strategic studies from the Naval War College. He is a certified project management professional (PMP) and a Six Sigma Green Belt (SSGB). A family-owned company since 1932, Curry Supply has grown to be one of America's largest manufacturers of commercial service vehicles. With locations in Pennsylvania, Texas and Arizona, the company is equipped to

provide custom and work-ready trucks for the agriculture, construction, mining, oil and gas, rail, rental and waste industries. Visit currysupply.com.

► John Schiedeck Wins North American Regional Global Operator Challenge

Machine operator John Schiedeck won the North American Regional Finals of the Global Operator Challenge. The North American Regionals were the third round of the Caterpillar 2022-2023 Global Operator Challenge. He will represent Holt Cat in the Global Operator Challenge Finals at North America's largest construction trade show, CONEXPO-CON/AGG 2023 in Las Vegas, where Caterpillar will crown one operator world champion. The competition will bring together machine operators worldwide to showcase their agility, speed and accuracy in a series of skills-based tests. The challenges involve the operation of multiple machines with tests such as loading precise amounts of dirt, hauling and maneuvering through obstacles. Through events such as the Global Operator Challenge, Holt Cat aims to highlight the operator profession and showcase the advanced skills needed to operate the machinery. Visit cat.com/operatorchallenge.

► Bobcat Company Celebrates Completion of \$70M Manufacturing Facility Expansion

Bobcat Company celebrated the completion of its Statesville, North Carolina, manufacturing facility expansion with a ceremonial ribbon cutting attended by company leaders, employees and community members. The \$70 million investment makes the location the company's largest manufacturing facility in North America. The 600,000-square-foot expansion increased the footprint to more than 1 million square feet on a more than 150-acre campus. Thanks to this expansion, up to 250 jobs will be added in the next five years. Since the start of this

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year, more than one-third of these new positions have already been filled, increasing Statesville's current team to nearly 600. The expansion adds space for manufacturing and warehousing; research and development; an automated paint line; parts control and storage; shipping and receiving docks; open air space for product testing and quality control; additional parking; shipping and delivery entrance; and finished goods inventory storage. The manufacturing space includes new technology to improve production efficiencies and streamline operations across Bobcat's North American locations. Visit bobcat.com.

► **LeChase Hires Abe Germano as Project Manager**



Abe Germano

LeChase Construction Services, LLC added Abe Germano as a project manager in the New York Metro office. In this role, Germano will manage, develop, maintain and oversee all functions of assigned projects in the preconstruction, construction and post-construction phases. Those functions include but are not limited to safety, construction planning and cost-control procedures. Germano has over 20 years of construction experience. Prior to joining LeChase, he held various roles in the construction industry including carpenter, estimator and project manager on many multimillion-dollar projects. Germano holds an associate of science degree in engineering from Full Sail University, and currently resides in Poughkeepsie. Established in 1944, LeChase prides itself on offering the capabilities of a large firm while maintaining the personalized service of a small firm. The company provides general construction and construction management services in a wide range of industries and on projects of all sizes. With a dedicated team of talented professionals, the firm has earned a reputation for quality, safety and integrity. In addition to serving

customers from its operations across the East Coast, LeChase can provide resources to meet the unique needs of clients no matter where they are located. Visit leCHASE.com.

► **Justin T. Cook Joins Principle Construction as Project Estimator**



Justin T. Cook

Principle Construction Corp. announced that Justin T. Cook has joined its team as a project estimator. Cook brings nearly 20 years of experience working in the concrete industry, as well as with general contractors, to his new role. Cook will be responsible for estimating project costs, developing proposals and communicating project scope to Principle and its clients. Before joining Principle, Cook worked as an estimator at Wells Concrete, Inc. in Waukesha, Wisconsin, where he worked on reading blueprints, developing takeoffs, issuing change orders and interacting with project managers, architects and engineers on parking decks, warehouses, multifamily housing, schools and churches. Cook holds a bachelor's degree in construction management from Illinois State University. Principle Construction Corp. is a design/build general contracting firm that has been serving the Chicago metro, southern Wisconsin and northwest Indiana industrial markets since 1999. Principle specializes in the design and construction of manufacturing, warehouse and distribution, medical, office, laboratory and food processing facilities. Visit pccdb.com.

► **Wirtgen Group Partners With BuildWitt**

Wirtgen Group joins BuildWitt to help solve the workforce issues the construction industry is facing. With a dwindling recruiting pool, companies can't keep crews fully staffed to meet demands, and the problem is only growing with time. The two companies will combine their resources to bring awareness to the issue and help

companies access solutions to meet their specific needs. Wirtgen is a firm believer in training the next generation to ensure a strong workforce for years to come. Wirtgen Group provides equipment for every phase of the road construction cycle, from mining and milling, to paving, compaction and rehabilitation. Since 2018, BuildWitt has been addressing common workforce problems by providing media and marketing services to companies in the "dirt world" (i.e., infrastructure, earthmoving, utilities, site work, demolition, mining, materials, heavy equipment dealers and supporting vendors). The company's next step is establishing partnerships with other organizations driven by the same mission. The company will strategize with each new partnership to address one or more of the specific root causes of the workforce shortage. Visit buildwitt.com.

► **Big-D Construction Joins Forces With Colorado-Based CFC Construction**

Big-D Construction, headquartered in Salt Lake City, Utah, has acquired CFC Construction. Based in Golden, Colorado, CFC Construction has served the state for 45 years. Under new ownership, the company will continue to be locally managed and operate under the same name. Chairman and Founder EJ Olbright will continue in his role with CFC, along with CFC President Pat Smith. CFC Construction has left its footprint through hundreds of projects, including office, resort, hospitality and multifamily. This transaction will allow CFC to better serve its clients by enabling the company to take on larger, more complex projects in Colorado while increasing its bonding capacity and resources. Big-D Companies is one of the largest groups of contractors in the United States. Visit big-d.com and cfcc.com.

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Pay & Performance Incentives That Work

Building compensation plans to increase employee success & satisfaction



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.

Many construction companies offer some form of bonus plan, but few feature a results-based incentive program. Some owners use bonus plans based on longevity, arbitrary factors, gut feelings or percentage of pay — but these are ineffective. And other owners just don't know what to do to keep their employees happy or reward those who contributed to the overall company success.

Higher Pay for Higher Value

Higher pay increases for employees without any additional improvement above their current workload, training, responsibilities or performance is not earned and should not be considered. Major pay raises must be based on improvement and merit. Each position must have a clear skill, responsibility and training requirement for additional merit pay increases. Employees who accept more responsibility, improve their leadership, learn more skills and perform more than their current job responsibilities deserve merit pay increases. These increased employee performance levels and activities should also improve the company's profits.

Effective Incentive Compensation Must Be Earned by Results

Consider these three basic types of employee recognition, bonus and incentive compensation programs:

1. *Thank-you gifts* — Provided based on nonmeasurable or other arbitrary factors
2. *Earned incentive compensation* — Earned by producing measurable results
3. *Company profit-sharing* — Earned by overall company performance

Bonus Gifts Don't Work

The incentive program you choose for your company is dependent on your goals. Do you want employees to like you, or do you want them to achieve and improve expected results? Most business owners feel they must provide gift bonus checks at year-end. But without a clearly defined and measurable incentive compensation program, bonus checks won't motivate employees to work harder. Profit-sharing tied to performance gets everyone in your company focused on hitting targets you want to achieve.

Incentive compensation must be based on measurable results beyond what's expected or normal. Employees who participate in the plans will want to work as a team toward improving results, finishing projects faster, eliminating call-backs and achieving common team goals. Plus, they'll generate more profit which can be shared with the incentive plan participants. For example, a concrete contractor client started their incentive plan based on sharing the savings created

by beating crew labor hours on projects. The foreman stopped asking for more workers, reduced rework, got change orders approved prior to doing any extra work and eliminated overtime on his jobs. As a result, project labor hours improved more than 10%, creating additional profit to split between the foreman, crew workers and company. Even better, crew members stopped looking for employment elsewhere, developed strong camaraderie and eliminated turnover.

Aim at Nothing & Hit It Every Time

Most owners don't want to share financial results with employees. They also don't want to set up an incentive plan based on individual or project results just in case the company doesn't get paid in full or loses money. A winning incentive compensation program requires sharing some or all of your numbers with the team to achieve specific results. The key is to keep your incentive plan simple. Consider the following examples.

Self-Performed Crew Labor Incentives

- Many self-performing contractors reward foremen and crews based on hitting their manpower budget. The foreman reviews the bid estimate for labor hours and agrees to bring the project in at a targeted number of man-hours.
- This PIP requires the company to share estimated hours budgeted to complete the self-performed work activities on every project with the crew foreman or supervisor.
- The key to making these field incentive programs work is to meet with your superintendent and foreman every week for an in-depth review of the job and crew hours expended by work task versus the project goal or target as the job progresses. Consider these options:
 1. *On-budget completion* — Upon

- project completion, share 2.5% of the total crew hours with the foreman and crew when jobs are completed on budget and without accidents. You may also include other project players, including the project manager, general superintendent, general foreman, job superintendent, estimator and project administrator in this type of plan.
2. *Under-budget completion* — Share 20% of the total crew hours saved with the foreman, crew and other players when jobs are completed under budget and without accidents.
3. *Project player share* — This could look like 40% foreman, 40% crew, 5% project manager, 5% superintendent, 2.5% estimator and 2.5% project administrator.

General Contractor Incentives

- *On-budget and on-time completion* — Share 2.5% of the general contractor fee (overhead and profit) with the project manager and job superintendent when jobs are completed on budget, on time and safely.
- *Under-budget and on-time completion* — Share 20% of the additional general contractor fee (overhead and profit) with the project manager and job superintendent when jobs are completed under budget, ahead of schedule and safely.

Companywide Profit-Sharing Plans

- Many companies are moving toward “open book management” where every employee sees and understands the company financial results and participates in overall company profits. Some companies only include upper management in this form of profit-sharing and financial disclosure.

- *Minimum net profit goal* — Share a percentage of company net profit earned yearly after the company achieves a minimum net profit goal. This plan requires the owner to open their books with all plan participants. Typical profit-sharing pools start at 10% of the pretax net profit earned.
- *Net profit exceeds goals* — When the company net profit exceeds the annual net profit goal, the profit-sharing pool can be increased to 20% or more of the additional net profit earned above the minimum net profit goal.
- Do a trial run to make sure there will be enough incentive compensation to share and make a difference to all employees. The incentive compensation earned goal should be 10% minimum to every employee to make it meaningful. For example, an employee who makes \$75,000 should be able to earn an additional 10%, or \$7,500, if the company hits the overall profit goal.
- Include all employees who have more than one year of employment, based on their individual salary percentage of all salaries combined.

As your company grows, it will need to reinvest most of the profits back into the company. This allows for expansion, increases bonding capacity, and reinvestment into people, training, tools, equipment, and technology. Be careful when setting up incentive and profit-sharing programs to leave enough profit in your company to allow for taxes and steady growth. Installing and maintaining a winning pay and effective incentive compensation program can be the key to improving your bottom line. Consider all the pros and cons before embarking on a program in which you give out cash gifts which don't improve your company profits, revenue, employee development, customer satisfaction, safety, quality and teamwork. ▲

7 Things Strategy Is Not

Understanding the misconceptions & how to fine-tune your focus



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With so much uncertainty in the construction community and world at large, firms are turning inward to ensure they have adequately prepared their businesses.

Most construction organizations get an A-plus for being builders and solving construction problems, but when it comes to thinking 12, 24 or 48 months out, “Who knows what’s going to happen next week?” often permeates the minds of leaders.

Everyone understands the need to think ahead; but because the future has an element of murkiness and uncertainty, many opt to focus on the near term and hover around things that they can control.

Strategic thinking is more important now than ever amid the specter of economic uncertainty and tumult.

