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The PM Perspective

Advice from construction leaders on what will take your business to new heights in 2018

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What Not to Do in a Meeting

IN THE FIELD
How Safety Can Change Company Culture



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The Announcement of the Decade

AIA Releases 2017 Contract Documents

Like Kowalski, the comet that only makes an appearance every ten years, the core set of AIA Contract Documents is updated every ten years to ensure your design and construction projects are protected against changing industry trends and needs.

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FROM THE EDITOR | Kathy Wells

As every construction business owner knows, with a skilled project manager (PM) running your project, your business is safe hands. They are your go-to project professionals, and when you have that knowledgeable and trustworthy PM in place, every project can benefit. Opening this month's cover series on page 26, Managing Editor Elizabeth Manning interviews five project leaders from some of the United States' top construction companies in "The PM Perspective." In this article, project management experts share tips for what makes them successful and knowledge you can apply to your own project management teams. Next, on page 30, CEO and co-founder of Dozr, Kevin Forestell, discusses how network equipment sharing can strengthen project management and your bottom line in "Adapting for an Autonomous Future." Closing our series on page 30, in "Data-Driven Construction Management," Marcel Broekmaat, market manager, project controls, at Trimble's general contractor/construction management division, covers the new frontier of too much information, and the processes your PM team needs to regain control. We hope these articles provide you with insight into the role of project manager, and guidance to help your company ensure future success in this area.



The Construction Business Owner team (pictured here) welcomes the New Year, and pledges to continue producing quality, educational content to help you run a better business. Contact our editors with your ideas, concerns or business topics you'd like to see covered.

This month, part of our ongoing educational webinar series, CBO has partnered with Procore Technologies to bring you our latest event: "7 Construction Software Trends to Keep Your Business on the Cutting Edge." Technology is transforming our industry, and it's important to know which tech trend could make or break your company's strategies. Join us for this webinar to explore the possibilities of the top seven tech trends in 2018, and learn how these technologies impact the way you plan your company's digital roadmap; enable your business processes; efficiently grow your company; and increase connectivity and productivity. Registration is free at constructionbusinessowner.com/webinars.

Check your inbox for CBO's newest e-newsletter: theHuddle. TheHuddle is a biweekly newsletter offering you a rundown of the top news, mergers and acquisitions and new hires in the construction industry in 4 minutes or less. We know that your day rarely includes enough time to pore over every news article—that's why you need theHuddle. Our editors research and summarize the news you need to stay up to date on construction tech, legislation changes, game-changing projects and more. Sign up to receive theHuddle at constructionbusinessowner.com/subscribe.

Last month, the CBO team attended World of Concrete, held January 23-26, at the Las Vegas Convention Center in Las Vegas, Nevada. The show hosted more than 1,500 exhibitors, including top equipment manufacturers, software and technology experts, and the latest from industry innovators. Stay tuned for our post-show coverage in our next issue, where you can learn more about the show and what the industry expects to see throughout the year.

Take good care,

Kathy Wells

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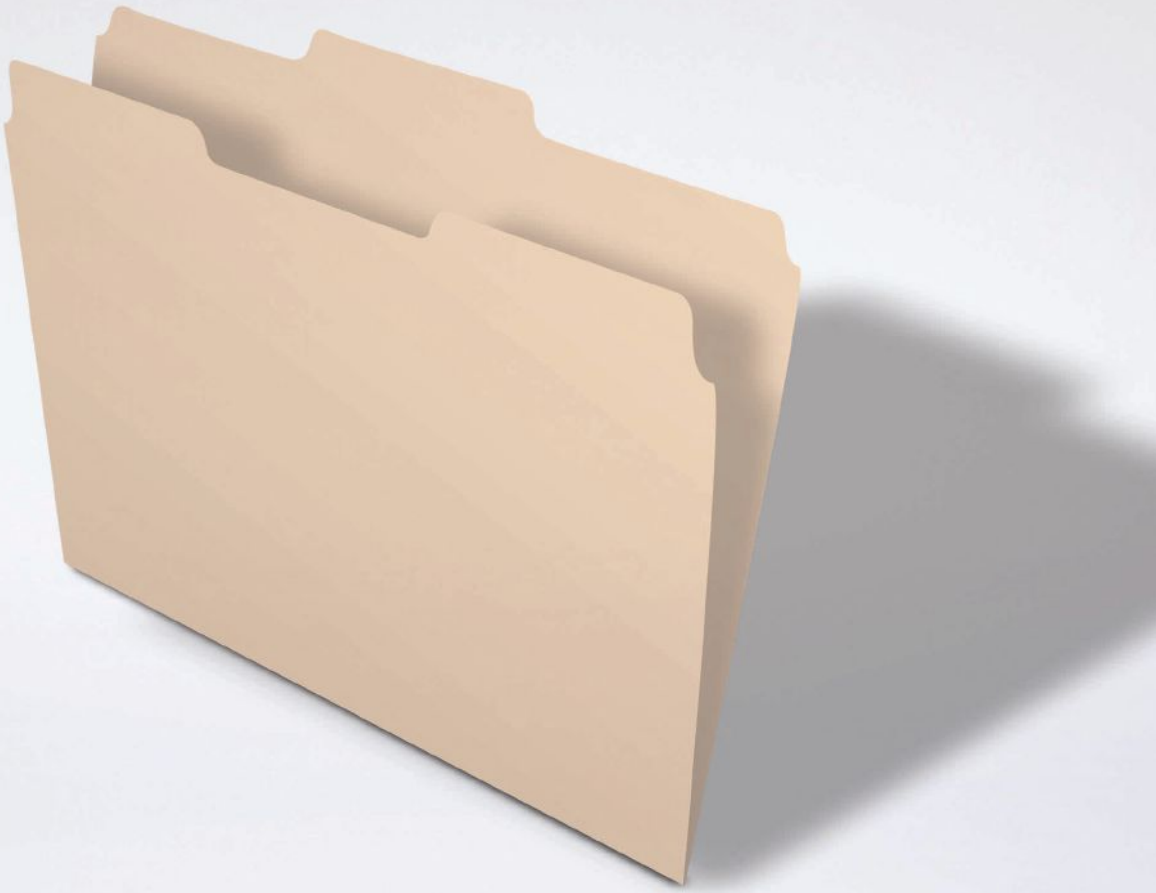




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Marcum Commercial Construction Index Reports Spending Declines in Many Nonresidential Construction Categories

Nonresidential construction spending between September 2016 and September 2017 weakened by nearly 3 percent, with a number of market segments recording double-digit declines, according to the Marcum Commercial Construction Index for the third quarter of 2017. The report juxtaposes this finding against the nation's continuing economic recovery, which is now in its ninth year. "One would expect that faster economic growth, record stock prices, low interest rates, unprecedented levels of household wealth, surging consumer confidence and elevated business owner confidence, as measured by the National Federation of Independent Business, would translate into significant nonresidential construction spending growth," wrote Anirban Basu, Marcum's chief construction economist and author of the index. "Despite that, the absolute level of nonresidential construction spending in September was at its lowest level since December 2015. Much of the recent weakness has been in publicly financed categories like water supply, conservation and development and highway/street." Basu highlights that, despite sluggish spending growth in half of the nonresidential construction categories, construction firms continue to increase staffing. He also points to tax reform as a pending source of improvement for the industry. "This quarter's index offers a particularly sunny report of the overall economy, if an uneven one for the construction industry. So, we advise construction firm owners to enjoy their prosperity, but plan for the future. Despite our rosy general forecast, the fact is that nonresidential spending is down overall and is ever more siloed by subspecialty. It is imperative to watch these trends and plan or pivot for a profitable future," said Joseph Natarelli, national leader of Marcum's construction services group and an office managing partner in New Haven, Connecticut. To read the complete Marcum Commercial Construction Index, visit marcumllp.com/construction.

Jarraff Industries Appoints VanRoekel as New COO

Jarraff Industries has announced the appointment of Steve VanRoekel as its new COO. VanRoekel most recently served as president and CEO of animal feed company Ridley Inc., Mankato, Minnesota. In his 12 years at Ridley, VanRoekel led a team that created more than $400 million in shareholder value culminating in the acquisition of Ridley by Alltech in June 2015. After leading the transition to Alltech, VanRoekel left Ridley in November 2016. Jarraff Industries manufactures a line of advanced right-of-way (ROW) maintenance, brush-clearing and tree-trimming equipment including the Jarraff All-Terrain Tree Trimmer, the Geo-Boy Brush Cutter Tractor and the Mini-Jarraff Rear Lot Trimmer. Visit jarraff.com.

Study Reveals Tools to Increase Safety

A new study from Dodge Data & Analytics reveals the engagement with and impact of two critical trends for improving construction safety—technologies used on jobsites, and the practice of prevention through design (PtD). The study, conducted in partnership with The Center for Construction Research and Training (CPWR) and United Rentals, is the third in a series of studies that demonstrates the financial and project benefits that contractors reap from their safety investments. It also shows the impact that new technologies being deployed on-site, from building information modeling (BIM) to drones to wearable devices, have on improving safety. Finally, it suggests that active consideration of safety during building design is still an emerging practice, but one well-positioned for wider acceptance in the design and construction industries. "The survey confirms two things we have been hearing for years," said Chris Cain, executive director, CPWR. "Owners drive construction safety and health, and architects are reluctant to implement PtD solutions without client pressure. By ensuring the entire team, starting with the owner/client, focuses on preventing jobsite hazards, we will continue to see improvements in worker injuries, illnesses and fatality rates." View the full report at construction.com/toolkit/reports/safety-management-construction-industry-2017.

Genie Expands North America Sales Team

Genie hired six new sales representatives in North America—Dickey Bennett, Justin Kelley, Dave Porter, Tim Schmidt, Mike Shaw and Brad Trask. These employees will support all Genie products and services for the company's customers, work to meet customers' needs and help to develop new growth opportunities, while also remaining focused on their customers' business goals. Bennett has rejoined the Genie team in the Southeast as a regional sales manager for the states of Louisiana, Arkansas and Mississippi. Bennett, a 16-year veteran in the construction equipment industry, most recently worked as a sales representative for Wacker Neuson. Kelley has accepted a territory sales manager position in the Western region, including northern California and the majority of Nevada. Kelley has been a team member at Genie for 20 years, most recently managing the company's e-commerce business. Porter comes to the Genie team as the regional sales manager for the Mid-Atlantic region, including Maryland, District of Columbia, Virginia and North Carolina. Porter has been in the construction equipment industry since 1994, and his previous roles include outside sales and management with Rental Service Corporation, United Rentals and H&E. Schmidt joins the Genie team as a regional sales manager for the Central region, covering North Dakota, South Dakota, Minnesota and Manitoba, Canada, after holding a territory manager position with Ritchie Brothers. Shaw has accepted the position with Genie as a senior regional sales manager on the CAT team in the Western region. Shaw has been in the construction equipment industry since 1990, working in outside sales and as a branch manager with Wagner Rents and as a district rental development manager for CAT in Denver. He served as factory representative for MultiQuip. Trask transitions to the Genie sales team, supporting customers in Ontario, Canada. Trask started in the aerial industry in 1994, serving roles in manufacturing, research and development and product support. He joined Genie in 2006, serving as a product support representative and moving into a managerial role for the team prior to taking on this new position. Visit genielift.com.

Manitou Group Renews Denis as President & CEO

The Board of Directors of Manitou Group has renewed the mandate of Michel Denis as president and CEO of Manitou Group for a period of 4 years until the Annual General Assembly in 2022 that will approve the financial statements of 2021. "We wish to thank Michel Denis for the work achieved since his arrival at Manitou in 2014. During this period, the group has experienced a strengthening of its market position, improved

profitability, accelerated innovation and introduced many new services," said Jacqueline Himsworth, president of the board. "All these achievements enabled the group to project with confidence and ambition for the continuation of this development for the future." Denis said, "It is a great honor to continue to lead the development of Manitou Group. The work with the Manitou team, our dealer network and our partners allows us to offer more innovative products and solutions and answer their needs." Visit manitou-group.com.

E-Z Drill VP of Sales Retires

E-Z Drill, a manufacturer of concrete drilling and doweling equipment, announced the retirement of Randy Stevens, vice president of sales. Stevens has been with the company for more than 28 years, joining just two years after E-Z Drill was founded. Since day one, Stevens maintained a sales role within the business, helping dealers and contractors across North America and abroad achieve solutions to their concrete drilling challenges. He's seen the company's line of drills grow from just a couple of standard drills to a complete line of drilling solutions, including on-grade and slab-rider drills with one to five gangs, as well as self-propelled machines and vertical drills. Stevens especially enjoyed seeing E-Z Drill units succeed on high-profile projects, from U.S. Steel in Pittsburgh to the Indianapolis Speedway and San Diego's Coronado Bridge. He also helped contractors secure the equipment they needed to quickly complete large-scale airport and air base projects around the globe. "The needs of the industry are always changing, but E-Z Drill is a proactive company. We do what needs to be done to help contractors finish their jobs quickly and cost-effectively. That's the culture," Stevens said. "I'm excited to sit back and see what the future holds for E-Z Drill." Visit ezdrill.com.