There are no guarantees, but preparation and scenario planning help ensure business continuity when encountering speed bumps.

For instance, no one could have predicted the pandemic and the myriad aftershocks it applied to the economy.

However, businesses that had a clear vision for their organizations, actively worked on their strategy while working on projects, and maintained a level of agility to allow for pivots and deviations successfully navigated the hazard.

So, with a renewed fervor for creating a dynamic strategic plan, it is important to recognize what strategy is not.

1. A Forecast

Forecasts are important elements of any strategic planning process. In fact, data-driven strategy will prove more fruitful than gut decisions. However, simply gathering market data such as construction spend is just that — data.

Does your organization use the data to make the organization smarter and wiser? What actions come of the interpretation of the data?

For instance, if the market is forecasting a 15% year-over-year growth in distribution spending, what strategic response is the firm taking? Consider the corollary argument (i.e., construction spending is deteriorating in a geography) — what is the firm’s action plan?

2. A Retreat

Everyone has been called to some posh resort to talk about goals and challenges. Throw in the occasional trust fall, and the retreat is viewed as a success.

Sarcasm aside, retreats are important to company health and provide a safe collaborative space. In some cases, these retreats are the one time a year where company health is discussed — most of the year is solely focused on project health. Strategic planning should not be limited to a short span of one or two days crammed in a hotel board room. Strategic planning can begin there, but it must continue long after the team returns home.

3. A Poster

If strategic planning were limited to bold posters and flashy marketing slogans, many firms would win a blue ribbon. Look, you want to have a vision and mission statement that resonates with the team, and if blasting them on posters, websites and billboards gets the job done, it will be worth it. But ask the team to recite the vision, mission, core values and purpose. If you simply get a blank stare, the poster is just a poster. True adoption of the ideals come through actions and a deep commitment to making them come alive.

4. A Business Plan

Annually, firms create a business plan to articulate what they will chase,

where they will play and how they will ultimately win. Some use forecasts to provide insight on the short term — the operative words are “short term.” Business plans are just as important as a strategic

plan. Think of a business plan as a series of gates the firm goes through to achieve the longer-range vision. In fact, there should be some connective tissue between the two plans.

A vibrant, cartoonish illustration of a small business owner, a man in a brown jacket and yellow hard hat, holding a rolled-up blueprint. He stands in a desert landscape where his house is under construction. The house is a two-story green building with solar panels on the roof. Various construction elements like hammers, saws, and nails are depicted as large, colorful objects floating in the air. In the background, there are mountains and a blue pickup truck. The text "KEEP LIVING THE SMALL BUSINESS DREAM." is written in large, bold letters across the top. The Progressive Commercial logo is in the bottom left corner. A text box in the bottom right corner provides information about insurance coverage.

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5. A To-Do List With No Action

Strategic planning creates lists of things to do. Hopefully, the plan is compartmentalized — operations, business development, talent development, etc.

At some point the plan needs to become a project for internal champions to not only work on, but use. For instance, a firm can say they need to develop talent and create a training curriculum for their team. This is where the rubber meets the road, and there needs to be action to articulate when the first training program will be. It is important for leaders to avoid analysis paralysis and launch, otherwise the firm will simply end up with a list to create more lists.

6. Action With No Goals

Action is imperative but it must also tie everything together and be measurable. Chasing a market sector or customer may

be the right strategic initiatives, but how do you know if your approach is working? Consider the following questions: What is our market penetration? What is our profitability in that new sector? What is our approval rating with that customer? Put another way, are we winning? Everyone loves to check off items on their action plan, but is the firm moving in the right direction or simply a body in motion, expending energy with little to no return?

7. Patient

The world is impatient. We want instant gratification. We finally make the decision to enter a new market, employ a new series of tactical improvements, etc., and we want to see that it works. We apply the right metrics or key performance indicators. Waiting and watching the grass grow is tedious and, for many executives, painful. There is a

fine line between holding the course on a failing strategy and being patient as the seeds of progress grow. Incremental successes need to be employed to show the timeline for strategic implementation was correct — and to also ensure the champions and teams remain motivated. Watching the pot boil doesn't do anyone any good: If the burner is on and you know the temperature is rising, be patient. You'll have your pasta soon enough.

Strategic planning is something all businesses must engage in. It requires real data on the company, clients, markets, vendors, etc. to make fact based long-term decisions. It requires commitment to the long game and persistence to work through those speed bumps that pop up. Lastly, it requires real action to support the decisions made and be flexible enough to pivot in the face of adversity. ▲



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How Marital Strain & Divorce Impact Workplace Safety & Performance

4 steps to implement an employee support system

BY PILAR PRINZ, ADAM P. HANDFINGER & RICKY ROBINSON

Distracted, stressed and anxious construction workers pose significant risks to safety, productivity and quality. Marital strain, separation and divorce, along with the corresponding consequences, cause extreme stress and may not be readily apparent or noticed by managers. Divorce is considered the second most stressful life event (second only to death of a spouse) and those going through it can feel a whole range of emotions, from fear and anger to relief and guilt. Employees going through these stressful life events pose a significant risk, especially in dangerous industries like construction.

Out of 25 industries surveyed by Monster (monster.com), the construction industry had the 12th highest divorce rate (36.5%), with the office and administrative support industry topping the list (40.6%). According to Zippia (zippia.com), conveyor, dredge and hoist/winch operators have the highest divorce rates.

While the statistics may conflict, one thing is for sure: The last thing you need is a stressed and distracted operator of heavy equipment. The good news is that employers can put a support system in place to help individuals and the business

thrive — even through stressful life events.

What Marriage Strain & Divorce Look Like in the Workplace

Far too many relationships at home are strained. A survey of 3,000 indicates that six out of 10 people are unhappy in their relationships, and four out of 10 have thought about leaving. We know people are struggling as a result of the pandemic, financial uncertainty and social and global unrest. And as the line between home and work life continues to blur, these issues are having an even more profound effect on couples.

It's no surprise that the effects of our home lives play out in our work lives. In fact, 71% of Americans agree that problems at home have a negative impact on their jobs, leaving them more distracted, less productive and less able to control their emotions. Despite this tangible impact, the majority of workers don't tell their employers what's happening.

Impact in Construction

Construction is an industry where small mistakes become big problems. A minor mistake (i.e., missed scope on a bid)

can turn a project from profitable to a loss, and, if significant enough, sink a contractor's business. More significant errors can cause costly and potentially dangerous construction defects or catastrophic jobsite injuries.

A contractor making 5% to 10% on a project to cover overhead and profit does not have much wiggle room for error. The successful contractors don't assign risk to achieve great reward, but mitigate risk to maintain steady reward. Whether it be risk of injury at the jobsite, financial risk or legal risk, successful contractors have many protocols and procedures in place to address these risks. However, no matter how perfect the process and how contractually protected a contractor may be, there's always a human with emotion driving the process.

Human performance plays a vital role in construction. Architects intricately design each space, estimators get down into the details calculating project costs, project executives squeeze margins by aggressively negotiating contracts, project managers lead teams to timely delivery, crane operators swing precast concrete joists hundreds of feet in the air and foremen — harnessed to the side of buildings — guide those joists into position. It's a miraculous process that, at all levels, requires intense focus on the task at hand. That is why understanding your employees is key to mitigating the greatest variable in construction: human risk.

An employee suffering through a divorce and feeling emotions such as depression, fear, anger and guilt, may not be focusing at work. Divorce's impact on an employee's psyche can be significant. Even the smartest, most focused employees may be subject to the emotional toll of divorce. The real-world implications of this emotional toll are all too real to be ignored — especially in the construction industry.



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What Businesses Can Do

While more and more businesses are investing in employee wellness, too little is being done to help employees build better relationships at home — or to support them when those relationships suffer. It might feel too personal (“I don’t want to get involved in my employee’s home life.”), but we can no longer act as if home and work life exist separately from each other.

Offering support to workers has many benefits. It can:

- Mitigate productivity losses by helping employees retain attention and reduce workplace errors.
- Increase the safety of the entire team by reducing distraction and stress.
- Reduce absenteeism caused by increased illness, childcare issues and time spent dealing with divorce.
- Demonstrate an innovative commitment to employee wellbeing.
- Reduce feelings of isolation and create a culture of inclusion.

If you want to adopt a support system but aren’t sure where to start, here are

four steps that can be taken:

1. Be aware of signs that an employee may be going through marriage strain or divorce: arriving late, leaving early, childcare issues, changes in appearance (divorce stress can lead to both sudden weight loss or gain), distancing from coworkers, shifting emotions.
2. If possible, offer a temporary or permanent change to or flexibility in schedule. As an example, an employee who is juggling work and co-parenting might find it easier to leave work early on Wednesdays but can make up the time on Thursdays. Ask what limitations or restrictions are making it more difficult to perform their functions, and what schedule shifts might offer improvement.
3. Divorce impacts nearly every facet of a person’s life, from health to family to finances to sense of community and belonging. Resources that help guide an individual through the process, including what to expect and letting them know they are not alone, improve their experience and reduce the overall

impact. Consider rounding out your benefits program with solutions that directly support employees in this area.

4. Often when someone is going through divorce, the first (and sometimes only) person they tell at work is their direct supervisor or a close coworker. Bridging the gap between the home office and the field is key. Regular communications by and between executives, project managers and superintendents can help identify a worker who may need support. Make sure the availability of company resources is communicated to everyone so they can be utilized by those in need.

Marriage issues are personal, and many people don’t feel comfortable sharing the news at work. By providing available outlets where employees can receive support in a private manner, they are more likely to open up with those around them. Knowing that a company has a support system in place can help an employee better transition through this difficult event. ▲

Pilar Prinz is a family lawyer, certified relationship coach, and co-founder of Forwardly, a comprehensive employer benefits solution that supports employees going through marriage challenges and divorce. Named one of the “Best Lawyers in America,” Prinz has appeared as a guest expert on CNN, Fox News and other national programs.

Adam P. Handfinger is a board certified construction lawyer and co-managing partner of Peckar & Abramson’s Miami office, representing contractors through all phases of a construction project. Handfinger teaches construction management at Nova Southeastern University’s Master of Science in Real Estate Development program. He is ranked by Chambers and is recognized by The Legal 500, Best Lawyers, and Super Lawyers. Handfinger was also recently named the 2023 “Lawyer of the Year” for Construction Law in Miami by Best Lawyers.

Ricky Robinson, an experienced construction professional, J.D. candidate at Florida International University, and law clerk in Peckar & Abramson’s Miami office assisted with this article. Visit pecklaw.com.



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10 Often-Overlooked Legal Lessons

The regulations you should know to protect your business

BY SCOTT CESSAR

Construction business owners juggle heavy responsibilities. In addition to managing a business, owners need to be cognizant of the legal issues that impact their respective areas of the industry. This knowledge can protect a company and help to ensure projects run smoothly and successfully. Consider the following 10 legal reminders that construction professionals are sometimes unaware of or fail to consider.

1. Claim Waivers

Owners: Specify in the general conditions that general contractors will be required to sign claim waivers for every pay application and change order. For general contractors, be sure to include the same obligations in the terms required

of your subcontractors and suppliers. For general contractors, subcontractors and suppliers, do not sign these waivers if you have claims. Do not hesitate to include on the waiver form all reserved claims. And, in appropriate circumstances, reserve rights for impacts and delays that may arise from events that occurred precedent of the pay period or that arose from, or that could arise from, the subject of the change order. All company controllers, billing clerks and project personnel involved in the payment process should be schooled on this subject.

2. Pay-If-Paid & Pay-When-Paid Clauses

These clauses are not as absolute as they

used to be. In many states, pay-when-paid clauses may not mean forever, as courts have construed such clauses to impose a reasonable time for payment. There is also legal authority which holds that such clauses may not be enforceable under the prevention doctrine if the general contractor's conduct, be it deliberate or inadvertent, caused the owner not to pay the general contractor. In such circumstances, the subcontractor or supplier may be able to overcome these clauses and obtain payment.