Atlas Copco Renames Construction Equipment North America LLC to Power Technique North America LLC

Atlas Copco has announced Power Technique North America LLC as the new name of Construction Equipment North America LLC, effective January 1. Power Technique was chosen as the name because United States and Canadian customers recognize power as the defining characteristic of the core product categories in the portfolio: air, power (including light) and flow. The business area will serve multiple segments, including construction, industrial, drilling, oil and gas and petrochemicals. It will continue to comprise the Atlas Copco, Chicago Pneumatic and American Pneumatic Tools brands. "Our commitment to the construction industry is as strong as ever," said Scott Carnell, president, Power Technique North America LLC. "However, we also serve customers in many other segments. The Power Technique name more accurately encompasses this and our overall product offering." Moving forward, Power Technique North America LLC will offer products including portable compressors, generators, light towers and pumps, along with dedicated construction products including handheld pneumatic, electric and hydraulic tools and customized solutions. The name change follows three 2017 Atlas Copco moves: The divestment of the Atlas Copco Road Construction Equipment Division—including Dynapac rollers, pavers and planers—to French industrial and construction company Fayat Group. The announcement of a planned 2018 split into two companies, with Atlas Copco and new company Epiroc focusing on mining, infrastructure and national resources customers. The agreement, announced December 22, 2017, to divest its concrete and compaction business to Husqvarna Group's construction division. The divestment is subject to regulatory approvals and is expected to be completed during the first quarter of 2018. Products include complete ranges for concrete and compaction. "The evolution to Power Technique will enable us to focus on our three pillars—air, power and flow," Carnell said. "We will continue to provide on-site products and solutions that power sustainable productivity for our customers." The Power Technique North America LLC corporate office remains at the company's new facility in Rock Hill, South Carolina, and continues to support customers through dedicated service centers throughout North America. Visit atlascopco.us.

SoftBank Corp. & Vayyar Imaging Collaborate on IoT Innovation Partnership

SoftBank Corp., a subsidiary of SoftBank Group Corp., and Vayyar Imaging Ltd. jointly announced that they have agreed to collaborate in the IoT field. Vayyar Imaging, global leaders in radio wave 3-D imaging, whose technology can see through almost any object or material, is partnering with SoftBank to develop technological solutions for the Japanese market. Together they are developing applications which combine SoftBank's AI with Vayyar's sensor technology for use in public transport, construction and elderly care. The rise of IoT and AI have compounded to produce opportunities where technologies can be used to create buildings and infrastructure that are safer, more energy efficient and better able to handle large crowds. Among other applications, Vayyar and SoftBank will work to analyze people flow for use in transportation optimization; monitor structural integrity in real time during and after construction; provide safety solutions for public areas; and collect and analyze big data. Visit softbank.com and vayyar.com.

Olivo Joins Curry Supply as Strategic Account Manager

Curry Supply Company announced Gina Olivo has joined the organization as strategic account manager. Olivo comes to the company with more than 6 years of experience in the rental and construction industry from a global company specializing in equipment fleet tracking and recovery systems. Her previous positions included strategic account manager, commercial technology specialist and commercial account manager. Olivo will play a critical role in developing customer relationships, ensuring client satisfaction and identifying new opportunities for a large client base throughout the U.S. She will represent Curry Supply's entire product line, which includes water trucks, mechanics trucks, fuel/lube trucks, dump trucks, vacuum trucks and more. "We couldn't be more excited that Gina has joined the Curry Supply team," said Jason Ritchey, president. "Her knowledge and relationships within the rental and construction community will be very beneficial as she helps to provide our customers with solutions to their everyday equipment challenges." Curry Supply Company is a family-owned business that was established in 1932. During the past 85 years, it has grown into one of America's largest manufacturers of commercial service vehicles. Curry Supply delivers internationally, with sales, parts and service provided throughout North America. Visit currysupply.com.

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

Fleet Needs & How to Meet Them

What is the best strategy for fleet growth?



KENNETH TYSINGER
Director
Independent Equipment
Dealers Association

Contractors should consider a mix of new and used equipment, as well as leasing or renting equipment that is used less frequently. Buying used machinery is always a great option for growing your equipment fleet. A qualified dealer can help locate a machine that will work for a contractor's needs and fall within their budget. Purchasing new equipment should be considered when a contractor is looking to add or replace high-frequency usage machines. With the aggressive financing options currently being offered, new equipment can work for these types of purchases. If a contractor needs a specific machine for a project but isn't sure if they will use it frequently afterward, leasing may make the most sense. Leasing combines a smaller monthly payment with a shorter commitment term. Once a lease is up, contractors can purchase the machine or turn it back in to the dealer. Finally, renting is a good option for short-term needs. Rentals are typically considered direct job costs and may give contractors the ability to write off the cost on a monthly basis. Contractors should consult a tax adviser to see if this is applicable in their states. A trustworthy equipment dealer can navigate a contractor through the options and help to choose which one is best.



JENNY SHINER
Marketing Communications Manager
GPS Insight

When creating a 2018 strategy for fleet growth, construction businesses should first look to their operations to understand issues that could inhibit bottom-line growth. The most common challenge our customers face revolves around the inefficiencies they experience throughout their fleets. These issues range from inefficient fuel economy and high maintenance costs to inefficient daily workflows that lead to the completion of fewer jobs. Once areas for improvement are identified, businesses can build a strategy that includes new processes and technology like GPS tracking, maintenance software, fuel card software and other applications that will positively impact the bottom line, which will ultimately aid their plans for fleet growth. The key takeaway is that there is not just one metric for businesses to focus on to gain the means for growth—it is about solving the specific business challenges each company faces and choosing the right technologies that can help to solve them.



MARK WASILKO
Vice President of Heavy Equipment
Industrial Markets
Decisiv

As construction companies consider adding to their fleets, the maintenance and repair of those assets becomes increasingly complex. Managing warranties, parts and technician service in an effort to minimize equipment downtime requires moving toward a more automated approach. With the proper technology in place, companies can better predict maintenance and service events more efficiently, manage mobile repairs and improve technician productivity. The result is less equipment downtime and more consistent and cost-effective operations. Finding, or even approaching, the holy grail of zero unplanned downtime promises to be a huge differentiator for construction companies, allowing for new models of business with key suppliers that include offering guaranteed uptime and "power by the hour" pricing. An integrated service relationship management (SRM) approach between companies and suppliers to fleet maintenance can help to better manage critical assets, reduce costs and enable companies to lead to a more profitable 2018.

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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 best-selling author of "Get Your Construction Business To Always Make A Profit!," available on amazon.com. Email George at gh@hardhatpresentations.com to sign up for his free e-newsletter, start a BIZCOACH program, attend a 2-day BIZ-BUILDER Boot Camp or get a discount at hardhatbizschool.com online university for contractors. Visit hardhatpresentations.com for more information.

Ask George

To submit a question for George Hedley, email Editor Kathy Wells at kwells@cahabamedia.com.

Tom Merritt is an example of how a local contractor transformed his company into a leading commercial civil, earthwork and concrete company by focusing on continuous improvement. After working as a laborer and doing side jobs on weekends using his truck, trailer and tractor, he started Merritt Contracting Inc., in 1995 near Indianapolis, Indiana. By focusing on "Making Things Better: People, Projects & Process," Merritt has grown his business to well over $12 million in annual revenue with 60 dedicated, longtime employees and a large equipment fleet.

BECOME A LIFELONG LEARNER

During my 25 years of experience as a construction business coach and presenter at more than 550 conventions and conferences, I have learned there are two kinds of construction business owners: lifelong learners and those who continue to do things the same way. Guess what? The lifelong learners make a lot more money than the 98 percent of those who stop learning and improving early in their careers. I met Tom Merritt more than 6 years ago when he attended one of my programs, and I quickly discovered he was a determined lifelong learner focused on continually improving his company, people, team and management skills. He was also very focused on building an efficient company using systems, standards and technology and challenging his players to continually improve.

INVEST IN IMPROVEMENT

Today, one of Merritt's main priorities is getting the company culture right. His focus on and dedication to improving people is evident. He invests time in regular team meetings and programs to guide people in the right direction and keep the lines of communication open. The company has a regular employee recognition program with incentives such as employee of the month awards, gift cards when crews meet their goals, regular employee satisfaction surveys and a personal career development plan for each employee.

On a continuous quest to build a better company, Merritt is not afraid to dedicate real money to consultants, technology, training and management systems. He uses several business consultants for various company improvements, and he learns best business practices from other contractors as a member of a construction business owner peer program. He also commits to attending a few construction conferences annually, and he is dedicated to utilizing the latest technology and software available. The company even uses drones to fly over, review progress and monitor jobs on a regular basis.

HIRE FOR CHARACTER

Rather than look for the most experienced people, Merritt hires for character and trains for skill. The company's ongoing training program includes a series of short

videos and QR codes they created, which are available via "The Merritt Way" YouTube channel. Merritt's team created hundreds of training videos with topics including how to set up a laser screed, properly maintain equipment, fill out timecards correctly, use specialty tools, download job cost reports and everything else the team needs on a regular basis. These how-to videos provide simple instructions, help people to learn faster, improve efficiency, eliminate downtime, troubleshoot, reduce field problems and help Merritt to make more money.



PUT PEOPLE FIRST

To keep connected with and stay focused on people, Merritt requires a formal, honest, open and frank review for everyone that they call a "quarterly conversation." Employees may discuss their needs, examine their contributions to the company and talk about how they can improve. This time provides a consistent check-in with their manager/boss and a discussion of roles, goals and performances. Here's an example of a quarterly conversation agenda:

- *Core values*—Rate employee on company core values such as teamwork, ongoing learning and attitude
- *Accountabilities, responsibilities and roles*—Rate on a scale of excellent to needs improvement
- *Accomplishments*—Review all
- *Areas for improvement*—List specific areas that need attention
- *Performance improvement*—Develop action plan
- *Career development plan*—Discuss employee goals and actions required to get to next level
- *Employee comments or concerns*—Honest feedback, including rating manager's performance such as clear direction, communication, feedback, delegation, training and core values

FOCUS ON RESULTS

To keep the team focused on achieving better results, Merritt implemented a weekly scorecard to track feedback. Clear expectations, targets, goals and updated tracking for every job, crew and player keeps the team focused on winning results.

Every week, the management team, department managers and project teams review their results and then discuss how they can maintain progress, improve or get back on track for underperforming jobs. Below is an example of a weekly scorecard tracking system.

- *Man-hours*—Over/under budget
- *Equipment*—Over/under budget
- *Backlog*—Costs and hours
- *Change orders*—Approved, completed and/or performed without authorization
- *Safety*—Audit, violations and accidents
- *Past-due receivables*—30-, 60- and 90-days past due
- *Rework*—All projects including callbacks and warranty work
- *Equipment*—Damages and repairs
- *Customer complaints*
- *Employee satisfaction ratings*
- *Credit line balance*
- *Revenue versus goal*
- *Gross profit versus goal*
- *Overhead versus goal*
- *Net profit versus goal*

HOLD REGULAR MEETINGS

Like most business owners, Merritt disliked scheduling and holding regular meetings with managers and crew leaders. He would often call a meeting, miss or reschedule it and eventually stop holding them altogether. As a result, he spent his time running around constantly talking to his project managers, superintendents and foremen to make sure they were doing what he wanted them to do. This created a lot of stress as his people relied on him to make decisions for them, and it didn't allow him to focus on his priority—developing empowered, accountable and responsible company leaders.

Eventually, Merritt learned the key to building a winning team was to let people do their jobs, give them the rope they needed to succeed and even allow them to fail. He refocused on helping his project managers and superintendents to do a better job, rather than micromanaging them. This management shift allowed Merritt to make higher net profits and significantly grow the company, and to take the time to build stronger customer relationships.

After implementing his new management style, Merritt maintains an open dialogue with his five direct reports; still makes it a priority to regularly visit jobsites to stay in touch with key field employees; provides coaching by offering input regarding job labor and equipment strategy; and attends regular mandatory weekly and monthly meetings designed to help everyone achieve better results.

Now, he is determined, focused on doing the right things and not compromising his values. He is never satisfied with the status-quo and works hard on what matters: improving people, systems, structure and results. His investment of time and money implementing "The Merritt Way" has paid off, as his company has greatly improved the top and bottom lines. **CBO**

Winter Is Coming, but When?

Why it's always best to know where you stand on contingency planning



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The markets are soaring and the stock market appears to have no upper limit. Unemployment continues to hover at near microscopic levels. Backlogs remain strong and employers are optimistic in their business planning. With all of this, one indelible question remains: Have you started planning for an economic disaster? It is almost heresy to utter the words "recession" or "depression," as if the mere mention will cause markets to crater. It is much more fun to reflect on the halcyon days of recent times and simply build.

So, why even tempt the economic gods with such talk? First, it is always important to remember that the economy and its business cycles do not care who is in the White House, do not watch the DOW as closely as day traders and certainly give little credence to the general level of happiness contractors are currently enjoying. Second, there is no shortage of socioeconomic, macroeconomic and geopolitical upheavals taking place on a daily basis. Third, during the last 30 years, there was plenty of exuberance immediately prior to the subsequent meltdowns. For instance, there were a number of individuals who said, "There is no way this will ever end—we will always need housing, internet, technology."

No one wants to be the Debbie Downer who reflects on negativity. The better action is to implement strategies that help to provide guidance and position the business for the short and long term.

THE ASSESSMENT

NASCAR and IndyCar racing evoke great imagery of contractors running through their backlogs, accelerating and throttling to keep pace with the competition. One of the most important aspects of any race is actually the least attractive—the pits. In addition to the maintenance and refueling, it's where teams modify their vehicles and strategies to move up in the queue. Unlike the No. 3 or No. 20 car, contractors rarely slow down to evaluate and assess their positions. For instance, rather than simply looking at a work-in-progress report, study what trends emerge from the firm's data:

- *Margin capabilities*—Are margins increasing or decreasing? What can be attributed to gains/losses?
- *Volume distribution*—How much volume does the firm have within a niche/market/customer/geography? Is the distribution of future backlog evenly distributed or overweight?
- *Market share*—What aspect of the market does the firm currently occupy? What is the forecast for these markets? Is there shrinking opportunity or growth pockets?

The "pit stop" is hardly just a measure of financial performance. More importantly, learn what can be said about the capabilities of the firm's talent:

- *Operations*—Is the firm operating at the desired efficiency? How far away



from the standard operating procedures have the operators migrated?
- *Talent*—When was the last time the firm did a true appraisal of its talent within all aspects of its business? Have the organization's ranks become bloated or has it settled for mediocrity within the firm?
- *Marketing*—What is your firm selling and is it relevant? What do your customers think of your organization?
- *Communication*—How linked are all of the firm's business units? Does everyone have a perspective on the firm's true health?

A true, fact-based assessment grounds the organization and provides optics on issues surrounding the firm, as well as factors that can impact its future. Without this deep dive, firms risk running the race with an empty tank at the most critical time.

THE TRIGGERS

Metrics provide those optics into a firm's health and also serve as an early warning system. With much discussion on key performance indicators and data-driven businesses, the answer is using the data to make informed decisions. Many leaders still have the uncanny ability to sniff the air and make effective business decisions. For the general populace, there is a need to first see the numbers to gauge the enormity of the subject and reinforce the strategy. For instance, firms routinely look at their backlog as a forecasting component. What if this same forecast also forced the firm's leadership to make decisions?

As an example, let's say a firm consistently has $5 million per month in backlog. However, it historically has $10 million per month and, based on the business plan, the number should be $12.5 million. When does the firm make critical decisions about the market, personnel, go/no-go tactics, etc.? Should the firm downsize if it has 5 straight months of sub-par performances? All too often, many of these decisions are made too late. It is never easy to make earth-shattering moves; the corollary is the same when looking at growth. How many firms delayed hiring when economic forecasts were improving, fearful of increasing overhead with so much uncertainty? Metrics such as these should serve as triggers to, if nothing else, stimulate the discussion about the firm's strategy. Without data, the leadership can become unduly fixated on opinions that can provide a misshapen landscape and lead to poor decisions.

THE FUTURE

The one inalienable truth is that people will continue to age and time will not stop. Hardly profound, but consider that when thinking about mortality within the firm. How many firms grossly altered their succession plans when the last recession hit?

Maybe it was the owner delaying his or her departure, or a senior staffer exiting earlier than planned, only to see his or her savings vaporized due to market conditions. This is another reason to develop a strong strategy replete with contingencies. Several following considerations are simply reflections from the last recession:

- *Training and development*—While firms wrestled with shrinking discretionary expenses, associates within firms saw training opportunities diminish. Career development shouldn't be put on hold while the economy rights itself. Also during this time, firms sought answers about the next generation of leadership and talent while stifling their growth.
- *Value generation*—With the younger generation assuming the reigns, what are they purchasing and at what value—where it was, or what it could be? Ownership transfer is an already-complicated algorithm; further complicating it by failed strategy is foolish.
- *Market diversity*—Most experts agree that the only way to adequately protect a firm is by diversifying its portfolio. Too often, firms wait until the market has turned against them. It takes discipline to assign resources to new ventures when the traditional sectors are on fire.

Winter is coming, the only question is when. Even in the most robust marketplace, it is critical that business leaders do not become complacent. **CBO**

What Not to Do in Your Next Meeting

Deciding how, when & where to interact with technology at work



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So much of life and business runs parallel because business is life. Picture this: It's the weekend, and you have a lot to catch up on after a busy workweek. A friend who just happens to be in town contacts you, and the decision is made to meet for lunch. You're having a great time, enjoying the good food, atmosphere and conversation. Then, for whatever reason, you get distracted. It could be a stranger passing by your table, the pinging smartphone next to you or any number of other causes. No matter what initiated the distraction, think about the following questions for a moment:

- How does your being distracted affect your friend and the flow of conversation?
- How does it make your friend feel?
- Will you ever really know?

Now, consider a typical workday. You're sitting in a conference room during a business meeting with coworkers or perhaps a customer or prospective client. Your smartphone is positioned next to you and indicates a call coming through. What do you do? You answer it—right in the middle of an important meeting—and disrupt everyone by responding to the incoming call.

This is a prime example of what every CEO and business owner should never do in a meeting.

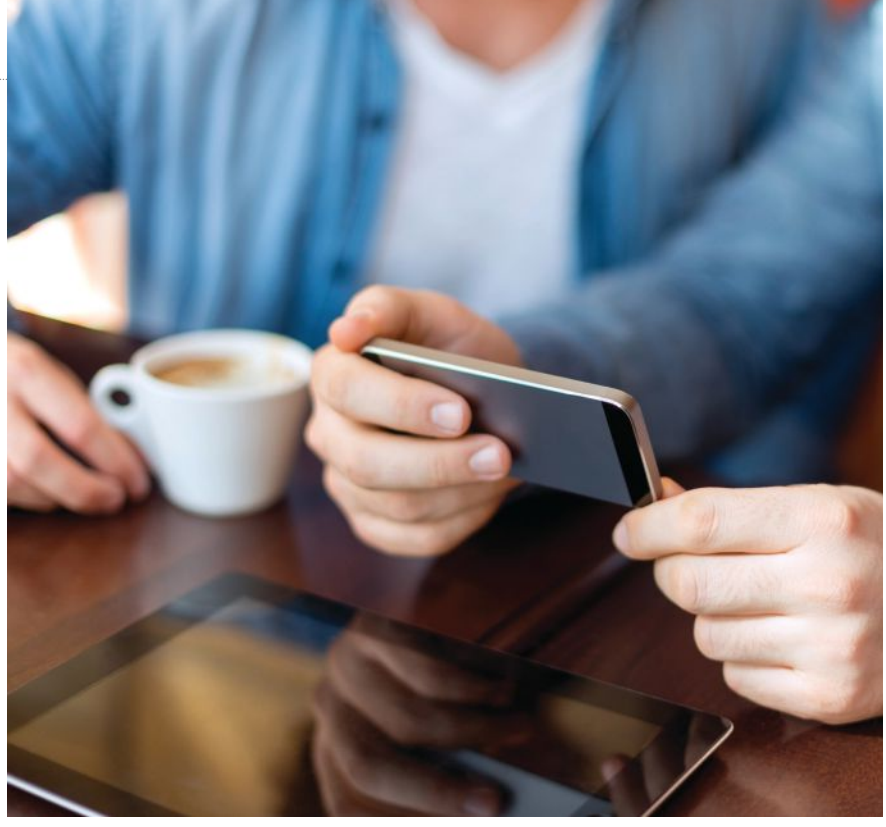
Handling phone calls and other messages distracts you and everyone else in attendance. You may never know the degree to which it affects the meeting or the business relationships formed on that occasion, but you can be sure that it disrupts the flow of thought by pausing conversation and dividing attention that should be focused solely on the discussion.

There are some occasions when a call is anticipated and it is necessary to answer during a meeting. When possible, mention to those in attendance that you may be interrupted. Then, when the call comes through, politely excuse yourself to take it outside the room.

Most often, taking the call during a meeting is not necessary—but I've experienced it countless times when calling a company. I ask to speak with someone, get them on the phone and the response is something like, "I'd like to speak with you, Howard, but I'm in a meeting." Or, taking it one step further, "I'm in a meeting with a client." Why answer the phone at all when you know the conversation cannot be held at that time?

As a company CEO, president or owner in the construction industry, the day includes meetings in your office and also on jobsites. Your phone, or the phones of your employees, may potentially ring numerous times each hour. Company policy and etiquette should be set regarding communication and the use of smartphones during work hours. Some questions to consider when deciding what is best for your company might include:

1. How do I get the work done right and on schedule?
2. How do I give customers/clients or employees the impression that they are a priority and what is being discussed is important?



THE CONTROL FACTOR

It's a phrase you may have heard before: There is a time and place for everything.

It's your choice. Technology can control you, or you can control how, when and where you interact with technology. The digital age we work in dramatically speeds up work expectations and opportunities, but boundaries still need to be set. Otherwise, you potentially lose what you perceive as gained by being constantly surrounded with technology at your fingertips. It's no different than having a weekend lunch and not giving your full attention to your dining companion. The people you are face to face with are most important.

THE PEOPLE FACTOR

Remember: Business is all about people. Without them, you don't have a business. Technology may change, but the needs and wants of people do not. Finding the right balance for the most effective level of communication and productivity is key to your company's success. Otherwise, what message are you sending to those who are in front of you?

- You're not important.
- I'm bored.
- I don't need or want to focus on what we're talking about.
- I don't really need your business, or you'll do business with me regardless, so let me work on something else.
- I can't just not take this phone call. It's as important, or maybe more so, than you are.

Other than the phone call exception previously mentioned, it is simply bad business to answer your phone during a meeting—period—and you shouldn't do it.

Perhaps the opposite has happened, where you've been in a meeting with someone and he or she defers to the phone. Review the scenario in your mind, and think about how it made you feel.

Let's consider another example. It's Saturday, and you decide to see a movie. It seems there are about 20 minutes of previews prior to the start of the main feature. What's usually the final message on the screen before the movie starts? A clever announcement from the theater asking everyone to silence their phones and to not distract others by using cellphones in any way during the film.

Consider doing the same throughout your business day. When you're participating in conversation with other businesspeople, focus solely on them—text messages and phone calls can almost always wait. If someone really wants to speak with you, they will wait a bit longer for you to return the call or answer the text.

Meetings require total concentration to be productive: no wandering minds, no looking out the window and no staring off into space. If the meeting has lost direction or become boring, ask a question to liven it up.

THE TIME FACTOR

We only have so much time, and once it's gone, we can't get it back. If you allow yourself to get distracted in a meeting, ask the following questions.

- Why did I schedule or attend this meeting in the first place?
- What was the purpose of the meeting?
- Is there a better way to accomplish what needs to be accomplished?
- Could the meeting have been shorter?

The next time you are at a public meeting place, mall or grocery store, note how many people are on smartphones rather than interacting with their immediate surroundings. Millennials may have a different viewpoint about the integration of technology as they essentially grew up with it, but basic, common sense business practices still apply no matter your age or generation.