3. Performance Bonds & Extended Warranties

Many construction contract warranties for discreet items, like roofing and mechanical systems, extend well beyond the standard one-year period from substantial completion. What if the supplier of these items goes out of business or fails to respond? Can the owner claim under the performance bond? The answer is that it depends on the language of the bond and whether it incorporates the terms of the general contract, including the supplier warranties. Owners faced with a supplier who cannot or will not perform should review the contract, the bond and the warranty to determine if there may be surety liability.

4. Miller Act Claims on Payment Bonds

The Miller Act applies to all federally



The graphic features a large, stylized clock face in the center. Several business professionals are depicted interacting with the clock: one person is climbing the left side, another is at the bottom, and a third is on the right. The background consists of vertical blue bars of varying heights, some with white arrows pointing upwards. A dark blue circle in the top right corner contains the text 'CONSTRUCTION BUSINESS OWNER webinar'.

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funded projects and governs payment bond claims. There is a growing body of law under the Miller Act that precludes sureties from defending subcontractor payment bond claims based on the defenses available to its principal, the general contractor. This is a potent weapon for subcontractors. Some states have what are known as “Little Miller Acts,” which are comparable to the federal Miller Act, and under which the same argument may be tenable.

5. Performance Bond Claims

Owners should read the terms of the performance bond carefully and follow them to the letter, even if it delays a response from the surety. Many performance bonds require a meeting between the surety, contractor and owner. This is a required step and should be requested, notwithstanding that the surety will likely not undertake any affirmative action under most performance bonds, unless and until there is a termination of the contractor's employment. Owners should take care not to terminate the contract but to terminate the employment of the contractor as the contractor under the construction contract.

6. Indemnity Clauses

These should be carefully read and, if need be, negotiated. General contractors and subcontractors should take care not to agree to indemnify a party against that other party's own negligence. General contractors and subcontractors should consult with their insurance brokers on indemnity clauses, because sometimes their insurance will not cover one-sided contractual indemnity obligations. If the value of the job warrants agreeing to such a one-sided indemnity clause, there may be a project specific insurance rider to be purchased for an additional premium. Also, the indemnity term may be unenforceable based on what are

known as “anti-indemnity” statutes that some states have enacted to prevent such risk shifting. It pays to check state law where the project is located.

7. Change Orders

Many a valid claim for an extra has failed to follow the terms of the contract by giving notice of a change and advising the owner of the issue, even if the contractor is uncertain of whether it will be compensable or will impact the schedule. Often the contractor will not want to jeopardize the relationship with the owner by giving notice of a claim. The better practice, however, is to provide notice so the owner may adjust the work or the schedule to avoid the extra. It is better to be safe than sorry. And if the contractor is uncertain as to whether there will be an impact and they are not sure of the magnitude, the contractor should inform the owner of these circumstances in the notification.

8. Mediation

Successful mediations require parties factually and legally armed to cogently articulate their positions and a mutual intent to determine if there is a common ground. Parties should carefully vet potential mediators to determine that they have the requisite real-world construction law experience and the ability and willingness to work the parties hard and stick to it even after the mediation session has ended. No party should come to a mediation and announce to the other side that it will not settle for less than some amount or will not pay any more than some amount.

Such an approach may well poison the environment such that the possibility of the mediator working a settlement is greatly impaired, as a party will not want to seem as if it backed down or was weak. Parties should inform the mediator of expected outcomes and let him or her deal with it.

9. Venue Selection Clauses

These should not be taken for granted, as oftentimes they require litigation in locations distant from the project site. There is a reason parties include such clauses in contracts: It discourages the other party from seeking to enforce its rights by making litigation for the other side more expensive and providing the contract-drafting party the perception of having the home-field advantage. Many state law payment acts make these clauses unenforceable; however, some federal courts will not enforce state laws prohibiting venue-shifting clauses that shift venue from the state of the project site.

10. State Law Payment Acts

The law of the state where the project is located should be consulted to determine if such an act is in place in that state. If so, the provisions of these acts should be consulted by the owner, general contractor and subcontractor alike, as they will normally govern over contract terms. If not followed, they may provide for added interest, penalties and the recovery of attorney fees for the prevailing party. ▲

Scott D. Cessar is a member of the board of directors of the law firm of Eckert Seamans Cherin & Mellott. Eckert Seamans is a full-service national law firm with a strong reputation and history of success that spans more than 60 years. With more than 300 lawyers across a network of 15 offices, the company provides clients with proactive, solution-oriented business and litigation counsel. Cessar works to develop creative contract-delivery systems intended to mitigate risk and maximize success, and he advocates for clients in all types of dispute forums, including mediation, arbitration and the courts. His practice focuses on the construction industry and handles all types of construction-related issues on behalf of owners, contractors, equipment suppliers and sureties — ranging from delay, impact, loss of productivity, defective work and differing site conditions to architectural and engineering omissions, bid and procurement challenges and overcharges. Visit eckertseamans.com.





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Defending Company Culture, Reputation & Profits From Workplace Misconduct

Prevent a hostile work environment & protect your workforce

BY ASHLEY SEITZ & CAL BEYER

Construction leaders at all levels must be aware of the rising risks of workplace misconduct. Company principals should be prepared to promptly and effectively investigate all circumstances of misconduct in the workplace. This includes incidents both in the office and on jobsites.

In today's increasingly litigious environment, there can be no ignoring these circumstances. Companies that turn either a blind eye or cold shoulder to these situations face growing risk of punitive actions. The stakes are high, including:

- Damage to company culture where trust can quickly erode and turn into "us versus them" conflict.
- Reputation risk that will hurt the company's efforts in recruiting and retaining top talent and jeopardize relationships with owners, financiers, subcontractors and suppliers.
- Profit loss from legal defense costs during pre-litigation discovery and negotiated settlements or legal judgments, as well as indirect costs associated with lost productivity participating in investigations, depositions, negotiations, arbitrations or trials.

Origins of Liability

The Civil Rights Act of 1964 (Title VII) makes it unlawful to discriminate on the basis of race, color, national origin, sex (including pregnancy, sexual orientation and gender identity) or religion. The Equal Employment Opportunity Commission (EEOC) exists to enforce this federal law which applies to most employers with at least 15 employees in all types of work situations, including

hiring, firing, promotions, harassment, training, wages and benefits.

Not Enough to Prevent Misconduct

Diversity, equity and inclusion (DEI) efforts have a large piece in altering mindset within the workplace. DEI initiatives alone are simply not enough.

A 2021 survey conducted by the Workplace Bullying Institute (WBI) found 39% of respondents (employed Americans) suffer abusive conduct at work, while 73% are aware that bullying happens. Based on the 2020 U.S. Bureau of Labor Statistics estimate on U.S. civilian labor force, that equates to about 48.6 million workers directly bullied.

Women across the nation have raised their voices about unwanted physical contact or biased treatment. In 2018, Engineering News-Record (ENR)



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- How a "risk lens" was able to significantly improve employees' capability to identify and mitigate critical risks
- Which tools you should have as part of your risk management system
- How to better prepare and safeguard your business for 2023

SPEAKER



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spotlighted the #MeToo movement. They conducted a survey of 1,248 people throughout the construction industry.

The survey showed 66% of respondents reported facing gender bias or sexual harassment at the workplace or jobsite. Such experiences leave team members emotionally scarred and could be a major reason construction remains a heavily male-dominated industry.

Construction Is at Risk

There have been a number of high-profile and widely publicized incidents that focused the spotlight and scrutiny on the construction industry. This includes reports of nooses on construction projects across the country. These incidents have also included examples of hazing and bullying, as well as alleged and actual harassments and discrimination — including hostile work environments from pervasive conditions and threatened sexual assaults. Due to the increased social and political attention, reporting misconduct is generally becoming more acceptable. However, nearly 60% of all misconduct that is observed in the workplace is never reported, according to Gartner, Inc. This alarming statistic stems from a fear of retaliation, being ostracized, hoping the issue will “just go away” or simply not knowing whether their company has provided a way to seek unbiased guidance. The reality is:

- The EEOC has increased its enforcement actions against construction companies.
- The EEOC held a summer 2022 hearing in focused on discrimination in the construction industry.
- There's been an increase in employment practices liability insurance claims involving workplace misconduct.
- The average cost for an EEOC enforcement infraction is \$160,000. There have been significantly higher judgments.

- The real risk is reputation risk and punitive damages if those were to be assessed for willful or repeat offenses.

Removing Bias From Investigations

Historically, organizations have looked to department leaders, human resource professionals or internal general counsel to conduct investigations and provide recommended corrective actions.

This may pose a threat of unconscious bias or conflicts of interest impacting decision-making when it comes to Title VII workplace investigations. Employees may feel the system is rigged against them — regardless of how well-written a company policy is, how many avenues are given to employees to lodge complaints or how often a company talks about a culture of accountability.

To promote a culture of exchanging “bystanders” to “upstanders,” it is recommended to have external trusted advisors, as well as providing alternative, third-party avenues to report.

8 Steps to Reduce Risk

1. Adopt zero tolerance for workplace misconduct, including bullying, harassment, discrimination and retaliation.
2. Establish procedures to ensure employment screening, interviewing and hiring practices are nondiscriminatory.
3. Develop clear policies in employee handbooks and/or procedure manuals outlining the expectations and requirements of a respectful workplace culture and specifically prohibiting workplace misconduct.
4. Educate leaders/managers and supervisors on the expectations and requirements for the company's zero tolerance for workplace misconduct and how to respond to alleged workplace misconduct.
5. Train employees on the expectations

for respectful workplace culture. Inform employees steps to take if they are the object of perceived harassment or discrimination by a supervisor, coworker or vendor/supplier.

6. Develop a confidential process for reporting incidents of alleged or actual workplace misconduct, including bullying, harassment, discrimination and retaliation.
7. Conduct a timely, confidential and objective review to investigate the circumstances in any reported incident of alleged or actual workplace misconduct.
8. Maintain documentation of all actions your company has taken to prevent, mitigate and resolve alleged or actual employee misconduct in the workplace.

Enough is enough. Now is the time to eliminate the threat of workplace misconduct. Leaders and organizations alike can no longer fail to acknowledge the detrimental damage workplace misconduct presents. Companies have a greater cultural and fiduciary responsibility to act. To build the next generation of workers, barriers to equal opportunity and safe working conditions must be removed. ▲

Ashley Seitz is a client executive with Holmes Murphy consulting on employee benefits. She specializes in helping contractors across the country support their people by promoting health and reducing hassle, all while controlling cost. Additionally, as a U.S. military reservist, Seitz knows the importance of strong workplace culture on productivity and performance. Contact Seitz at aseitz@holmesmurphy.com or 701-412-7026.



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Protecting Your Brand Identity

Public perception of your company hinges on more than your logo

BY CHRISTINA THRONDSOON



Brand identity is often defined as a logo; companies like Starbucks, Pepsi and Microsoft may come to mind. Yet, brand identity is more correctly defined as how a company is perceived by others. That perception can vary from person to person as well.

While no company can completely control how the public perceives it, it can control the attributed elements such as its logo, colors, fonts, style, tone and imagery.

But brand identity goes well beyond flashy design and also includes your company's culture and service offerings — the things that will keep customers coming back for more.

Why Do I Need a Brand Identity?

Brand identity allows your company to connect with current and prospective customers in an impactful and memorable way.

It provides a visual or “face” for the company, builds trust and credibility, supports your values and mission, promotes your offerings and more. A company's brand identity is powerful.

As you read this article, you may think:

- Does our company have a brand identity?

- Our company is too small/big. This doesn't apply to me.
- I have a marketing department; this is their job.
- We've been in business for a long time. No one cares about my brand identity.
- I don't have time for this.
- My company has a great brand identity; you're not talking to me.

I am talking to you directly, my friend. Let me assure you:

- Your company does have a brand identity.
- Regardless of your size, the need for a brand identity applies to you.
- Development and management of the brand identity is not the sole responsibility of a marketing team, intern or individual.
- Your messaging and branding impacts your targeted audience, community, competitors, partners and team. They care about your brand identity.
- Implementing a branding plan can reduce anxiety and wasted time.

- While your brand identity may be great, this is not a “one and done” effort. It's an ongoing effort that must be planned and cared for.

What Customers Want

As more and more companies compete for your audience's attention, the need to manage your brand identity moves up on the list of priorities and becomes an important differentiator for your own organization.

A successful brand doesn't just happen. It's developed over time by purposeful action and continued maintenance. It's a staple for all companies big and small as the hub of communication, service, relationships, promotional efforts and company strategy.

Brand identity is important to your audience and requires the proper attention to analyze, strategize, plan, execute and measure.

At the end of the day, it's the customer's opinion and needs that are important, because word of mouth will drive traffic to your business.

Here are three things your customers are looking for from your brand:

1. Authenticity

Customers want to do business with honest brands they can connect with and trust. Your messaging should be consistent and transparent and speak to the company's values. According to a Stackla survey, 88% of consumers say authenticity is important when deciding which brands they like.

2. Trust

Product experience is no longer the main driver. Many customers prefer to build reliable, long-lasting relationships. They seek trusted partnerships, brand value and customer experience. A Salsify survey found that 46% of consumers would pay more for brands they trust.

A successful brand doesn't just happen. It's developed over time by purposeful action and continued maintenance. It's a staple for all companies big and small as the hub of communication, service, relationships, promotional efforts and company strategy.

3. Brand Consistency

A consistent brand presence across all channels (e.g., website, email, snail mail, social media, etc.) has a positive impact on consumers' awareness.

Consistent presentation of a brand has been seen to increase revenue by 33%, according to a study by Marq, formerly Lucidpress. The benefits of a defined, consistent brand identity paired with the right strategy and plan are great both internally and externally. This will help guide your team, as well as

create comfort and clarity for consumers, with a consistent, committed message that will result in success. ▲

With over 17 years in the digital industry, Christina Thronson is a seasoned digital marketing strategist focused on bringing businesses and their targeted audiences together to meet goals and maximize their return on investment. Thronson currently serves clients with a variety of online and offline marketing tactics within Moxie, a division of VGM & Associates. Her unique experience and knowledge in new media marketing allow her to focus most of her time on planning and executing campaigns for VGM's largest vendor and member partners. Visit experiencemoxie.com.



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8 Wastes to Eliminate With the Use of Technology

Your game plan for ditching inefficiencies & doubling productivity

BY BILL WAGNER

When it comes to construction, “lean” is a hot topic. It serves as a potential playbook for more operational and jobsite efficiencies — which, for construction companies, is a great way to plan to face challenges on and off the jobsite.

The lean game plan has a key concept for a challenge that affects construction companies everywhere: identifying and aggressively confronting waste. Add technology to the plan, and your company is on its way to becoming an unstoppable force in the construction industry. Before removing waste, you’ll need some tools to sift through it.

3 Lean Tools: What to Use to Sift Through the Waste

1. *Genchi genbutsu* — This lean tool gets people to see the “place where it happens.” The Toyota Production System (TPS), for example, is well known for utilizing this concept in their company to make sure any problems, their causes, roots and relevant facts are taken into consideration and observed. For construction, *genchi genbutsu* is quite simple: Go see it yourself. See the jobsites your company operates on. See your team perform. See where there are openings for any waste.
2. *Kaizen* — This tool brings together your entire team to continue growth, improvement and development. This

concept can find ways to identify and eliminate waste while facilitating teamwork across roles and teams. Having collaboration across the organization opens your company up to more solutions, creativity and innovation when removing waste.

3. *Poka-yoke* — This lean tool refers to mistake proofing — making sure mistakes aren’t allowed to happen on and off your jobsites in the first place. Examples are everywhere in construction, from lock out/tag out to clutches on cordless drills. If there is room for error, then your company can take the necessary and informed steps to eliminate that risk.

Adopting these three tools doesn’t require a full-blown lean transformation — but with those tools in your pocket, you can review how waste affects your company. Your team may already use these tools in your company, whether you know the terms or not. If so, good for you: You’re one step closer to dumping waste. If not, it’s easy to implement these tools at your company.

8 Types of Waste & Tech to Confront Them

The eight types of waste plague construction companies everywhere. Remember how I said small improvements can lead



Small improvements can lead to big changes. The same goes for waste. You may have a little waste here and a little waste there; but before you know it, a little waste can turn into a heaping pile of problems.

to big changes? The same goes for waste. You may have a little waste here and a little waste there, but before you know it, a little waste can turn into a heaping pile of problems.

1. Defects

When you find defects in your work, you waste time and money. Bad estimating takes more time and resources, leading to poor quality. Safety incidents and plan collisions are other defects that put your company at risk. Construction companies do their best to plan to account for as much as possible before the project starts, but we can all do more here. Building information modeling (BIM),

estimating tools, safety reporting, and augmented reality (AR) and virtual reality (VR) are technological solutions to enhance your planning. By using these tools, your team can make data-informed decisions that create plans to avoid defects — not respond to them.

2. Excess/Nonvalue-Added Processing

The construction industry pushes a lot of paper and does a lot of manual-data entries. Some warning signs that this waste is present at your company are poor communication, data duplication and reports that aren't reviewed. What can you do to digitize that information earlier in the workflow? The answer: Make it downstream to use, update and refine to make it easier for your team. Helpful technological tools include enterprise resource planning (ERP) systems, jobsite data vacuums and Power BI. They clean up excess junk, dump it off your jobsites and clean it out of your back office.

3. Overproduction

This is not a common type of waste in construction since the type of work we do naturally limits overproduction, but we can leverage digital tools more to manage supply chains and innovate like manufacturers. Look into your raw materials, tool management and uneven work in progress (WIP) across the job to see if overproduction affects you. While this waste is not

common, technology can reduce or remove it like the other types of waste. Supply chain software, accounts payable (AP) solutions for the field and jobsite data vacuums are good tools to tackle this type of waste.

4. Waiting

Waiting is a silent killer to productivity, especially in an industry with time-sensitive delivery commitments. Waiting includes project delays, missed milestones and difficulties collaborating. Ensuring that you're using modern, digital tools to get your teams coordinating and collaborating is a great way to confront this type of waste. Tech tools like project-management software, digital-collaboration tools and cloud-document-sharing tools get your team on the same page.

5. Inventory

Construction inventory is a way of life for most specialty and general contractors. Having too little inventory often leads to maintaining excess inventory. Be on the lookout for write-downs, too many warehouses for excess inventory and a lack of vendor-managed-inventory (VMI) agreements. Digital tools provide an opportunity to create better supplier relationships that shift more of the inventory-management burden back to your suppliers, where it belongs. Warehouse-management software, ERP systems, AP solutions and vendor scorecards are technological tools to keep better track of your inventory.

6. Transportation

Construction has massively complex transportation requirements. This is one of the reasons the largest and most sophisticated contractors leverage advanced fleet-management tools. Keep an eye out for truck rolls, delivery charges and rush fees that can waste time and money for your company. Use service-management tools, supply chain management tools, ERP systems and short-interval scheduling tools to enhance the transportation of materials and equipment to and from your jobsites and cut back on wasted time and money.

7. Motion

Construction workers are in constant motion, but much of it is not tracked and certainly is not centrally coordinated. Are you



tracking elevator rides, truck rolls, back-office inefficiencies and pushing paper into technology? If the answer is no for any or all of these, your company could have a pile of motion waste building up.

Start tracking the amount of motion that happens on a typical project, and you'll be surprised at the amount of waste. Use cell phones (with features such as step counters/GPS tracking), optical character recognition (OCR) and integrations to track and keep progress moving.

8. Nonutilized Talent

This industry cannot abide nonutilized talent. That further builds waste and crushes your team's potential. Examine your business for trade-level variances and 40-hour-week variances as they can affect your company.

As the labor crunch continues to impact everyone, there's an opportunity to use more digital tools to plan and schedule, as well as source, train and retain your talented team members. If you have a strategic initiative to obtain more talent

for your organization, you should have a digital tools' plan to go along with it. Use labor-productivity software, labor-planning software and human resource information systems (HRIS) to your company's advantage, and give your team the tools they need to shine.

How to Get Moving

Your next step: Bring these concepts and tools into action at your construction company. This is where the game plan comes to life. Start small: Listen, learn and keep track of waste. Once you have a good handle on what has the largest impact on your ability to be efficient, think about copying the playbook of other contractors who successfully leverage modern digital tools to solve these productivity challenges.

With that said, get out of your office, and get to the "gemba: the actual place" where the work happens (like genchi genbutsu). Get your boots dirty and look at your company. What are your business problems, and are they the focus, not

technology solutions? Remember: Always tie your technology back to the problem.

Lastly, hold your vendors accountable. Their actions have an impact on your company's waste. Keep things productive and a part of your playbook. Do that, and your company will have the game plan it needs to be victorious over the eight types of waste. ▲

Bill Wagner is passionate about creating exceptional employee and customer experiences. As Penta's president, Wagner developed a long-term strategy for business growth around Penta's innovative-product portfolio of SaaS solutions. Prior to Penta, Wagner worked for startups, midsize and Fortune Global 500 firms. Wagner generates business growth through the application of cutting-edge best practices for business, science, marketing and economic industries. Wagner holds a bachelor's degree in communications from Marquette University. He is a current member and past president of the American Marketing Association's Milwaukee chapter. His expertise on product management, digital disruption, business strategy and the impact of digital experiences on the customer journey provides audiences with relevant workplace knowledge. Visit penta.com and struxi.com.





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Solving Business Issues With Software

How automation can streamline your workflow

BY SCOTT LEWIS

Being a small business owner is challenging: You must manage the business processes to identify and solve real business growth issues in a fast-paced, high-stress work environment. But if you're honest with yourself, many areas of business must be managed simultaneously, and you likely have limited time and employees to help you manage it all. Directly related to your financial success is the ability to develop and implement work processes that, through automation, can be proactively managed.

These work processes include maintaining and tracking customer service, human resources, resource allocation, litigation protection and billing issues. With service businesses, processes include managing time such as employee time, project time and installation time. Automation reduces the human factor for mistakes and catches the overlooked factors that might affect customer service, costing you time, money and clients.

As part of any software selection process, the human factor must play a part. This could either be the human process within your business or your customers. When it comes to the customer, as a service business, you must understand that customer experience and satisfaction are not the same things; however, they are intimately related. Why is this important? Because how you operate is going to dictate the customer

experience. You have to be in tune with the customers' needs from their perspective. You must know how selecting your software will improve their experience. Otherwise, the business processes are going to frustrate and hamper those needs, creating a negative customer experience.

Making software valuable to customers is done by learning how they need their business to interface with the software, and how their customers interface with the service provider. According to zoovu.com, the following are some key points that you can use to make sure that you are providing the customer experience you want.

Accessibility

As a service business, accessibility is vital. If your customers cannot get in touch with you, or their requests are not being completed promptly, then you are creating barriers for them while they are trying to run and manage their business. This would create friction and show a lack of accessibility.

Navigation

Not only is the human workflow essential, but the software workflow is also critical to the success of the software. The software should be straightforward and walk you through what



fields need input to provide you with the output you expect and need to make data-driven workflow and customer service decisions. If it is difficult, your customers won't want to use it. Furthermore, the missing or incomplete data will create data gaps. Business management software is different from a simple help desk solution. It requires more data to perform trending, business load calculations, productivity measurements and litigation protections through data collection and proof of service. These factors can be complicated for some internal staff to understand; however, it depends on your goals. Do you want to identify underlying issues so proper budgeting can focus on real issues, or do you want to know you had a problem?