As an executive leader, you are in control. Focus and total concentration are vital to your business and your life, as well as your success and your company's profitability. CEOs, presidents and business owners set the standards; lead by example. Don't allow technology—especially your smartphone—to rule your day. **CBO**

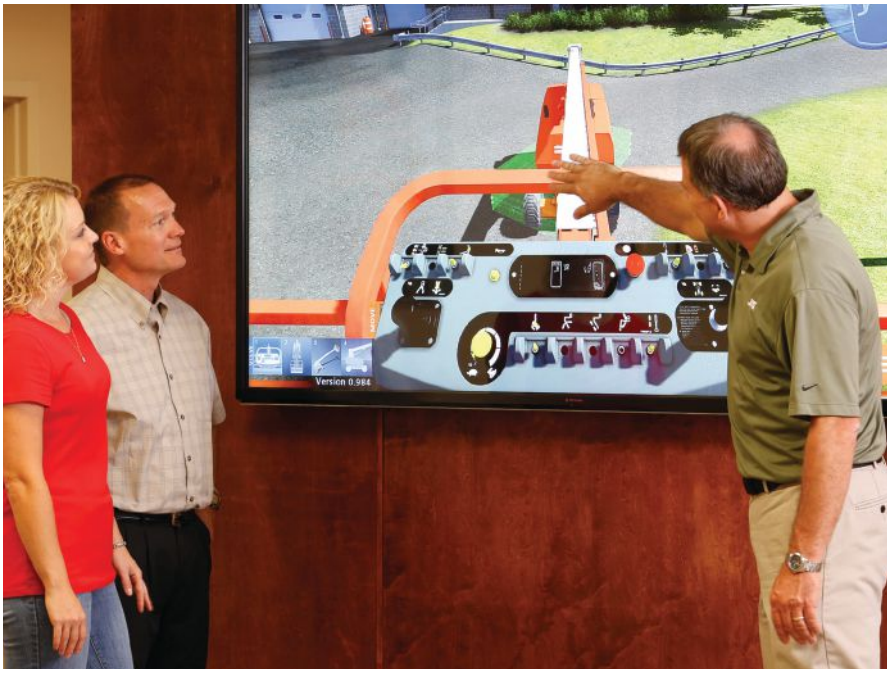
How New ANSI & CSA Standards Change MEWP Training

A review of the guideline updates that affect your training requirements

BY RICK SMITH

The American National Standards Institute (ANSI) and the Canadian Standards Association (CSA) determine standards that govern the design and use of aerial work platforms across North America. The last big change to these standards took place in 2006. Today, new standards are in the works.

Updated CSA standards for Canada were published in May 2017, while new ANSI standards for aerial work platform design, safe use and training in the United States are anticipated early this year. One year from the date of publication, any aerial work platform manufactured for use in the U.S. must meet the new standards. Machine designs for equipment manufactured prior to that date will continue to be governed by the existing standards.



Among the new standards, ANSI A92.24 and CSA B354.8 focus on training requirements, providing guidance on preparing aerial work platform (now called mobile elevating work platforms, or MEWPs) training materials, defining ways to deliver theoretical and practical training and identifying the required elements for proper training.

According to the new standards, all training must be delivered by a qualified person who is experienced with the classification of MEWP on which training is being given. This person must understand the laws, regulations, safe-use practices, manufacturers' requirements and the recognition and avoidance of hazards as they relate to MEWPs.

TRAINING REQUIREMENTS

Although MEWP operator training is still mandatory, training requirements now include any others who will come in contact with an MEWP on the jobsite, including supervisors—people who directly supervise MEWP operators (ANSI only); occupants—people in the MEWP who are not considered operators (ANSI and CSA); and maintenance and repair personnel—people servicing MEWPs (CSA only). Anyone who interacts with MEWPs in any way is subject to new training standards.

The standards require dealers, owners and users to train and familiarize all employees, or have proof of training and familiarization for all employees, whom they allow to operate an MEWP.

Whenever dealers or owners sell, lease or rent an MEWP to someone, they must offer operator training or explain where operators can get the required training. All

training must be delivered by a qualified person and must be offered in a language and format the trainee understands. When requested, dealers must offer familiarization to the person buying, leasing or renting an MEWP.

SUPERVISORS & OCCUPANTS

Supervisors must be trained in proper MEWP selection; rules, regulations and standards that apply to MEWPs, including operation, safe use and training; potential hazards associated with the use of MEWPs and how to protect against them; and where operation manuals should be stored and how they should be used.

In addition, operators must provide specific instructions to occupants so they can work safely in an MEWP, including how to use fall protection and the location of fall protection anchors and teaching them how their actions can affect stability.

Occupant instruction must also include how to safely use MEWP accessories, how to adhere to the safety plan and avoid site-specific hazards and how to complete emergency procedures in line with the manufacturers' warning and safety information.

Additionally, the new standards require maintenance personnel to be trained to properly inspect and maintain MEWPs, including load and tilt sensing, entrance gates, foam-filled tires and platform railings.

TRAINING TIMELINE

Many manufacturers offer ANSI- and CSA-compliant operator training through independent trainers instructed by in-house teams, with the option for website training as well.

Through training on the web, manufacturers issue certification cards for MEWP and telehandler operators who successfully complete training and evaluation.

The results of the new standards will be better alignment of North American manufacturers with international standards like AS/NZS, CE, GB and ISO and, by requiring more robust training, safer jobsites. ANSI standards have long been the benchmark for safety in the industry. These new training standards, along with those that address machine design and safe use, will continue to set the bar for the safe operation of MEWPs. **CBO**

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Using Marketing to Increase Sales

How you can redefine the meaning of customer service to make more money

BY SCOTT KAY

To understand how to better market your services, you should first take a step back and challenge your perspective. While you sell your services, you should also consider the receiving end. Many dismiss this perspective, claiming that positivity and preparedness from customer satisfaction teams quell these concerns. Though these teams may intercept some problems, they are not enough. Relying too heavily on a customer satisfaction team is like preparing to fail—it's a backup plan for when things go off the rails, so you know you can recover later. Going beyond what works best for you and understanding what works best for your customers is what proves transformative for true growth, no matter the company.



When you gauge customer service performance based on achieving satisfaction, you may be in trouble. Optimal satisfaction should be your target, and that means thinking beyond straight-line customer satisfaction and, instead, creating a more ideal customer experience. Many people hear the words "customer service" and think of consumer-packaged goods and retail experiences, but at the end of the day, each one of us is a consumer.

When one of your customers can have shoes overnighted from Zappos.com and then call them with a question, only to find out that the company will do anything to please them, that influences expectations all around. So, when that commercial property owner accepts bids on a job and some bidders are late, don't answer their phones, or are difficult to schedule meetings with, you can imagine a customer's quickly emerging frustration.

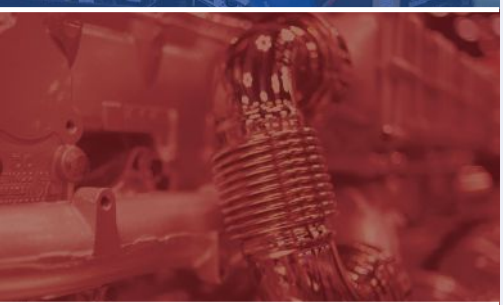
When customer experience is ignored for too long, a trend of disruption surfaces. And there isn't just a threat of disruption in the market—it's already happening. Disruption is driven by less than ideal customer experiences. When other aspects of your life become easier to resolve, you are less likely to stay settled in a system that no longer delivers on your needs.

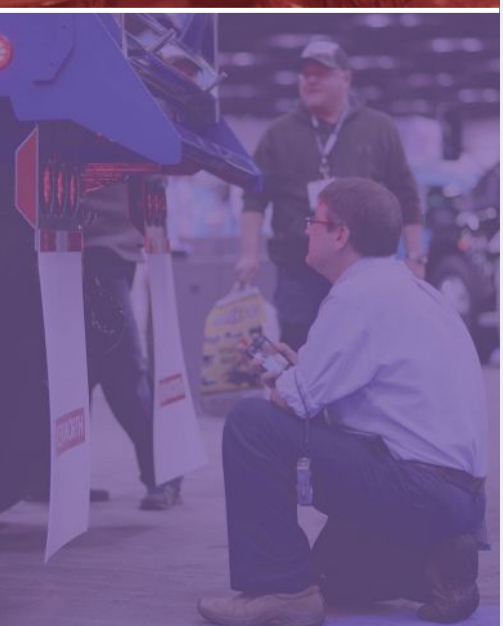
Customers undergo this pattern in all facets of buying—from ordering a pizza without being put on hold to car shopping online without bickering and bartering, real



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When you gauge customer service performance based on achieving satisfaction, you may be in trouble. Optimal satisfaction should be your target, & that means thinking beyond straight-line customer satisfaction &, instead, creating a more ideal customer experience.

estate becoming more digitally advanced and completing every bit of holiday shopping without setting foot in a crowded mall. Online wish lists, registries and automated grocery delivery continue to set a new precedence and level of convenience that are shortly followed by a new set of higher expectations.

So, why should a property owner work with one commercial services provider over another? Suddenly it's not just about the product, service or even the price. If all else is equal, knowing you will have to "manage" one company less than another can become the deciding factor.

3 DISRUPTIVE SALES OPPORTUNITIES

This is not bad news for your sales team. If you are the construction sales leader or business owner, you likely have several main concerns. Consider the following three ways this disruptive shift in the sales universe turns new expectations into opportunity for you.

1. *Reduction in cycle time*—At its best, the traditional business model drives leads from manufacturers to contractors from customers making an inquiry on a website with little information about their true level of interest or position in the sales cycle. A lead could be someone in early exploration who wants to get on mailing lists, or someone who knows exactly what they want but needs installation services and bids. Chances are, they are seeking multiple quotes to compare in a bid process, so an email or callback is necessary to get their contact info and set up a time to visit and measure, plus a return to your office and another appointment set up for the bid presentation. You might be worn out just thinking about all the steps involved.

   Instead, consider providing an option to request samples online and the ability to accurately measure your project needs, product visualization and pricing all before a potential client needs to speak with you—unless, of course, they request an in-person consultation. Think of all the time and coordination you save, allowing you to focus on details of in-progress jobs or those closer to being awarded.
2. *Reduction in cost*—The above savings in time equates to a cost savings. You won't need to invest time into a lead until you understand it is qualified by the actions they take online to invest their own time—an indication of their level of seriousness and placement in the sales funnel. And, quite frankly, many people would prefer to not interact with a person as long as the information they seek is readily available. This doesn't mean wiping out the need for salespeople altogether, but rather better targeting their efforts for greater impact on your bottom line. Think of the savings in having your lead salesperson reach out via phone to two leads who are making final decisions versus five leads that you discover are just considering a project for the following year, exploring ideas for a commercial build or looking for samples.
3. *Represent your own business*—Another ongoing problem is hiring a salesperson you can trust to represent your business the same way you would as an owner. As the process becomes more digital with the property owner in the driver's seat, the marketing materials can be developed once using the specific language and tone you desire as a business leader. The level of interaction needed from a salesperson to close the sale reduces, as does the opportunity to overpromise or embellish details to earn a commission. If these benefits seem worthwhile to you, you may find yourself asking how to get there. The following tips will help.
   - *Meet with customers on their terms*—Getting time on business calendars to sit down around the conference table is getting more and more difficult. With more pressure to manage more projects in less time, respond to business needs, payroll, HR and more, many business leaders are in the game of defending what little time—if any—they have left. Instead of shoehorning a meeting at traditional times, offer to fit into their schedules. Give them the visibility to your business, product offerings and options so they can explore your website. If you aren't

quite there with your website, work with your manufacturer partners to ensure your business is properly listed on their partner pages so you can be easily located. Make yourself available for calls, emails and instant messaging at their convenience instead of holding off conversations.

- *Give them confidence and options*—Today's customers are well-informed. Chances are, before they have begun to look for a business to provide installation or other services, they have seen products or services at a trade show, read reviews online, talked to neighbors and friends and done a lot of digital window shopping. The next step is critical: If you can create a space that allows potential customers to feel like they have done their research, then give them the platform to review multiple options and decide what best fits their needs, they will keep moving full steam ahead. This typically means having good/better/best options in a variety of styles with performance differences clearly defined. Consider saving favorites in an account or have them sent to you for safe-keeping.
- *Measure and price*—Visualization tools are a huge benefit. Many companies offer a way to view the actual products on an installed visual. Those who combine visualization and measurement take it one step further down the sales and convenience funnel toward success. New technologies are already in play in the residential market and will soon transition to commercial. Some forward-thinking software programs let the homeowner take a few snapshots of their home and upload them. In return, they receive a 3-D rendering of their home with accurate measurements and the ability to visualize their product choices on the model. This is similar to the technology used in the past to measure commercial roof spans from above. These few minutes spent on a smartphone with a submit button accomplish the same thing as a salesperson hauling actual product samples to a residence, which you view while they walk around a home with a measuring tape and ladder. Instead of the back and forth from home to office, this allows clients to go online and toggle between options, view the associated pricing and see a 3-D rendering of their home with the products they choose. The same can be done for a commercial space, and it's a race to the finish line to see what companies will help evolve the market with this technology first. This approach with a scaled rendering is an excellent way to make your commercial bid stand out.