Memory

Harvard Business Review named repetition as one of the most frustrating

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Acumatica Construction Edition had everything we were looking for. We are different from a regular construction contractor and liked that we could add our own specialty fields and customize it to the way we do business.

Sean Barnett, Chief Financial Officer
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things customers complain about when it comes to service-based businesses. Having to repeat or redo troubleshooting or conversations to support their requests is a common complaint from customers. Customers expect that information and communication regarding their issues, problems or interactions are to follow them until they are resolved. They don't want to be asked the same questions time and time again.

This is where the human factor interferes with customer service and experience. The data in any system is only as good as the data being input by a human.

Convenience

There are many factors to convenience — internal convenience and customer convenience. Internal convenience is how quickly your employees can move between software sections, how fast the data can be displayed and the overall ease of moving through the system. Externally, the factors don't change much; customers want access to their data, your products and ultimately the ease of use and data retrieval. There are a lot of subcategories of convenience; here are a few:

- *Decision convenience* — How quickly can a customer decide what information they need, or what products they need access to? Consider a generic integrated barcode system to track inventory and assets.
- *Access convenience* — How easy is it to access information within the software, and how robust are its search capabilities? An integrated bar code system can quickly pull up purchase information, warranty information, user information, pictures and specifications.
- *Benefits convenience* — Being able to display and use the core benefits of the software and work processes within the software are parts of the benefits convenience. Examples of works processes include escalation processes, updates, order information, customer information, documents, parts and inventory, human resources, email notifications, billing information, time and attendance.
- *Transaction convenience* — Transaction convenience can mean many things to many different businesses. In the service business, it is typically about tracking time against a contract to ensure that the customer is receiving value and measuring the profitability of your business. Transaction convenience also provides a legal record and tracking of activities. You, as the provider, can then prove what, who, and when you provided the service, parts or other products.
- *Post-benefit convenience* — What happens after the service or project is completed, and how are you handling issues after the initial interaction and service? Polling customers on how they feel about your service is one way to gauge your service.

We have to be in tune with the customers' needs from their perspective. We must know how selecting our software will improve their experience. Otherwise, the business processes are going to frustrate and hamper them, creating a negative customer experience.

Defining a workflow process can be challenging. Identifying a workflow is the documentation of a series of activities or tasks that must be done in a specific order to achieve a business-based outcome.

Suppose you see people using Excel spreadsheets, Google Sheets or some other product unrelated to your company's business management software. In that case, you might discuss the reason they are not using your software for that process. Google Sheets and Excel spreadsheets are what I call disassociated data; it is valuable data, but only to those who possess the data. It can't be used for internal or external trending or business decision making on a global basis.

Also, you will likely have employees recreating the same data and processes because of the gap of knowledge between those who have access to specific data, those who don't, and those who need it. According to [integrify.com](https://www.integrify.com), these are other benefits of automating workflow and process development:

- Streamlining and expediting internal workflow by reducing double or triple entry and data availability
- Tracking request status in real-time
- Trending models, both internally and externally, over a period of time
- Eliminating or combining process redundancies
- Parallel processing of task and data entry
- Enforces corporate work processes and organizational rules
- The ability to alert and manage tasks
- 24/7 access to data and monitoring for escalation requirements, missed tasks or delays in service requests
- Reduce licensing overhead, utilizing one integrated business management software (enterprise resource planning, customer relationship management)
- Reduce entry errors and rework created by the human factor

Developing good, solid workflow and work processes can be critical to your long-term success and customer satisfaction. People like to know what to expect and the issues that might arise from the project or service you are providing. Internally, work processes can help your employees work through the

day-to-day issues, and it refines and improves the overall efficiency of the process the more people use it.

Not having well-defined and enforceable work processes can lead to some of the following issues:

- Customer complaints about the quality of the product or service provided.
- Employees, vendors and subcontractors get frustrated because of unreasonable delays or mistakes.
- Duplicated work, repeated troubleshooting processes, redundant conversations about the same issue or the issue never being resolved.
- Unforeseen cost increases, either in the product or the labor.
- Wasted resources, parts or equipment that were purchased and not used. Also, return and changes in employees.
- Missed deadlines without knowledge or communication.

Over the last two decades, I have been passionate and uncompromising that using data-driven trending models can help you grow your business, avoid human errors, identify real business issues, increase productivity through workflow and work process management, reduce billing mistakes and provide a better customer experience.

Since the software is managing the business process, not the people of the business, it reduces onboarding costs and training costs because the software puts the human into an automated workflow versus the human driving the workflow. ▲

Scott Lewis is the president and CEO of Winning Technologies Group of Companies, including Liberty One Software. Lewis has more than 38 years of experience in the technology industry, managing systems as small as a few users and as large as thousands of users. Lewis is a nationally recognized speaker and author on technology subjects. He has designed thousands of systems and worked with businesses to empower them to use technology to improve work processes, increase productivity and reduce costs. Call 877-379-8279 or visit winningtech.com.



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Can Electric Demolition Robots Make Jobsites Safer?

Behind Brokk's remote demolition equipment & how it's reshaping industry norms

BY MELISSA KHALIL

Demolition is difficult, dirty, dangerous work. It is also necessary work. How can you best keep workers safe in a demolition environment? Remove them from that environment. When the people come out, the robots move in.

Robotic demolition has been soaring in popularity in recent years. Demolition includes razing structures, but a growing demand for demo comes from retrofitting and repurposing existing structures.

That can be done by an operator on a skid steer with an attachment, but dust, fumes, falling debris and other hazards have driven contractors to seek out other options to keep their workers safe — robotic options.

There are also demolition settings where the fumes and oxygen consumption of diesel- and even propane-powered equipment are not allowed due to worker safety. Electric robots answer all these concerns.

Compact Demolition Machines With Big-Machine Performance

While the use of electric robotics for demolition machines has risen recently, this is nothing new to Brokk Inc., whose product line focus is remote demolition equipment.

Lightweight and compact size are key for many of the jobs where Brokk robots are used, including interior demolition. Many models are within floor and elevator load limits, making transport and setup much easier. All models have lift points and can be craned into position, if necessary.

Since demolition robots are purpose-built for the task, their size and weight may not be good indicators of their capability. Jeff Keeling, vice president of sales and marketing at Brokk said, "It would typically take an excavator three times heavier than a Brokk equipment piece to deliver comparable breaker performance and our four smallest models fit through a standard doorway. We aren't adding an attachment to an existing piece of equipment. We are designing purpose-built demolition machines for use in confined spaces."

Demolition robotic machines are remote-controlled by radio and cable with a range of up to 1,000 feet.

The Appeal of Electric Demolition Equipment

Just as electrification is making waves in consumer vehicles and land-moving construction equipment, it continues to affect the future of demolition equipment. Brokk offers diesel models where their use is appropriate, but their innovations specialize

in electric models. Power is supplied by plant or building power, or by generator if sufficient plant power is not available. Brokk's electric models require 480-volt service of 20 to 100 amps, depending on the model. Wire gauge also varies by model and length of run.

This raises a question: why not batteries? "Attachments are huge power consumers," said Keeling, "and today's battery technology limits run time to two or three hours, which is clearly not sufficient."

How is it other electric equipment has longer run times? Other machines have a lower draw, are hybrids or have much larger battery packs. Brokk machines, with their emphasis on high power output from compact equipment designed for use in confined spaces, don't lend themselves to hybrid power or massive, stacked batteries.

In terms of the future of electrification for remote demolition equipment, Keeling said, "We're always monitoring battery development and it's conceivable at some point we'll be able to offer battery-powered models, but battery technology is not at that point yet."

A Full Range of Demolition Attachments

If a company is thinking about investing in a piece of remote-controlled demolition equipment, machine and attachment versatility will be top of mind. Hammers and breakers are the core of Brokk attachments, but they offer a full catalog of tools and attachments specifically designed to provide peak performance from Brokk machines.

Examples include digging buckets, concrete crushers, grapples for soft demolition and material handling, steel shears, concrete scabblers, drilling attachments and splitters.

Brokk also has the capability to design and build custom attachments such as plasma cutters and torch tools.

"[A] Brokk demolition robot is as much a tool carrier as it is anything else."

The versatility of attachments has led to versatility in applications. Besides demolition, Brokk is also active in the nuclear power industry, safety and rescue, "and we even have Brokk equipment in use at the Crazy Horse Memorial in South Dakota."

As a pioneer in the remote demolition industry, Brokk equipment has a wide tilt range for attachments and boasts a three-part arm design. These features improve performance in

See More Robots in Action

Want to dig deeper into the world of robotic demolition? CONEXPO-CON/AGG 2023, takes place March 14-18, 2023, at the Las Vegas Convention Center and will feature **Brokk's electric robots alongside 18 different other exhibitors featuring robotic, smart or remote-controlled solutions for use in construction.** For more details on who's exhibiting and how you can register to attend, visit conexpoconagg.com.

tight spaces but also provide unique angles of attack on faces, floors and even overhead.

Market Conditions for Demolition

The switch to robotics has been a hot topic in the manufacturing industry for decades. "In the early days we'd hear, 'You're trying to take away our jobs,'" said Keeling. "Now we hear, 'Please, help reduce our need for labor.'"

With an ongoing labor shortage, especially a shortage of operators, contractors want to cut their need for hourly workers and shuttle their remaining staff to tasks that provide more return to both the company and the employee.

There's been a huge shift in the workforce recently, with many employees leaving traditional employment. Many that remain are working remotely, either by their choice or that of their employers.

Estimates are that up to 30% of workers will be remote by 2025. Does this open commercial properties for repurposing? "Not yet," said Keeling. "Commercial property owners are taking a wait-and-see approach before reconfiguring their properties."

Mention demolition to members of the general public and they recall media footage, precisely timed detonation or an office tower turned to rubble in just seconds. Demolition work is rapidly morphing into something with more control and finesse, but no less danger.

Electric, robotic demolition machines answer the twin requirements of production and safety as this market continues to evolve. ▲

Melissa Khalil is an employee of CONEXPO-CON/AGG, a construction industry trade show held every three years. The show features the latest equipment, products, services and technologies for the construction industry, as well as industry-leading education. Visit conexpoconagg.com.



Sizing Up Compact Track Loaders for Optimal Performance

Guidance on the ins & outs of today's top options

BY MIKE FITZGERALD

Whether you're a longtime compact track loader (CTL) owner/operator or in the market to enhance your equipment fleet and offerings, there is no question that matching the machine to the job should be a top consideration. It's a first step that will offer increased efficiency and uptime, as well as easy regular maintenance. In addition, CTL attachment options offer versatility that's

hard to match. With all the new CTLs on the market, owners have more choices than ever before. Take the time to evaluate your purchasing decision using the following guidelines.

Features & Benefits

When choosing a CTL, be sure to let the dealer know exactly what the machine will be used for. Do you need something that

fits well in tight spaces, or do you have plenty of room on new construction sites? Are you picking up material and loading it into a truck, requiring extra lift and reach, or are you doing final grading work? These are all important parameters that help a dealer best understand your needs.

Lifting performance is one of the most important factors to consider. Larger track loaders are engineered with a

higher-rated operating capacity, allowing them to handle heavier loads of aggregates and palletized materials, such as brick and blocks or bags of cement sand. If that's what you move on a daily or weekly basis, then rated operating capacity should be one of the top machine specifications being evaluated. When it comes to lift arm design, some manufacturers offer a choice between loaders with a vertical lift path and a radius lift path. A vertical lift path loader provides higher lift capacity and more reach at full lift height.

Because maximum reach is achieved at full lift height, a vertical lift path loader makes it easier to clear high-sided trucks and hoppers and perform jobs that require repeated lifting at taller heights. While a vertical path loader may have a higher initial cost, its utilization and resulting job profitability could be better for your particular operation, and these machines usually command higher resale prices.

A radius lift path loader, on the other hand, raises the load in an arc that provides maximum reach at truck bed height. A radius lift path machine excels at jobs with midrange or lower working heights, like dumping material over a wall, backfilling, loading and unloading flatbed trucks, and leveling or grading.

The length and width of a compact loader's tracks have a direct effect on ground pressure and traction. Narrow tracks provide better traction and maximize ground pressure on hard surfaces or slippery ground. Contractors may consider a wide-track option to lower ground pressure and increase floatation when working in wet, muddy or sandy conditions. It's also important to assess your auxiliary hydraulic flow needs. If a variety of attachment operations make up a significant portion of your work time, it increases your productivity and your overall return to have machines and attachments with good hydraulic capabilities.

Understanding Flow

Prospective buyers today have different auxiliary hydraulic options to choose from:

- Standard flow for normal operating conditions and a wide array of attachment compatibility.
- High-flow systems that offer increased flow at standard pressures or increased flow at higher pressures to enhance attachment performance.

High-flow, high-pressure systems result in greater productivity for attachments designed to work with the increased flows and pressures. Higher pressure adds up to greater hydraulic horsepower and faster, more efficient results in demanding applications. The environment the machine will be working in is another important consideration, including dust and debris in the summer or cold, and snowy conditions in the winter. Pressurized cabs provide the operator excellent protection from the elements while maintaining a comfortable temperature inside the cab.

Best Practices

When it comes to operation and maintenance of a skid steer loader, it's always best to follow the manufacturer's instructions that come with the machine. Match the machine to the job. Utilize smaller machines for tight work areas, and larger machines for those applications requiring more material to be moved or loaded.

If you're using hydraulically powered attachments like a breaker, be sure the auxiliary flow is within the appropriate range for the breaker.

Following the recommended operation and preventive maintenance guidelines will ensure a machine performs efficiently and will hopefully ward off any unscheduled repairs, providing the best return on your investment. Machine performance varies based on who is

operating the equipment. If a foreman or owner notices one person operating more effectively than another, determine the differences and implement those efficiencies when training new operators.

In addition to daily greasing and fluid-level checks along with visual inspection of the machine and attachments, examining undercarriage components is an equally important maintenance item.

Most manufacturers' idlers and rollers are permanently sealed and lubricated; however, they — along with sprockets and tracks — may need to be replaced periodically depending on a machine's use. The occasional track tensioning can be done with a common grease gun, and tracks can be replaced in less than an hour on some machines.

Attachment Versatility

The breadth of attachments enables owners to utilize the CTL in various applications through low initial investment with great return and also provides the option of year-round operation.

If a one-off job opportunity comes along, it's easy to rent an attachment, and in many applications, compact equipment coupled with application matched attachments works as well or better than dedicated machines.

Compact equipment can perform a wide variety of tasks on most jobsites. Owners will realize the best return on their investment and maximize profits when they have the correct machines and attachments to complete the job. ▲

Mike Fitzgerald is a marketing manager with Bobcat Company. With more than 30 years of industry experience, Fitzgerald brings his vast expertise in compact equipment to help customers be as productive as possible on the jobsite. A member of the Society of Automotive Engineers, Fitzgerald holds one European and two U.S. patents. Visit bobcat.com.





Modernizing Your Equipment & Expanding Your Reach

How Atlas Excavating embraced tech to transform operations

BY TROY DAHLIN

For more than 30 years, the team at Atlas Excavating focused on laying pipes. The family-owned company built a solid business, but in doing so, it didn't necessarily grow its offerings or bring in new technology.

A few years ago, the Atlas team recognized the growing opportunities in grading, excavation and site preparation.

However, leadership understood it needed new technology as they charted a forward-thinking course for their West Lafayette, Indiana-based company. GPS-enabled technology opened new avenues for Atlas by allowing them to branch out, explore new business opportunities and innovate their company. The company initially focused

on public sewer work and subdivisions. New technology helped Atlas chart a new direction and transform the company from focusing primarily on laying pipe to seeking out new types of projects while adding work to their portfolio, doubling their team size, triggering a growth boom and allowing them to take on much larger projects. Today, Atlas performs all aspects of site-civil construction and earthwork for industrial, institutional, commercial, and residential sites.

"Technology has transformed our company," said Atlas Chief Operating Officer (COO) Nick Dillon. "We were historically a pipe company. We would have 10 pipe crews and one dirt crew. Now, we have seven dirt crews."

A New Realization

One of the Atlas team's initial concerns was the ability to use and implement new technology.

At first, they didn't fully realize how much GPS could improve their operations. However, after seeing the technology in action — including its accuracy and how easy it was to learn and operate — the team quickly realized the old way was not the path forward.

They researched options and ultimately turned to Leica-powered equipment. By adopting advanced technology, Atlas could recruit younger workers who are more tech savvy.

Even though these new additions didn't have the same experience as veteran

operators at Atlas, the new solutions empowered younger workers to work beyond their experience levels. The result? Atlas drastically reduced training time and allowed workers to hit the jobsite quicker.

After they started using the new equipment, the Atlas team quickly realized their former process wasn't the best way to perform the work. Adding GPS to excavators has minimized how long they need equipment on the jobsite.

The payoff was immediate: Atlas avoided outlaying capital to buy additional equipment. That's because the team could use technology to optimize equipment usage and ensure equipment remained in use and didn't sit idle on the jobsite for extended periods.

Technology Changed the Stakes

The Atlas team initially pursued excavation work to lay pipe on a project.

If they handled the excavation work, they relied on traditional — and more manual — processes.

One of the most significant pain points was setting stakes over and over again. Jobsites often had so many stakes that they were impossible to navigate.

When the Atlas team saw how much faster subcontractors using GPS-enabled technology could handle the same excavation work, they explored their options.

Thanks to a partnership with Westside Tractor, the Atlas team demoed an excavator and immediately saw its benefit. Until they tried out the excavator system, they had to keep a dozer with a system on it tied to the excavator, constantly working the dirt around.

When they put a system on the excavator, the dozer was freed up to operate in locations on the project.

At the end of the day, the team straightened up what the excavator had graded.

The job increased efficiency by freeing up the dozer to grade another part of the project, as the excavator could accurately cut to grade all day long. After seeing the technology in action, they immediately bought two excavator systems.

As the Atlas team rolled out the new equipment, they checked the work to confirm its accuracy.

As Atlas grew more accustomed to the new equipment, the team began to trust and rely on the accuracy of the technology, reducing duplicate staking and field measuring.

"That philosophy is starting to change because when we did dirt jobs, we used to do everything twice," Dillon said. "We're not making the mistakes; we're doing it once and leaving."

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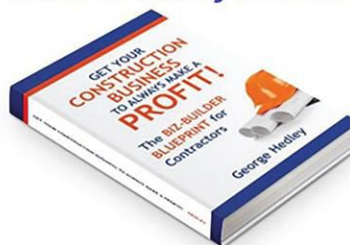
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Before investing in Leica equipment, two or three workers would walk with a string and establish the level, and a grader would follow them.

Now, one team member does it alone, and the string lines and tape measures are left in the toolbox.

"It is right; we can prove that it's right: There is no interpretation from one person to the next," Dillon said. "It's taken the human error out of it."

Real Benefits

Ultimately, the shift propelled the company into a constant year-over-year growth trajectory.

Because of the increased efficiency, Atlas could sometimes cut its grading estimates by more than 50%.

That made the company extremely competitive, driving even more customers their way.

"Ultimately, that's what it's done: made us cheaper, faster, more efficient," Dillon said.

Because of its success, Atlas has slowly added equipment, allowing the company to move into larger markets and projects. As a result, they've experienced a growth boom in recent years, moving from small to multimillion-dollar commercial projects.

"We're doing fewer small commercial sites and subdivisions," Dillon said. "It's allowed us to expand to bigger markets."

As happens in many companies, some tenured Atlas team members initially resisted technology. Their concerns ranged from learning how to use the new technology to what its deployment meant for their jobs.

While the Atlas team quickly learned that technology makes the construction industry more appealing to younger

workers, tenured team members also embraced these new tools, realizing it helped them accomplish more.

Training teams to use new equipment was quick and easy, and veteran workers and newcomers took to using the technology to perform their tasks.

Now, the only thing left to do for the Atlas team is to keep the dirt moving. ▲

Troy Dahlin is vice president, heavy construction segment, US/CAN of Leica Geosystems, part of Hexagon. With more than 200 years of history, Leica Geosystems, part of Hexagon, is the trusted supplier of premium sensors, software and services. Delivering value every day to professionals in surveying, construction, infrastructure, mining, mapping and other geospatial content-dependent industries, Leica Geosystems leads the industry with innovative solutions to empower our autonomous future. Visit leica-geosystems.com.



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The Future Is Now

Examining construction's power alternatives

BY MARCIA DOYLE

At the center of any construction alternative power discussion is diesel. Diesel remains the go-to power on jobsites — according to the Diesel Technology Forum, 98% of construction's energy use in the U.S. comes from diesel.

But with global initiatives underway to reduce carbon emissions to net zero by 2050, it's up to construction industry manufacturers to find ways to lessen diesel's carbon impact. A range of solutions is being considered:

- Replacing the diesel engine altogether
- Reconfiguring the engine to run on lower-carbon fuels
- Making the diesel engine as efficient as possible

All will be necessary.

The challenges are numerous. Unlike some sectors, construction doesn't rely on a core piece of equipment, but rather on a vast fleet that ranges from mini excavators to massive off-highway trucks. A jobsite can be anywhere from midtown Manhattan to rural Wyoming, which is why so many diesel alternatives are being offered — including electric, hydrogen, biodiesel and other biofuels. And, over the next decade or so, one (or more) of these alternatives will establish themselves as having the greatest long-term potential.

"What's coming? The answer is probably all of them," said Jeremy Harsin, construction market director at Cummins,

which specializes in diesel and alternative fuel engines and generators, and related components and technology. "The combination of duty cycle and available infrastructure is going to decide what wins out, but they're probably all going to have their place in the world."

Electric Has Arrived

Zero emissions, low noise, instant response, fewer components to break down, all on a platform that delivers the same breakout force of a diesel-powered unit — electric power sounds like a major win. That's why much of the alternative power activity in construction has centered on electric, particularly in the compact equipment segment.

"Battery power density is increasing all the time, and we're seeing a number of different technologies that make better use of battery energy," said Ray Gallant, vice president of product management and productivity at Volvo Construction Equipment.

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With global initiatives underway to reduce carbon emissions to net zero by 2050, it's up to construction industry manufacturers to find ways to lessen diesel's carbon impact.

"Electric is happening now as machines are starting to be commercially available," says Chris Sleight, managing director at Off-Highway Research, a management consultancy specializing in the research and analysis of international construction and agricultural equipment markets. Although now quite expensive compared to their diesel counterparts, "at some point the economic argument will be there," Sleight added.

Electric options are certainly growing. Volvo, for example, started selling its electric compact excavators and wheel loaders into North America this year and expanded its offering to five machines.

Electric has also made its way to midsize and larger construction equipment. Electric machines, however, have some significant downsides. The ones most critical to contractors are limited run-time-per-charge and recharging time.

Although the electric charging infrastructure is the most developed of all alternative powers in the United States, today's electric car owners still have range anxiety when they get into rural areas. Since many jobsites aren't even on the grid, many original equipment manufacturers (OEMs) are selling chargers with their electric machines. Solar charging is also being examined.

And electric's strong sustainability argument can break down when one gets to the batteries themselves. First, several minerals are extracted to create the batteries, including copper, lithium and nickel.

Second, proper end-of-life battery disposal is still in question, not to mention that battery materials have residual value. Caterpillar, for example, said it is looking at repurposing batteries from high-power applications for a lower-power second life.