Certainly not every business is able to employ all of the technology processes listed here, but every business owner needs to understand that this is where the market is quickly headed. Your sales process is no longer your process—customers own the experience, and you work for them. While virtual measurements may seem far-fetched, many of these technologies are already available as software packages or are in development with manufacturers. Businesses that don't move to incorporate these types of solutions are going to quickly lose market share.

This does not mean the salesperson is being eliminated—you still need confidence and trust involved in closing the job. But technology does mean that you can get to the closing stage faster.

"It's a natural extension of online research," said Dale Thornberry, CEO at Remote Sales Force. Instead of meeting face-to-face, "Now the majority of customers who do their research online can also finalize their designs and make the purchases online."

As a business owner, the more sales cycle tools you can get into consumer hands, the faster that cycle will move. If, for now, that means being responsive via email and replying during the evenings to close the loop, then it's a step in the right direction. If you don't, one of your competitors will.

Adopting tools such as these will help to differentiate your business from the competition. If you get on board early and embrace the change, your sales team and your customers will be one step closer to the closing deal. **CBO**

GET A MORE SOCIAL APPROACH

You already know your company's customer service can make or break its reputation. If you aren't already using social media to connect with current and potential new customers, start now. Establishing positive, active social media profiles for your company on Facebook, LinkedIn, Twitter or other platforms could be the key to increasing leads from a market area you may not have otherwise reached. In Hubspot's 2017 State of Inbound marketing report, 74 percent of survey respondents said they use Facebook for professional purposes. The report (hubspot.com) also found that content consumption on Facebook has increased 57 percent over the past 2 years. In addition to being a good place to find new clients, LinkedIn is a great resource for marketing your company to potential new hires. Look for opportunities in which your company's active presence on social media further establishes the organization as an industry leader.

Scott Kay is president of Modern Marketing Concepts (MMC). MMC's most successful clients and business partners embrace technology changes in building products and understand they can transform their business by engaging in digital market reach. Visit mmcbuildingproducts.com.



Finding a Damage Prevention Partner

5 considerations for working with a local service provider on utility projects

BY KEVIN VINE

The emergence of new regulations, awareness campaigns and best practices across the United States and Canada has thrust the topic of damage prevention to the forefront of construction safety conversations. Excavation remains one of the riskiest construction activities, and a utility line is damaged every 6 minutes across the country.

Now that it is law to contact 811 prior to digging, infrastructure owners are opting to outsource the work involved with locating their buried assets to trained and qualified locate service providers (LSPs). This strategy makes sense from both a cost and safety perspective: Utility locating is a complex and time-consuming task that involves many aspects, from managing ticket requests to implementing a 360-degree feedback process to following an escalation protocol in cases of emergency.

Enlisting the services of an underqualified or inexperienced LSP could actually increase the likelihood of damages, injury and liability. When seeking to secure an LSP, whether through a request for qualification (RFQ) or an informal process, look for the following selection criteria.



1. ENSURE HEALTH & SAFETY IS A MAIN FOCUS

Above all else, be certain the LSP follows a robust health, safety and environmental (HS&E) management system that incorporates, at a minimum, principles of the Occupational Safety & Health Act, applicable general safety practices, a hazard identification and reporting mechanism and an injury/incident investigation process. Look for a commitment to environmental management. Does the LSP safely dispose of hazardous materials? Is a reuse and recycling program in place? How are spills prevented and managed? The HS&E management system should be regularly updated and implemented by an active joint health and safety committee (JH&S).

Furthermore, ensure the LSP carries out regular workplace safety audits. Ask who is in charge of the audits, how often they occur and how the audit results are documented and incorporated into policies, practices and procedures. To further reduce risk, search for a company that has been certified by an outside organization such as Avetta or ISNetworld. These organizations screen contractors to ensure compliance with current regulations. LSPs

that qualify meet rigid requirements for health and safety, regulatory compliance and quality management.

2. ASK FOR PROOF OF A COMMITMENT TO QUALITY

A professional, experienced LSP should demonstrate a firm dedication to quality. A quality management system (QMS) should underpin every process, from the initial project site visit to submitting the final client deliverable. When assessing an LSP, ask to view a copy of the QMS. Make sure it outlines processes for records and data management, document control, inspections and testing, sustainability and corrective/preventive actions. It should highlight clear roles and responsibilities, and the organization should staff dedicated personnel, such as a quality engineer, to oversee the quality management process.

3. LOOK FOR AN INVESTMENT IN CONTINUOUS TRAINING

Utility locating methodology is always evolving, and new regulations are frequently being introduced.

Field technicians should receive regular technical training on operating geophysical equipment and implementing best practices for locating and marking utilities. Technicians should also be trained to adjust locating and marking techniques based on site conditions such as rain, snow, vegetation, construction and traffic.

A commitment to health and safety training is also a must. Certifications to look out for include Workplace Hazardous Materials Information System (WHMIS), first aid, fall arrest, confined space entry (CSE), Occupational Safety and Health Administration (OSHA) hazmat and Hazardous Waste Operations and Emergency Response Standard (HAZWOPER), just to name a few. Damage prevention technician training workshops and certifications are also starting to emerge across the country. To verify the qualifications of an LSP, ask for copies of the key employees' resumes and certificates.

Much of the work involved with utility locating occurs in the office, not just in the field. Utility locate requests need to be reviewed against a number of factors, including proximity of utilities to the excavation area, clarity of excavation requests, accuracy of measurements and offsets and the location of high-risk assets such as gas lines or hospitals. Ensure the LSP has the qualified resources in place to manage this aspect of utility locating.

4. GATHER INFORMATION ABOUT PREVIOUS EXPERIENCE

A little bit of research will go a long way toward selecting an LSP that is qualified, experienced and equipped to manage your project. Find out how many years the company has been in business, and look for experience completing projects similar to yours. For example, does the LSP have knowledge of local conditions? Have they worked on projects of a comparable size and scope? Secure contact information for at least three references to verify that the projects were completed safely and successfully.

Ensure a project plan is in place to forecast workload fluctuations, and adjust resources accordingly. A responsive plan should be developed for dealing with unpredictable fluctuations. This is key to confirming tickets are processed in a timely manner and that unnecessary delays aren't introduced to the project.

5. STUDY METHODOLOGY & LOCATING APPROACHES

Choose an LSP that can offer more than basic locating capabilities and is experienced in leveraging a variety of geophysical instrumentation and methods. In instances where a tracer wire has broken or is missing, or there are buried utilities comprised of concrete or PVC material, basic utility locating equipment will not detect the utility. In these cases, more advanced technologies, such as ground penetrating radar (GPR), may be required. It is helpful to work with an LSP that can swap in other technologies and be flexible to navigate challenges and surprises as they arise.

Ensure the LSP begins the locating process with a visual inspection to identify access points and potential hazards, and that plant facilities shown on available records match those that are actually on the jobsite. This is especially critical on project sites where new construction has occurred or is in progress. Evidence of buried infrastructure might include poles, dips, enclosures, pedestals, valves, meters and manholes.

Furthermore, confirm the LSP has a documented damage investigation procedure in place. If damage does occur throughout the course of locating, whether due to technician error or other circumstances, the LSP should investigate the damage to determine the root cause and any additional factors that may have contributed to the damage. There should also be a formal process in place for documenting and communicating the findings of the investigation.

With ever-evolving regulatory requirements and the risky nature of excavation, choosing to outsource utility locating is a decision heavily weighted in risk management. By keeping key selection criteria in mind, infrastructure owners can confidently transfer the responsibility to an expert, qualified LSP that will minimize potential hazards, complete work safely and ensure compliance with regulations and other requirements. For more information and resources on damage prevention, visit the Common Ground Alliance at commongroundalliance.com. **CBO**

Kevin Vine is the president of multiVIEW Locates Inc., a utility locating company that has been in business for almost 30 years and specializes in private and public utility locating, concrete scanning, hydro excavation, CCTV camera sewer inspection and subsurface utility engineering. Visit multiview.ca.

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The PM Perspective

Advice from construction leaders on what will take your company to new heights in 2018

Compiled by Elizabeth Manning

Project managers are often the jacks of all trades on a construction project. They are tasked with the responsibility of keeping the entire project running like a well-oiled machine. And we don't have to tell you how difficult that can be. Because of this, some of the best lessons come from the experiences and the knowledge of those in the field. The project leaders listed at left are from five of the top United States construction companies. We asked them about trends that are altering their daily processes in 2018, advice for new project leaders and more. Read their insights below.

CBO: What industry trends have had a major effect on your company's project management processes in 2017 and 2018?

Wiehe: This is more of a market condition rather than a trend, but we are experiencing a booming market in the Pacific Northwest. With that, we are also experiencing a shortage of skilled labor, like everyone else in the industry. We can't grow at the pace that developers would like us to because of this challenge. To try to combat that, we've started using business analytics to glean information and streamline our processes. As for industry trends, PCL has put a big emphasis on applying lean construction and production techniques across all of its divisions. PCL recently began hiring lean production managers, specifically to observe and identify issues and increase productivity in our offices and on our jobsites.

Welton: In the past, trends seemed to be just that—a trend—and we didn't necessarily investigate every trend or technology on the market. Today is different. To stay competitive, you have to investigate all trends, even at their infancy, to determine what and where the potential value might be. The advantage is how you integrate new building trends into your ecosystem that brings the most value to the client. We have changed our approach to building innovation by including it as a key initiative in our strategic plan. We have invested in resources that change the way we execute work. I would say this is a complete shift in philosophy from the past, when technology had to prove its value before we integrated it in our workflow. Now, we take a lead position on innovation and integration.

Thayer: Most notably, availability of skilled labor continues to have a major impact. We have also seen a positive impact from utilizing lean daily management, which enables issues to be addressed proactively and at the project site. As issues are solved, the data can be analyzed at a high level to look for trouble areas across regions and bring resources to assist.

Shaw: Recently, the industry has seen an explosion in how technology is utilized on a daily basis. The use of iPads, building modeling, robotic surveying equipment and online file sharing and collaboration continue to reshape how information is transmitted. In the past, projects were constructed solely with paper drawings, fax machines and overnight carriers. Now, we are using electronic document transfer regularly. The ability to digitally transfer information and then access it through management platforms has increased the flow of information.

CBO: What technology has transformed your processes over the past year?

Wiehe: It's actually an entire category of technology: reality capture. We have been using reality capture in several forms to improve our processes for a while. But now, instead of having to outsource that work, it's possible through different tools and software to complete those tasks in house. We can confirm existing conditions through complete 3-D processing and scanning, and use those models all the way through design, construction and operations and maintenance. Having 3-D printing capabilities in house has allowed us to print models that we can share with project owners and other partners to understand concepts and challenges more easily. All in all, having the ability to self-perform a lot of the virtual construction work has made a massive difference in our productivity and it has made us a stronger project partner.

Hedlund: Overall, 360-degree camera technology and drone capabilities have been the biggest drivers in moving our virtual construction efforts to new levels in the field. Virtual quality control and digital record documents are more sophisticated and useful than ever.

Welton: Wearables, drones, 3-D printing, mobile access and the growing number of devices all are just table stakes for the big prize—data insights that have never before been possible. JE Dunn has focused on investing in tech with the primary goal of harvesting, analyzing and publishing data in a manner that enables these "never-before-possible insights." For this to be possible, you must have an internal data infrastructure that allows for data aggregation that becomes your single source of truth. We are just scratching the surface of how valuable it is and will be to our company.

Thayer: Laser scanning has changed how we field measure and how as-builts are created. The ability to accurately and precisely model existing conditions in a timely manner is not possible using traditional techniques. Taking that data and communicating it to owners, designers and subcontractors gives all stakeholders the best information they can get to ensure a high-quality project.

CBO: Do you see any regulations, trends or other factors that could be a challenge in 2018?

Wiehe: A busy market means everyone has a high volume of work and is strained to meet demands. For our particular

region, we are looking at significant code upgrades that will be happening in the near future—specifically energy and seismic codes—so there's a bit of a rush for developers to design projects and submit them for permit before the code changes go into effect. Recently, in Portland, Oregon, there was a change in affordable housing requirements, and it's changed how developers are thinking about residential towers. It's certainly had an immediate effect on the progression of that project type locally.

Hedlund: As an industry, we continue to keep an eye on any legislation that modifies alternate procurement delivery methods (APDM), as well as payment or taxation issues for construction projects.

Thayer: Getting all subcontractors on project sites up to speed and enforcing the Occupational Safety and Health Administration's (OSHA) final silica standard will be a challenge for 2018.

Shaw: Access to qualified workers and the retention of qualified project management and field staff is always a concern. The construction industry has exploded since the recession a few years ago. People have a lot of options as to who they want to work for and where. Figuring out how to manage remote projects, while maintaining a healthy, work-life balance, is a significant measure to having a strong company. If we can find the lever that makes this a reality, we will retain key people and develop those coming in behind them.

CBO: What advice, that has helped you do your job better, can you offer to other project managers in the industry?

Wiehe: I've had an opportunity to work on a number of different project types, and PCL has always done a great job of letting me design my own career path. During the job search process, look for a position where you will have the opportunity to work on projects that excite you, so you remain highly engaged. Construction is built on long-term relationships; it's a marathon, not a sprint. Sometimes project partners make mistakes, and usually, it's in your best interest to help clean up. Always err on the side of over-communication. Be transparent about the team's goals. As a team, clearly define what the contract requires, the owner's goals and the end user's needs to pave the way for overall project success. When everyone has an understanding of what is valued, then each stakeholder can make decisions based on what they have to add to the conversation. Encourage project owners to be straightforward and consistent in what they expect. Get the end user involved early on in the process. They will have insight into what the project needs that you may not ever consider.

Hedlund: Keep your eye on the ball. When things get busy, those who pay attention to the basics of our business, like putting work in place safely, productively and on schedule, will make the most of a solid construction market.

Welton: Understand that you are not simply in charge of managing a project. You might not explicitly have "customer service" or "marketing" in your title, but that doesn't mean you aren't representing your company to your client every day. You have to provide the highest level of customer service, be constantly trying to prove and add value and be solutions-oriented for your client at all times. Next, be sure to train your next generation. We need talented and experienced people to support sophisticated building types and clients. We simply cannot expect our nation's college institutions to provide every skill necessary for project managers, so we need to take it upon ourselves to provide on-the-job training, mentorship and guidance. The more you help grow your people, the more support and ideas you have to draw from as you move forward with new client challenges. Last but not least, never stop learning. The project managers who have the greatest success at JE Dunn are the ones who aren't afraid to try out a new technology or a new approach to building. I tell everyone to be open-minded about finding new, innovative solutions to age-old construction problems.

Thayer: Get into the details. There are times to stay at a high level, but frequently at the project site, items can be missed, unless time is taken to get into the details. Make sure to communicate. Communication among the project stakeholders and internally within project team is critical. Know your people in order to grow and keep the best people.

Shaw: The construction industry is one that is based on relationships and effective communication. Learning and expanding on these skills was key for me. In today's world, we gravitate toward text messaging and email. While important, there are many times where face-to-face conversations solve more problems and open new doors. My best advice is to develop the skill to communicate effectively. Recently, I have noticed employees move between companies now with greater frequency than at any other time in my career. I have watched people leave companies and projects without any regard to the potential damage they cause to the company that employs them, the staff they are leaving behind or the owner with whom they are involved. Life happens, and at times, it cannot be controlled. However, we can control the decisions we make. If we strive to practice patience and make decisions with others considered, everyone benefits.

Elizabeth Manning is the managing editor of Construction Business Owner magazine.

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Adapting for an Autonomous Future

How network equipment sharing can strengthen project management & your bottom line

By Kevin Forestell

One of the most exciting developments in the construction, agriculture and mining industries today is the introduction of autonomous machines. Tractors are piloting themselves through fields to plant, water and harvest crops, and massive, self-driving rock trucks can make their way in and out of mines safely, continuously optimizing their routes. Meanwhile, self-piloted earthmoving equipment is being developed to dig out foundations, and 3-D printers can be fed blueprints to generate buildings.

When autonomous equipment hits the mainstream, it will help businesses drive down project costs, accelerate timelines and make trade work safer. However, before these positive changes can take hold in the industry, project managers will need to learn how to strategically add autonomous machines to their fleets, create uptime for them and maximize returns on what will surely be large investments in autonomous equipment.

Today, growing peer-to-peer (P2P) equipment rental networks offers a model for the ways project managers can adapt procurement, planning and deployment strategies to prepare for autonomy.

FIND THE RIGHT FIT

Businesses that can't afford autonomous equipment outright may still find it cost-effective to rent these machines to backfill for labor shortages. Finding the right machine at the right price will likely prove difficult as autonomous machines slowly make their way into traditional rental businesses' fleets, but project managers who want to experiment with autonomous equipment could find those machines on P2P networks sooner.

P2P networks already feature a wider variety of common and specialty equipment of all ages at lower rates than traditional rental yards can offer. This is because P2P networks don't have to cover the

same overhead costs as traditional rental businesses, and they connect renters with equipment owners who are states or countries away, widening the pool of available equipment for rent. Equipment owners also set their prices individually, so as autonomous machine owners look to increase uptime, renters will probably pay less of a premium on P2P networks than they would at traditional rental businesses.

Businesses should encourage their project managers to get familiar with P2P networks today so they can make smart recommendations as to when it will be the most cost effective to deploy rented autonomous equipment. As these project managers find more opportunities to deploy autonomous machines on their jobsites, the positive impact to project timelines and costs could even help them to increase profits and afford autonomous vehicles of their own.

MAKE THE MATH WORK FOR YOU

The first businesses to purchase autonomous equipment (or those that already have) will struggle with the same core problem all contractors face: keeping machines on uptime as much as possible. Today, P2P networks help project managers to fight downtime for equipment they own by renting idle machines to other contractors who can't or don't want to make a purchase, but who perhaps can't find equipment for the right price at traditional rental yards—or at all.

Renting machines to other contractors to create uptime helps project managers to offset costs associated with machine ownership, namely finance payments and maintenance. For autonomous machines that can (technically) be working 24/7, the impact of revenue from around-the-clock rentals could be enormous.

The autonomous foundation-digging machines mentioned above offer a great example for this model of ownership. These machines are expensive to own but can greatly accelerate land preparation across all of a large builder's projects. Once they're finished digging out foundations for their projects, managers can rent those machines to other builders near or far to keep the machine moving and bringing in additional revenue.

KNOW AUTONOMY'S IMPACT AT SCALE

The bottom-line benefits of P2P equipment sharing can be amplified by more sharing and further increases in machine utilization rates. As more businesses embrace P2P as a tool for increasing per-machine revenue, we're likely to see fleet management become fluid—as soon as a machine has finished its job on one site, it will be sent to a renter.

Managing equipment this way can change the way contractors compete for work. Businesses using P2P to get the equipment they need can plan to spend less on equipment, helping them to lower cost projections and compete for larger projects. Businesses that already own equipment may also be able to lower their bids with the knowledge that they can continually generate revenue from their fleets. In both cases, sharing equipment helps businesses to reduce overhead by using their equipment more efficiently.

> Autonomous machines can work around the clock without breaks, reducing costs & increasing revenue from output.

That efficiency will be key to the rollout of autonomous equipment, which will be expensive for any business to own and manage the same way they do today. To reap the rewards of deploying autonomous vehicles, businesses will have to adapt to sharing the equipment and the costs of that equipment.

The rewards are pretty great, too. First, and perhaps most obvious, autonomous machines can reduce labor costs while increasing work site output. Whether on a farm, in a mine or on a construction site, autonomous machines can work around the clock without needing breaks, meaning they can impact the bottom line from both sides: reducing costs and increasing revenue from output.

Autonomous machines will also save lives. In construction, agriculture and mining, transportation-related accidents or unintentional contact with equipment caused 57 percent of the 1,627 workplace fatalities recorded in 2015, the most recent year for which complete data is available.

APPROACH CHANGE WITH PEOPLE IN MIND

When it comes to autonomy, the impact on jobs is impossible to ignore. We aren't fully sure how autonomous technology will impact jobs in the trade industries, but today's machines that can drive themselves are solving more labor problems than they're creating (they're still being supervised by humans with kill switches). For the foreseeable future, we can be certain that autonomous machines will need to be maintained by skilled technicians, and before that they'll need to be manufactured on new lines which will run through plants that today's workers still need to build.

Whether we expect them to eliminate jobs or create new ones, the fact remains that autonomous machines are coming. The business impact of autonomous machines being used at maximum efficiency is too great to ignore, so we must get more comfortable sharing equipment and adjusting to the new business strategies around-the-clock autonomous labor will require. **CBO**

Kevin Forestell is the CEO and co-founder of Dozr, an online heavy equipment marketplace connecting machinery owners with builders in need of equipment. Prior to starting Dozr in 2015, Forestell was president of Forestell Designed Landscapes, which he also founded. It was there that he grew frustrated seeing bulldozers, tractors and other heavy equipment sitting idle during the winter. Dozr was invented to provide an outlet for owners to generate revenue from their underused equipment. Visit dozr.com.





Data-Driven Construction Management

The new frontier of too much information & the processes you need to regain control

By Marcel Broekmaat

There's a paradigm shift happening in our industry. Ready or not, every company involved in construction—no matter what phase it supports in the building lifecycle—must now also consider itself a data company. When we design, construct and operate a building, we're not only constructing walls, columns, beams and roofs, but we're also creating mountains of data on the jobsite and in the office. This data is collected in a myriad of file formats and disparate workflows and then stored in silos and often incompatible repositories.

How well we use data to drive better decisions and to deliver projects more efficiently, more sustainably with higher quality and with lower costs and fewer risks is what defines the next frontier of construction management. It is our most significant challenge and our greatest opportunity. To that end, implementing technology that transforms the way project information is delivered and consumed is more important than ever.

THE DARK SIDE OF INNOVATION

Cloud computing and mobile technology have radically changed the way we create, track and share data on the jobsite and in the office. Virtual design and construction (VDC) methods and building information modeling (BIM) have streamlined collaboration and transformed relationships among architects, engineers, contractors and owners. Emerging technologies like unmanned aerial vehicles (UAVs), the internet of things (IoT) and wearables are creating new applications for capturing and analyzing rich data on complex jobsites. Mixed reality is merging real and virtual worlds to produce new environments and visualizations where physical and digital objects coexist and interact in real time—transforming the way construction professionals consume, communicate and interact with data. Cloud computing is enabling ubiquitous, on-demand access to shared resources, allowing rapid product development and unprecedented data processing capabilities.

However, there is a considerable consequence to this innovation. As technologies evolve and come to market at rapid speeds—and projects become more complex and larger in scale—the amount of data created and accessed across the planning, design and construction project lifecycle is extraordinary, making it difficult for stakeholders to find the information they need, analyze it efficiently or share project data downstream. Project managers have been hit hardest, now having to add "data Sherpa" to their already long list of responsibilities.

Construction organizations must extract data from these silos and make it available through more easily accessible and spatially organized interfaces. General contractors looking to restore project control should consider these strategies that focus on data centralization and project intelligence.

BIM-CENTRIC PROJECT MANAGEMENT

Drawings remain the preferred way of interacting with project information in the field and in the office. Moreover, BIM is evolving beyond design to become an invaluable process for construction management. With a BIM-centric workflow, markup drawings and models provide spatial context and can indicate areas or places that require the attention of team members. These markups can be associated with project data such as requests for information (RFIs) and submittals, therefore creating the spatial reference for this information, which makes it easier to consume and use in decision making. For instance, if potential change orders (PCOs) can be created and assigned directly from the jobsite, how much time would it save? Or, imagine a scenario in which emails are automatically generated to notify appropriate contacts of an RFI initiated by recognized changes to the 3-D model. In an environment where critical project data and project changes can be captured and shared instantly, project visibility and transparency will improve dramatically.

ELEMENTAL THINKING

Thanks in part to the deluge of information and shifting digital preferences, project management has become heavily focused on data and file management. However, this can be counterproductive. General contractors will need to shift their thinking away from files and toward elements in order to successfully take BIM to the next level and to continue to leverage data across the project in more productive ways. To get there, contractors should look for solutions that will help to increase the level of granularity and control over processes. More than a visual representation of the building, today's centralized project management tools are taking BIM beyond the traditional design function to effectively coordinate the design, quality, production, delivery, schedule and assembly of building elements. Using this approach, general contractors can visualize how proposed design changes will impact the schedule and project costs. Specialty contractors such as mechanical and electrical contractors, as well as steel and concrete fabricators, have already converted their BIM processes to elemental thinking. This means that centralized data sources and construction-ready BIM are embraced from the onset of projects, and in doing so these contractors have adopted prefabrication as an integral part of their business workflows. General contractors should follow their leads and look to apply elemental thinking to support reduced risks and more predictable schedules, not to mention better collaboration, lower assembly costs and reduced maintenance costs.

PROACTIVE PROJECT MANAGEMENT

Many believe the building process is rife with opportunities for reinvention. The McKinsey Global Institute estimates that the world will need to spend $57 trillion on infrastructure by 2030 to keep up with global GDP growth. This is a massive incentive for players in the construction industry to identify solutions that transform productivity and project delivery through new technologies and improved practices.