Electric machines will also require a reworking of the dealer parts and service offering and technician training. In addition, residual value is central to any equipment cost equation; the verdict is still uncertain whether the value of electric — or indeed any alternative-powered machine — will hold up in the resale market.

The Impending Rise of Hydrogen

Current construction equipment prototypes use hydrogen in two ways: either as a fuel cell that charges a battery-electric machine or to fuel an internal combustion engine. In a hydrogen fuel cell, hydrogen and oxygen react to produce electricity,

with water as its only byproduct. In the second way, hydrogen is used as a direct engine fuel, much like diesel. While hydrogen must be compressed and transported at low temperatures, “it’s a portable fuel so you can get it to where it’s needed,” Sleight said.

But infrastructure challenges are also part of the hydrogen story. The number of hydrogen fueling stations is a hard-to-see sliver on a chart from the U.S. Department of Energy. Almost all of them — approximately 70 — are in California.

Construction equipment powered by hydrogen fuel cells and hydrogen-fueled engines are — at least at this point — in the prototype stage.

Low-Carbon Fuels Can Be Used in the Same Basic Engine

Hydrogen-powered engines also illustrate another way to reduce engine emissions: Modify a conventional engine to be able to burn cleaner fuels. According to proponents, this approach doesn’t require wholesale changes of jobsite practices, machine componentry or fueling infrastructure. This approach offers scale, since the many of the components are similar. And it holds promise for off-highway engines since Cummins commonly adopts cross platform technologies, Harsin said.

Don’t Overlook Diesel

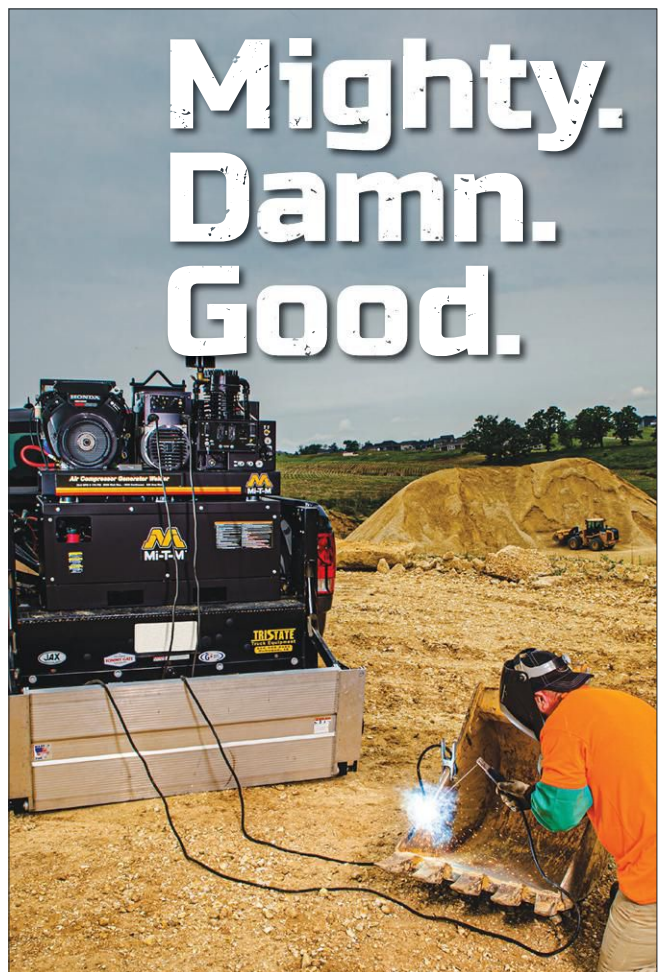
Current prices and world political stability issues aside, diesel remains the construction stalwart.

Despite its “dirty diesel” perception, Cummins says it’s worth a reminder that compared with Tier 1 engines, today’s Tier 4 Final engines offer a 96% reduction of oxides of nitrogen and a 97% reduction in particulate matter.

The U.S. is also likely to see Tier 5 emissions regulations by the end of the decade, Harsin said. California has already discussed enacting a Tier 5 regulation in 2024 with implementation in 2028. Another consideration is the gradual retirement of construction’s aging fleet. Construction machines have a relatively long life; there are plenty of Tier 3 engine-powered machines still plugging away on jobsites. Caterpillar, for example, estimated the average age of its field population to be 11.3 years.

“There’s a lot of good work being done in the diesel space. It’s about lowering our emissions overall. Everything doesn’t have to be zero emission,” said Gallant. ▲

Marcia Doyle is a contributing writer for the Association of Equipment Manufacturers (AEM). AEM is a North America-based international trade group representing off-road equipment manufacturers and suppliers with more than 1,000 companies and more than 200 product lines in the agriculture and construction-related industry sectors worldwide. The equipment manufacturing industry in the United States supports 2.8 million jobs and contributes roughly \$288 billion to the economy every year. Visit aem.org.



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Winter Watch: Rules to Protect Your Jobsite

Cold weather concerns & top takeaways from a Travelers' risk control expert

BY KATHY WELLS

According to the National Oceanic and Atmospheric Administration (NOAA), winter conditions this year are predicted to be drier than average across the South, with wetter-than-average conditions for areas of the Ohio Valley, Great Lakes, northern Rockies and Pacific Northwest. At print time, Jon Gottschalck, chief, Operational Prediction Branch, NOAA's Climate Prediction Center said, "Drought conditions are now present across approximately 59% of the country, but parts of the Western U.S. and southern Great Plains will continue to be the hardest hit this winter." So, what does this mean for weather-related risks

on the jobsite? To find out, Construction Business Owner (CBO) Magazine spoke with Casey Banks (CB), managing risk control consultant, construction, energy and marine risk control, at Travelers, the second-largest writer of U.S. commercial property casualty insurance. Read on for an inside look at cold-weather risks as construction teams prepare for lower temperatures on the job.

CBO: How should construction teams plan to stay healthy while working winter projects?

CB: The best advice I can give is to be prepared. Monitor the weather conditions

throughout the week, and make sure you show up to the jobsite dressed accordingly. If you must be outside, dress in layers. Start with a base of clothing made of moisture-wicking material, such as polypropylene or a similar apparel fabric. Next, add a middle layer with materials that provide insulation and warmth, like polar fleece or wool. Finally, put on an outer layer designed to prevent wind, rain and snow from getting in. Nylon or a lightweight waterproof material for the outer layer is a good option. Air between the layers will provide additional warmth. And don't forget a hat, gloves and insulated boots.

Nutrition can also help combat the effects of cold weather. Your body needs food to burn to maintain your core temperature. Eat a well-balanced diet rich in complex carbohydrates, and rehydrate regularly throughout the day, as dry air in cold conditions can cause dehydration. Avoid smoking, which decreases circulation to the extremities, and stimulants, which can cause blood vessels in your hands and feet to narrow.

CBO: What precautions must employers take to ensure jobsites are safe in winter?

CB: Consider putting a snow-and-ice management plan in place for your projects. Assign tasks, such as snow removal in walkways, to team members and include backup members so everyone knows how they can help during inclement weather. Think about where you are working, the type of access to the jobsite and the availability of parking during a storm. For example, if workers are parking in a designated lot, is there a plan for clearing the snow or do you need to identify a backup location for everyone in the event of snow accumulation? It's also important to identify areas within the site that are protected from the elements and heated so workers can take periodic breaks throughout the day.

CBO: How should contractors take special care of their vehicles and heavy equipment in the cold?

CB: If you're using any heavy equipment outdoors, work with the vendor or manufacturer to understand safe use, storage and maintenance during winter months and to uncover potential ancillary risks. For example, if a vehicle or piece of equipment needs to be plugged in, can this be done without creating a hazard to an employee, plow or snowblower?

As part of the snow management plan, you will want to make sure that equipment operators are aware of any ground hazards, such as electrical conduits, hydrants or anchor bolts, which may not be visible due to snow or ice buildup. It's also important to review how to safely access equipment and vehicles during colder months to avoid slip-and-fall injuries from ice buildup.

Providing workers with education and training on winter-weather driving best practices both on and off jobsites can help them travel safely to work and return home at the end of the day.

CBO: How can foremen, project managers and fleet managers keep a project on schedule through winter weather events?

CB: Understanding the phases of construction, material installation and potential winter weather effects is critical for project management staff who work in regions with colder weather.

For example, do cold temperatures stop materials from properly curing? Can specific materials be installed in lower temperatures? Since weather can affect timing, keep it in mind when building a schedule or committing to someone else's. You can also consider using a winter-weather preparedness checklist, which helps ensure that you have the appropriate resources needed to safely construct the project during inclement weather.

Communication between the project management team, foremen and superintendents is also critical so that any changes to the schedule, site access or resources are known well before the workers show up on-site.

With the increase of newer construction methods like modular and prefabricated construction, the tradespeople may be able to perform their work off-site more efficiently and safely and thus decrease the amount of time and workers it takes to perform installation work in the elements.

CBO: What are the most common complications from cold weather on a construction project?

CB: From a health and safety standpoint, there is the potential for frostbite and hypothermia while working outdoors during winter months. Early recognition of symptoms and knowledge of the treatments can be critical to preventing potential serious health issues.

Some other complications might include snow and ice buildup around the exterior of the site and in areas of the

project that are exposed to the elements, such as roofs and open-air structures.

Have a plan to remove snow in areas where workers have access, and treat the walking surfaces with a sand or salt mixture to mitigate slip-and-fall hazards. This could include designating team members or contractors for snow removal, the sanding of walkways and other similar duties. Plan ahead so that you are not scrambling to coordinate cleanup the morning after a storm.

It's also important for contractors to think about access to temporary heat, which may require installation by a licensed tradesperson, well in advance of winter weather. Preventing fire hazards is a key consideration when planning for temporary heat sources.

Finally, frozen pipes are also a concern wherever there is active water in the building. Like fire losses, water intrusion can cause catastrophic damage if not caught in time.

That's why it's critical to have a site-protection plan in place that identifies areas that are not weathertight or that may have active water pipes without temporary or permanent heating systems in place.

CBO: Is there anything you'd like to add?

CB: Winter weather comes every year to many regions throughout the U.S., including the Northeast. The more we plan for it, the more prepared our projects will be to manage the changing conditions. The technology available to us — and thus our ability to anticipate inclement weather in advance — has improved over the years. So having a system in place to understand the effect on your projects, plus how to protect people and property, is a critical part of your weather preparedness plan. ▲

Kathy Wells is editor of Construction Business Owner Magazine & Digital Media.

Perfecting the Project Review Process From Start to Finish

Inside the advantages of using construction management software

BY TRACI VANDALSEM

Contractors can't afford slowdowns or inefficiencies during a project. Construction management (CM) software allows for constant communication, documentation and collaboration, ensuring the project stays on track and on budget. CM software assists the general contractor in all aspects of project review, minimizing risk by creating built-in workflows to ensure no details are missed — all without typical administrative oversight or tracking checklists. These management programs help to create an accurate and informed project review, which is an integral part of a successful project at all phases, from preconstruction through the close-out process.

What Is Project Review?

Effective project review ensures accountability and awareness of a project from the beginning to the end. It provides a “pulse,” so to speak, which helps promote professional growth for every person involved, along with objective data which can be used for case studies in post-project review. This process ensures your team can improve moving forward. Project review involves the examination of all

aspects of the construction project during the conception, pricing and construction build, as well as unplanned external audits during the project or after its completion. In a typical project review, the general contractor, architects, engineers and trade contractors each review aspects of the project. These aspects include quality control, budget and schedules to ensure each responsible party is accountable for the completion of the work according to the contract documents. Successful reviews of the contract documents need a simple and easy-to-understand presentation. Software allows project review accuracy without risk of information drop to important documents such as owner contracts or trade contracts, which include a scope of work, budget and schedule. Software also provides project documentation and collaboration on any issue that may arise during construction or building operations upon completion.