For project management, this means shifting from a retrospective, or as-it's-happening, project tracking and data recording function to a proactive and predictive forecasting function. This is only possible if the right project controls and building data are added to models and plans earlier in planning stages, are processed in an efficient and timely manner and stored in a way that is easy for future retrieval. Only then can project owners get ahead of the workflow and utilize the invaluable project data for timely decision making, useful analysis and forecasting.

Other industries have gone through similar transformations. Implementation of the six sigma methodology—a disciplined, data-driven approach for removing the causes of defects and minimizing variability for process improvement—has had an enormous impact on companies. For example, Motorola estimated it saved $15 billion in 11 years using six sigma; GE achieved annual benefits of $2.5 billion; and Honeywell saw more than $800 million in savings. These savings would not have been possible without data analysis. Data is necessary before improvements can be implemented, and this is the big opportunity for construction.

Moving forward, advancements in project management applications that combine modeling capabilities with the ability to manage data on the element level will deliver optimized project intelligence for general contractors. Next-generation project management tools can also help construction companies effectively manage and leverage the growing tidal wave of project data created on the building site every day. By moving project data beyond individualized containers to a centralized common environment, data can truly become an asset, and the insights gained can lead to better outcomes and risk management for contractors and project owners. CBO

Marcel Broekmaat has spent nearly 15 years in the construction technology field and is currently market manager, project controls at Trimble's general contractor/construction management division. He leads the development of Trimble's project management solutions, which include Prolog and ProjectSight. Visit gc.trimble.com.



The Power in Popularity

A look at the features fueling the high demand for compact track loaders

BY CHRISTOPHER GIRODAT

Looking at equipment trends during the past decade, it seems compact track loaders have led the way. These durable, versatile and cost-effective loaders have continued their reign in the compact equipment industry because of their power and ability to extend working seasons. Today, compact track loaders account for nearly 20 percent of all financed equipment in number of units, according to Equipment Data Associates (EDA). As an equipment owner, you should know the features of compact track loaders: powerful pushing, digging and lifting performance; exceptional traction; minimal ground disturbance; increased flotation; and attachment versatility are just a few reasons they are so popular.



BETTER MANEUVERABILITY

While other compact equipment may shut down during the off-season, compact track loaders can keep you and your operators working year-round. That is because they are built with a unique balance of torque and tractive effort that provides greater pushing power and mobility.

More ground-to-surface contact optimizes a compact track loader's power and performance on rough terrain, inclines and uneven surfaces. Tracks distribute the machine's weight across a larger area, minimizing ground disturbance when traveling over established surfaces. To best match ground conditions, compact track loaders can be outfitted with narrow or wide tracks and different tread patterns.

Equally beneficial is the tracked undercarriage, which provides low ground pressure and enhanced flotation and traction when working in soft, sandy, wet or muddy conditions. Choose from multiple undercarriage styles—including solid-mounted and roller suspension—that are designed with a suspension system to increase operator comfort by minimizing vibration. Cab enclosures, heat and air-conditioning, suspension seats and radios are also features that further enhance operator comfort.

Some manufacturers offer faster travel options on their compact track loaders to reduce time spent traveling across a jobsite or between jobs. These machine features can translate into project gains and benefits, allowing you and your operators to start earlier in spring or continue to work several weeks later in fall.

POWERFUL LIFTING ABILITIES

When it comes to lifting performance, many compact track loaders have high capacities for loading and placing materials. Many manufacturers offer a choice of two distinctive designs—a vertical lift path and a radius lift path—to match the level of

lifting that fits frequent tasks. For example, a vertical lift path loader provides higher lift capacity and more reach at full lift height than a radius lift path loader. When maximum reach is achieved at full lift height, it is easier to clear high-sided trucks and hoppers and to perform jobs that require repeated lifting at taller heights.

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

5 CONSIDERATIONS FOR PURCHASING A COMPACT TRACK LOADER

1. Match the compact track loader to the project to ensure that you have not under or oversized for common tasks. Aspects to consider include physical size, lift path type (radius or vertical), rated operating capacity, auxiliary hydraulic flow and horsepower.
2. Consider purchasing compact track loaders with a deluxe digital instrument panel that can sync with the machine's internal system and controls.
3. Visit your local equipment dealership before the sale to inquire about parts and service. Get to know key personnel in these departments because they will be critical to your company's field success when operating and maintaining compact track loaders.
4. Perform daily maintenance. Make sure operators are trained on how to properly perform daily tasks for compact track loaders, such as fluid level checks and visual checks of the machine and attachment components. Examine undercarriage components daily for any signs of damage or wear.
5. Consider attachments beyond just buckets and pallet forks to make the most of your investment.

MULTIPLE ATTACHMENTS

Strategically expand your project services and adjust to changing markets and applications by purchasing or renting key attachments. Some manufacturers offer more than 70 attachments for compact track loaders, from augers and grapples to rotary cutters and hydraulic breakers. For example, you can use an auger to dig footings; an industrial grapple to grab debris or hard-to-handle objects and transport the material; a dozer blade or box blade for



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grading projects; or a hydraulic breaker to remove asphalt or concrete on a construction site.

It is also important to assess the value of high-flow auxiliary hydraulics for compact track loaders and attachments that can benefit from an extra power boost.

COST OF OWNERSHIP

While it's true that similar-size skid-steer loaders typically have a lower purchase price than compact track loaders, rubber tracks can last about twice as long as tires if proper operation is followed. Rubber tracks range $3,000 to $4,500 per set and last approximately 1,200 to 1,600 hours, while a set of skid-steer tires ranges $600 to $1,000 and lasts 600 to 800 hours. Track and tire life will depend on the work surface; loaders driving on concrete or asphalt will generally need tracks and tires replaced before loaders performing tasks in dirt.

To keep operating costs down, consider minimizing operation of compact track loaders on asphalt and concrete surfaces to increase the life of rubber tracks. It is also important for operators to make gradual turns rather than sharp ones. Sharp turns may shorten the rubber track life and damage established surfaces like lawns.

Another consideration is downtime costs. If ground conditions are soft, sandy, wet or muddy, skid-steer loaders may not work. A compact track loader is designed to handle adverse underfoot conditions, so your productivity will not be halted due to weather.

Ignoring compact track loader maintenance may lead to expensive repairs and unplanned downtime. You and your operators should perform preventive maintenance tasks such as greasing the loader and checking the hydraulic oil site gauge on a routine schedule. These are outlined in your operation and maintenance manual. In addition, encourage operators to turn off the machines or lower the engine throttle to save on fuel when they are not working. During the course of a day, this time will add up and lead to fuel savings.

Based on information provided by the Association of Equipment Manufacturers (AEM), compact track loader sales continue to rise in the construction industry, particularly among contractors in grading, excavating and site preparation applications. The inherent benefits of compact track loaders make them popular among contractors. Equipped with multiple features and attachments, you can work longer, harder and smarter all year long. CBO

Christopher Girodat is a marketing manager for Bobcat Company, a Doosan Company. Girodat has more than 11 years of marketing and product experience in several industries, including construction, agriculture, landscaping and grounds maintenance. Visit bobcat.com.

Build Safe, Build Smart

How New South Construction is establishing a culture of safety

BY DANIEL MAXSON

New South Construction Company, an Atlanta-based general contracting firm, operates under the motto, "Build Safe. Build Smart." Created in 2014 as an approach developed to communicate safety across all projects, it has become more than a company mission statement, evolving into a philosophy that permeates every level of the firm.

Construction safety begins and ends with the boots on the ground. On New South projects, this philosophy is about understanding the workers who are at risk. Knitted into the fabric of the company's processes, safety means everyone is working together to accomplish the task effectively and without injury.



New South's success stems from a forward-thinking approach to safety that uses leading indicators, or indicators that could signal future events, to manage various views and opinions about safety, and then constantly looking for ways to incorporate safety in project processes.

Contractors should understand the needs of their trade partners and seek feedback to consistently reassess safety challenges on jobsites. Frequent safety walks and safety messaging in multiple languages are simple ways to ensure everyone is on the same page and effectively working toward the same project goals. Studies show a significant correlation between safety performance and employee engagement. If workers are engaged and made to feel like part of the process, then evidence of that will be noticeable. This can be accomplished with one-on-one communication, group lunches, safety incentives or positive feedback. The following projects are examples of proactive safety approaches that led to successful results.

- During the last 4 years, New South has extended its long-standing relationship with a multinational beverage corporation headquartered in Atlanta. With more than 1 million man hours on this single project, the team completed renovations to upgrade the company's expansive downtown Atlanta office. Weaving through six interconnected buildings, the project included converting more than 521,000 square feet of the corporate campus into a continuous network of common spaces, conference suites, dining facilities and outdoor courtyards. Because work on this project was completed in an active office environment housing several thousand employees, safety planning started long before construction began. During early planning sessions, safety teams analyzed project features and mapped out potential challenges and hazards. This added effort on the

front end, paired with consistent communication and a focus on developing a firm safety environment, continues to produce superb results.

- New South currently has several active projects at Hartsfield-Jackson Atlanta International Airport. Navigating projects in the world's busiest airport requires a high degree of expertise and flexibility. With Hartsfield-Jackson serving nearly 105 million passengers per year, public and employee safety and minimal traffic disruption are New South's top priorities. Construction crews at the airport worked to engineer out safety hazards to accommodate schedule demands and to ensure public, staff and aircraft safety.

In projects of this size and proximity to the public, it is crucial that safety touches every individual on the jobsite. New South teams at the airport implemented mandatory planning meetings and daily walk-throughs, reinforcing the idea that safety is implemented from top to bottom and is everyone's responsibility.

Conducting project-wide meetings and safety stand-downs that include training sessions are great ways to reinforce an approach that incorporates safety in the construction process. Safety managers can use these trainings to address unique project needs and challenges, as well as new industry standards and seasonal demands. Additionally, hosting these meetings allows workers to have a voice and reevaluate safety on projects.

One indicator that demonstrates safety culture on projects is safety engagement. If workers are not approaching supervisory staff during project walks or offering input on a safety item, then you should question the level of connectivity you have with them.

It is imperative that workers feel responsible for upholding safety standards. Safety reporting should be encouraged; workers should never hesitate to report safety hazards or near-misses. An important first step to benchmarking a company's safety culture starts with unbiased feedback, which may also include a third-party assessment.

Safety should not be compartmentalized like a project's specification book. Cultivating a sound safety environment is a result of developing a relationship with everyone on the project. That is why New South strives to build safer jobsites and to have a positive impact on the construction industry by practicing what it preaches and sharing best practices for building a safety culture. **CBO**



Daniel Maxson is the safety director at New South Construction Company. Visit newsouthconstruction.com.

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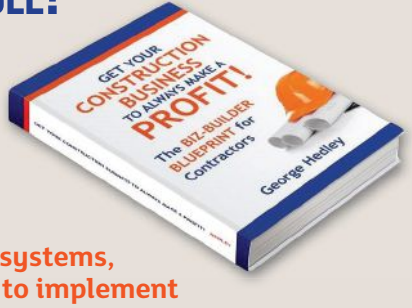


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What's in Your Work Boot?

Why safety starts with understanding your footwear & its functionality

BY LORI HYLLENGREN

The Occupational Safety and Health Administration (OSHA) reports slips, trips and falls comprise nearly 25 percent of all reported accident claims, including roughly 12,000 accidental deaths every year in the United States.

Employers are placed in a difficult position. While slips, trips and falls are among the most reported and costly injuries, confusion surrounds the definition of slip resistance as well as the accepted method for evaluating slip-resistant footwear.



THE STANDARDS

Purchasing a pair of slip-resistant work boots isn't as easy as a trip to the shoe store. Unlike other protective aspects of safety footwear, such as toe protection or puncture resistance, slip resistance requirements do not exist in North America. There are a variety of methods for testing slip resistance, and there are guidelines that manufacturers can choose to follow during product testing. Still, neither OSHA, HSE or any other U.S. regulatory body with enforcement power defines or quantifies the slip resistance of footwear.

Prior to 2011, ASTM F-1677 was the common method for testing the slip resistance of footwear. This was known as the Mark II or Brungraber test (named after Dr. Robert Brungraber at Bucknell University, who pioneered the method). However, it was dropped by ASTM more than a decade ago and is no longer supported.

Now, the most relevant testing standard is ASTM F2913, "Standard Test Method for Measuring the Coefficient of Friction for Evaluation of Slip Performance of Footwear and Test Surfaces/Flooring Using a Whole Shoe Tester" (whole shoe test). The whole shoe test is applicable to a variety of footwear materials and test surfaces, including those that are contaminated with slippery substances. As such, it offers a comprehensive picture of a shoe's slip resistance.