Preconstruction Project Review

During preconstruction, all project documentation needs to be scrutinized to ensure all details are uncovered, accounted for and understood — not only for determining the cost of the project but, more importantly, identifying the scope of work to which the entire project team is accountable.

One Source of Truth in One Place

The best construction software programs allow the general contractor to have control over the flow of communication between project partners. This ensures operational oversight throughout the project, so budget, quality and schedule remain on track, and unknown conditions are minimized.

Construction software platforms house project documentation and make it accessible to the entire project team in real time. For example, an online plan room provides a simple way to distribute and manage drawing iterations. With the right software, all parties can access the same information and the most up-to-date and accurate contract documents needed to accurately estimate project costs and execute construction.

During the preconstruction phase, project review takes place by reviewing documents. Subcontractors and vendors receive bids through the construction software platform, then analyze the bids to create the project budget. Each bid is carefully reviewed against the project documents to ensure all gaps are covered and a scope of work for each trade is created. Construction software has the power to carry all these details into an owner proposal, owner contract and subcontract agreement with no information drop along the



way, minimizing the risk of details being dropped from bid to contract. The real power is in building a repeatable process that produces the information in organized containers, ready to analyze and communicate to the client.

Project Review During Construction

Staying organized throughout the project is paramount to staying on track and on budget. There are a number of ways estimators, project managers, accounting teams, site superintendents and trade partners can use construction software for these purposes, such as:

- Managing requests for information
- Project meetings/minutes
- Managing submittals
- Managing project schedule
- Collection of daily logs/timcards
- Setting up a project budget/buyout
- Change management
- Managing/approving subcontractor billing
- Managing expenses and material purchase orders
- Owner billing
- Automatic creation of a job cost statement and work-in-progress (WIP) report

Of course, housing more tasks in a single construction software makes it easier to train all team members on the internal software processes. Integrated software platforms are great options as well, until the data sync fails in a critical time event. CM software provides operational oversight and risk management that makes project review seamless, reduces project risk and reduces the amount of time it takes to perform these tasks by each responsible party. This gives the team back an estimated 30% of valuable time to focus on the quality of workmanship and execution of the project schedule, which ultimately ensures the project will stay on budget.

The construction software provides the support each general contractor needs to easily communicate, review documents and stay ahead of unforeseen problems with minimal interruptions.

Project Review Post-Construction

Following the construction of a project, the CM software platform has all the necessary tools to produce close-out documentation such as operations and maintenance manuals, final, red-lined construction drawings and warranty information. Additionally, the software has captured all documentation necessary for a post-mortem project review process with the project team. You will discuss quality of work, efficiencies gained or lost, documentation and communication throughout the project, whether the client received appropriate communication and all necessary documentation, budget

fluctuations, software ease of use, any issues that arose and how you may have managed the project differently.

When harnessed, CM software organizes teams, manages risk, creates accurate job cost reporting and enables a project review process seamlessly. General contractors who embrace technology, adapt their processes and lay a foundation to scale their business by utilizing software will grow into a new era along with the industry. ▲

Traci VanDalsem is the vice president of client experience at RedTeam, a CM software platform provider. A graduate of Olivet Nazarene University and the University of Oklahoma with a master's degree in construction administration, VanDalsem has more than 20 years of experience in the construction industry. Visit redteam.com.



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Check T22 on index.

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.

BRIGGS & STRATTON ►

Vanguard 1.5 kWh Swappable Battery

Released: 5/31/23

Availability: Global markets

What's new? The new battery will focus on convenience for the end user, enabling them to easily swap the battery between applications on the jobsite, ideal for those in the rental industry. The ability to swap between multiple machines helps to reduce equipment downtime and streamlines the service offering by removing the need for different battery types. With a built-in latching system, the swap is seamless as the battery securely clicks in and out of place.

Specs: The batteries come with a built-in integrated battery management system [BMS] to protect battery health during use and charging, safeguarding battery longevity. No maintenance of the battery is needed as the BMS ensures it is operating in the optimum performance window. Additionally, the BMS enables the battery to be connected to the Vanguard app, where users can remotely monitor the battery and run easy diagnostics. The Swappable Battery comes with dual CANbus communication to ensure effective communication with the machinery.

[Check 200 on index.](#)



◀ JOHN DEERE

744 P-tier large wheel loader

Released: 10/11/22

Availability: Global markets

What's new? Offers advanced productivity features, increased jobsite reliability, optimal operator comfort and enhanced serviceability to help improve machine uptime.

Specs: Includes a standard lockup torque converter that adds additional torque during operation and increases shift quality. Features ground-level servicing, including a remote engine oil dipstick and improved electrical and hydraulic routing, to improve serviceability and get your machine back on the job sooner, increasing uptime. The redesigned cab gives the operator more space, storage, and enhanced visibility during operation. Additional features that improve operator comfort and performance include adjustable heated and ventilated seats and an upgraded HVAC system.

[Check 201 on index.](#)

EPSON ►

Moverio BT-45C augmented reality smart glasses

Released: 10/11/22

Availability: North American market

What's new? Compatible with a wide range of collaboration and remote assistance software, the Moverio BT-45C features all-new Si-OLED technology, a proprietary optical engine and a binocular see-through Full HD display with a 34-degree field-of-view to seamlessly integrate digital content with the outside world. With the USB-C interface, the BT-45C headset can tether to a wide range of compatible Android or Windows host devices to support an array of applications. The smart glasses are built with a tough, robust design — with high shock and dust resistance — to withstand the most demanding and dynamic work environments. With an adjustable, padded headband and helmet mounting options, the BT-45C can easily fit a variety of frontline work attire and helmet models for added comfort and flexibility.

Specs: Headsets are equipped with 9-axis and ambient light sensors. Headset flip-up function allows users to secure a clear field of view for enhanced efficiency and safety; tinted and clear ANSI Z87.1 compatible shields can be attached to the headset for added eye protection. Centered 8-megapixel autofocus camera with optimized camera angle precisely captures wearer's point of view.

[Check 202 on index.](#)





▲ FELLING TRAILERS

Reengineered Utility Cable Reel "R" Series

Released: 03/31/23

Availability: North American market

What's new? The Utility Cable Reel "R" series model lines have undergone design modifications to increase operator safety and ease of use. The most significant update to the model design is the auto-locking reel bar system. The auto-locking reel bar system eliminates the use of pins and brackets; it now utilizes a locking plate system.

Specs: The R series product line offers payload capacities ranging from 1,740 pounds to 13,520 pounds. All models have the capability to load up to a 120-inch diameter reel.

[Check 203 on index.](#)



▲ TAKEUCHI

TB335R 3.5-Ton Short Tail Swing Excavator

Released: 10/5/22

Availability: North American market

What's new? This excavator features a sophisticated interior and exterior design as well as enhanced functions that provide greater performance. The TB335R is ideal for working in small spaces due to the short tail swing design with a 3.1-inch overhang over tracks.

Specs: The cab model TB335R has an operating weight of 8,310 pounds, a maximum bucket breakout force of 9,127 pounds and a maximum arm digging force of 4,290 pounds. The excavator is powered by an EPA Tier 4/ EU Stage V emission-compliant engine delivering 24.4 horsepower and a maximum torque of 70.6 foot-pounds.

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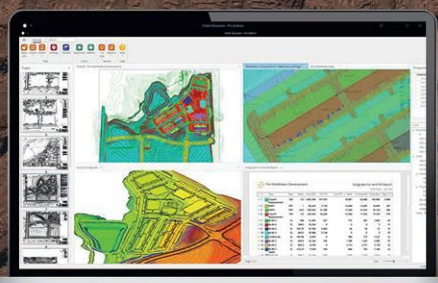
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▲ LEICA

iCON site excavator

Released: 10/4/22

Availability: Global markets

What's new? Three new components: a new software application, a new dual global navigation satellite system (GNSS) receiver and an optional communication device. The iCON site excavator application is available as stand-alone software or as an add-on within the existing and well-established iCON site platform. When used as an add-on, it enables a new workflow for on- and off-machine tasks, empowering construction workers to execute a variety of jobs, leveraging the same tools.

Specs: The iCON site excavator application will be available for a range of iCON field controllers in various sizes. The new GNSS receiver and communication device are designed specifically for compact machines, allowing more flexibility to adjust to different sites and project requirements. Controller unit with a Smart Antenna to stake out or create a design, then operators can immediately mount it in the cab to start grading according to the design.

[Check 205 on index.](#)



▲ MANITOU GROUP

MT 625e electric compact telehandler

Released: 12/31/23

Availability: European and North American markets

What's new? The MT 625e is Manitou Group's first 100% electric compact telehandler. Perfect for indoor or city center use or for renovating historic buildings.

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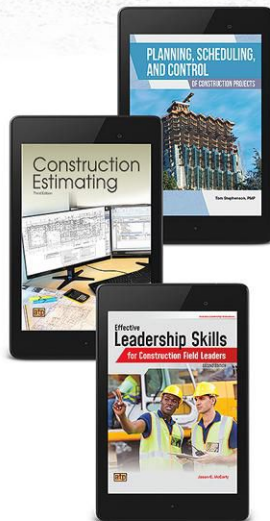
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- ☐ 05 Heavy Construction
- ☐ 06 Concrete Work
- ☐ 07 Excavation Work
- ☐ 08 Wrecking and Demolition Work
- ☐ 13 Architecture, Engineering and Construction Management Services
- ☐ 11 Consulting Contractor
- ☐ 99 Other (please specify)

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:

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- ☐ 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
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- ☐ 13 Training and Education
- ☐ 14 Telecommunications
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Annual Value of Construction Put in Place

September 2020/2021/2022 Annual Rate Comparison

This chart compares the two previous years' total value of construction put in place to an annual forecast based on September 2022 figures. (Millions of dollars. Totals may not add up perfectly due to rounding.)

	2020	2021	2022
Total Private Construction	1,074,925	1,229,915	1,450,283
Residential	610,871	773,537	917,986
Nonresidential	464,054	456,379	532,297
Total Public Construction	339,102	343,695	360,853
Residential	8,890	8,923	9,268
Nonresidential	330,212	334,772	351,586
TOTAL Construction	1,414,027	1,573,610	1,811,136

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

\$1,811,136

SEPTEMBER 2022 TOTAL ANNUAL VALUE
OF CONSTRUCTION PUT IN PLACE

“While billings in the Northeast region and the Institutional sector reached their highest pace of growth in several years, there appears to be emerging weakness in the previously healthy multifamily residential and commercial/industrial sectors, both of which saw a decline in billings for the first time since the post-pandemic recovery began,” said AIA Chief Economist, Kermit Baker, Hon. AIA, Ph.D. “Across the broader architecture sector, backlogs at firms remained at a robust seven months as of the end of September, still near record-high levels since we began collecting this data regularly more than a decade ago.”

AIA Architectural Billings Index (ABI)

National			*Regional - Billings				*Sectors - Billings			
Month	Billings	Inquiries	Northeast	Midwest	South	West	Multifamily Residential	Commercial/Industrial	Institutional	Mixed
Apr-22	56.5	62.3	53.1	57.6	57.3	58.2	57.2	60.7	51.8	61.2
May-22	53.5	63.9	51.4	56.8	52.3	59.3	54.5	57.7	51.7	56.2
Jun-22	53.2	58.2	48.7	54.8	51.5	57.8	52.6	52.5	53.5	52.8
Jul-22	51.0	56.1	48.4	52.2	53.6	51.7	52.8	52.2	49.6	52.1
Aug-22	53.3	57.9	49.8	51.4	52.9	50.2	52.0	51.2	52.0	51.2
Sep-22	51.7	53.6	54.6	52.1	51.7	51.6	47.9	49.6	58.9	50.3

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

*Regional and Sectoral indexes are three-month moving averages, due to small sample size. All data is seasonally adjusted.

**Every January, the AIA research department updates the seasonal factors used to calculate the ABI, resulting in a revision of recent ABI values.



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