Still, the slip resistance measurement does not guarantee you won't slip, trip or fall. While it is possible to measure the coefficient of friction of a shoe, slipping involves other variables to consider when choosing proper safety footwear. For example, one shoe may provide adequate slip resistance on dry concrete but become slippery on wet steel. Another may offer substantial slip resistance initially, but if the outsole is not durable and wears down quickly, the slip resistance may diminish.

SELECTING FOOTWEAR

For construction business owners, it is important to understand the trade-offs versus safety when making a solid assessment of slip resistance for your employees' footwear.

The first consideration is cost. The least expensive safety footwear may not offer adequate slip resistance for the job. The slip resistance of any footwear comes down to the integration of several anti-slip features, all of which may affect the purchase price. Antiquated technology, uncontrolled manufacturing or low-quality materials could compromise any of these features as well as create durability issues.

Next is comfort. Discomfort can be a distraction to a construction worker, so a proper balance between safety and comfort is necessary. If work boots do not fit properly, employees may look for excuses to avoid wearing them altogether.

Third is overdesign. Surprisingly, it is possible for safety footwear to be too slip resistant. For example, if the boot sticks to a work surface, the wearer runs the risk of injuries like those experienced by athletes who get hurt when cleats stick in the turf.

The ideal situation is to work with a safety footwear provider who can help you to understand benefits versus tradeoffs and assist you in finding the appropriate solution for a specific job environment. There are also a few general guidelines to consider when selecting the right slip resistance features.

DURABILITY

Slip resistance performance may change over time as footwear is subjected to normal wear and tear. Employers should prioritize highly durable footwear that provides the most slip resistance for the longest period of time so their workforces can operate with confidence.

OUTSOLE & TREAD

The outsole compound is critical for slip resistance. In general, soft rubber compounds offer the greatest slip resistance for work environments contaminated with oil and grease. However, it is important to keep in mind that small changes in the compound can result in large variations in overall slip resistance. Look for outsoles that channel oil, grease and water away so the outsole makes contact with the work surface more fully, as well as outsoles with split and solid lugs that are specifically designed to shed debris.

Treads should allow a maximum amount of material to grip the floor. Softer soles and more tightly spaced treads are better suited to fluid contaminants and indoor environments. More widely spaced treads are generally better for handling solid contaminants in outdoor areas. It is vital to avoid clogging the tread. A wider or deeper tread pattern may be necessary if footwear needs to be cleaned too often. Watch for worn or flattened soles after substantial use, which reduce slip resistance.

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MIDSOLES & INSOLES

The midsole should provide ample support and stability. Again, midsole technologies do not have a direct bearing on slip resistance, but they are important for overall structural integrity and the amount of comfort employees can expect. Insoles do not play a direct role in slip resistance, but they should offer additional cushioning and impact padding for employees who are on their feet for extended periods or who work predominantly on hard surfaces.

UPPERS

Uppers can be made of a long list of materials, including various leathers, suede, mesh or a combination. Like insoles, uppers do not directly determine slip resistance but instead play a key role in fit and comfort. A shafted boot (6 or 8 inches tall) offers more ankle stability than a shorter boot such as an oxford.

3 SIMPLE PRINCIPLES

Because there is no uniform standard or rating for slip resistance, any footwear manufacturer can claim slip resistance. This does not make purchasing safety footwear for your construction crew easy. The best approach is to follow these simple principles.

1. *Follow ASTM F2913*—This standard method (whole shoe test) provides the most complete approach to evaluating how different footwear materials interact with various work surfaces. All slip-resistant footwear should be tested to this standard to establish a common basis for comparison. Again, the Mark II test has been withdrawn by ASTM and should not be used to evaluate safety footwear.
2. *Understand the details*—Whether a specific shoe or boot will provide adequate, long-term slip resistance requires a deep understanding of what the job involves: the surfaces, contaminants and physical requirements of the role. Make sure to take all of this into account when selecting footwear. Your footwear provider should not be giving you something generic, but rather purpose-built safety footwear that adheres to your specific needs.
3. *Share knowledge*—Every work environment is unique. Ensuring slip resistance depends on a strong, open and transparent collaboration between the employer and the safety footwear provider. The footwear manufacturer should not only provide as much detail as possible about its products, but also should seek to understand every nuance of the work environment before making a recommendation. **CBO**

Lori Hyllengren is the laboratory manager for Red Wing Shoe Co. and S.B. Foot Tanning Co. She has vast experience in product quality testing of leather, footwear and PPE garments across international standards including ASTM, Canadian Standards Association (CSA) and European Standards (EN). Visit redwingshoes.com.





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New & Innovative Products

Selected by the editors of Construction Business Owner

1 TOWABLE HYDRAULIC EARTH DRILL



1

Little Beaver's Towable Hydraulic Earth Drill design reduces operating weight by roughly 50 percent compared to traditional hydraulic drills, and requires less than 20 pounds of force to pivot into digging position. The frame eliminates torque for safe, one-person drilling. The rig can be transported using a removable "no tools" towing hitch. The Towable drill's 11-horsepower Honda engine delivers 22-percent more power than competitive models. The unit's 2,700-psi hydraulic system provides up to 300 foot-pounds of torque with an auger speed of 150 rpm. Its 34-inch width allows it to easily fit through gates and other tight spaces. Its 16-inch semi-pneumatic tires and auger lock make it easy to maneuver around a jobsite. It features a two-position handle that rotates 180 degrees. The drill's infinitely variable 20-degree auger tilt makes it possible to drill vertically in uneven terrain. A built-in pressure relief valve releases if the drill reaches a certain hydraulic pressure, stopping the auger and protecting the operator from potential injury.

Visit littlebeaver.com.
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2



2 60-TON SPREAD-AXLE TRAILER

Talbert Manufacturing has introduced the 60/65SA trailer, a unit designed to accommodate both tri-axle and tandem-axle jeeps. It features 2+2, 3+1 and 4-axle close-coupled configurations. The trailer offers a 60-ton capacity rating with its 13-foot 6-inch two-point rigid load base as a 2+2 or 3+1 configuration. Owners can configure the trailer with four close-coupled axles with no gooseneck extension, which provides a 65-ton capacity with the trailer's load base. The 60/65SA features an optional 70-inch, flip-up gooseneck extension to achieve a 190-inch swing radius, while its removable kingpin stations allow for 120-inch and 108-inch swing radiuses. The trailer comes standard with a 30-by 8-foot, 6-inch-wide deck and offers optional deck lengths, deck types and widths. The 60/65SA's deck features a 22-inch height, one of the lowest in the industry. This trailer is equipped with Talbert's optional East Coast-style E2Nitro spreader, which uses a combination of hydraulic fluid and nitrogen to equalize axle pressures, providing proportionate weight distribution of each axle grouping. In addition, the E2Nitro features a bearing pivot and pivot lockout for backing the trailer. Users also can hydraulically lock in axle loads regardless of terrain. The E2Nitro is standard with a two-speed dual landing gear for optimal stability when disconnected from the trailer.

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3 ARTICULATING MULTI-PURPOSE TRUCK

ARDCO's next generation Articulating Multi-Purpose Truck (AMT) features a modular back-end platform designed to accept a wide array of standard and customizable attachments. Available configurations include a bare chassis, dump bed, flatbed, water tank, fuel tank, service and lube station, utility bed, personnel carrier, pipe trailer, drill and custom solutions. Powered by a 250-horsepower Cummins QSB6.7 Tier 4 Final diesel engine, the AMT 600 model features selectable 4- or 6-wheel-drive and offers a maximum payload of 45,000 pounds. The AMT 400 model has a 200-horsepower Cummins Tier 4 engine, offers 2- or 4-wheel-drive and provides a max payload of 28,000 pounds for hauling fuel, water, dirt and more. Top travel speed for the AMT 600 is 30 mph, while the AMT 400 can travel up to 25 mph. The AMT features a two-person, enclosed, all-weather ROPS cab that is sound rated to 68 db. An upgraded 7-inch display is incorporated in the steering column, providing digital gauges with onboard diagnostics and digital manual access.

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4 PAVER ROLLER

Weber MT has added a smaller machine for convenient installation of large paving slabs: the VPR 450 Paver Roller. At 108 kg, it delivers a centrifugal force of 8 kn, with a working width of 42 cm. It is ideal for installing paving slabs with a width of 30 cm. It also allows the Paver Roller to press delicate concrete slabs with a relatively low thickness gently into their bedding. The machine is just as effective when it comes to vibrating the joint seal into the joints. The operator can set the machine to the operating speed required to complete the project.

Visit webermt.de.
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5 42-INCH ANCHOR TETHER

Hammerhead Industries' Gear Keeper family of ergonomically constructed Super Coil anchored tool tethers are manufactured with a low-force polyurethane elastic core that is woven throughout the entire body of the webbing. The tool tether creates an 18-foot diameter working area but will gently retract to just 42 inches. Designed for tools weighing up to 25 pounds, Gear Keeper's proprietary manufacturing process minimizes "extension" arm fatigue while in use and minimizes entanglement issues when climbing or working in confined areas. Load tested beyond the drop weight, other safety and strength features of the Super Coil tethers include a lanyard cord that is sewn lengthwise into the webbing to avoid damaging the integrity of the cord and ensuring longer durability and strength. Model TL1-4021 specifications include 1-inch tether webbing and two stainless steel carabiners load rated above 1,100 pounds. Model TL1-4025 specifications also include a 1-inch tether webbing, plus one stainless steel carabiner and a fixed web tool attachment loop.

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6



8



7

6 HYDRAULIC EXCAVATOR SHEARS

Kinshofer has introduced the DXS Series of Hydraulic Mobile Excavator Shears. The attachment series, which debuts with the DXS-50 model, is ideal for scrap processing, tire recycling and demolition. Kinshofer's DemaPower cylinder technology gives the DXS-50 the same power as shears two sizes larger. The cylinder uses four chambers, resulting in 20-percent more surface area within the cylinder. That allows the DXS Series to exert up to 25-percent more power from a smaller attachment, resulting in the best power-to-weight ratio in its size class. The DXS-50 reduces carrier fuel consumption by up to 20 percent compared to other shear models. Kinshofer's double-acting speed valves and innovative cylinder technology also give the DXS-50 superior jaw closing and opening speeds. The cycle time is as fast as 5.5 seconds, 50-percent faster than other models in its weight class.

Visit kinshofer.com.

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7 BACKHOE LOADER ENHANCEMENTS

Case Construction Equipment has introduced several machine enhancements to its N Series backhoe loaders incorporated throughout the machine—from cab and drivetrain improvements to enhancements to the hydraulic and electrical systems. Case has also made standard several options that were previously optional, and now offers an increased suite of factory options on all N Series backhoe loaders. Case N Series backhoe loaders now feature an all-new Pilot Control hydraulic system for optimal precision and smoothness, offering the operator more control in critical applications. The fuel economy package is now standard. The package also includes the Auto Engine Idle feature, which brings engine rpms down to idle when the backhoe controls are not used for a set period of time. Several additional enhancements have been made, including electrical system features that were previously optional.

Visit casece.com.

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8 PORTABLE INVERTER GENERATOR

Caterpillar has expanded its home and outdoor power product line with the introduction of a portable inverter generator. Caterpillar engineers designed the Cat INV2000 with consumer usability features, like an easy start switch, along with professional performance and safety features (OSHA compliant GFCI). Caterpillar will also offer a parallel kit, enabling users to connect two INV2000 units together to double power output. The INV2000 produces 1,800 watts running and 2,250 watts starting. Noise levels are competitive in the product category—52-61 db (depending on load). At 49 pounds, the INV2000 is portable and convenient to store. Along with two GFCI 120V 20A outlets, this generator has two built-in USB ports for charging electronics such as phones, tablets and Bluetooth speakers. The unit also features a 12-volt battery charging outlet, along with a cable, for easy charging of automotive style batteries.

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9



10



11

9 QUIET INVERTER GENERATOR

Honda Power Equipment has introduced a new EU2200i inverter generator. Part of its Super Quiet Series, the EU2200i offers 10-percent more power (200 watts) than the outgoing EU2000i model, the company's most popular portable model. The Honda GXR120 engine provides power, performance and ease of use and maintenance. The EU2200i delivers additional features including a fuel shut-off valve that allows the engine to run with the fuel supply off; a large spout and oil drain gutter for cleaner, easier oil changes; a smooth, light effort recoil; a user-friendly design that incorporates color-coded startup points to start the generator; and increased ventilation.

Visit powerequipment.honda.com.

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10 NEW BUCKET ATTACHMENTS

John Deere has expanded its Worksite Pro attachments with its new roll-out bucket offerings. The RB72, RB84 and RB96 models are designed to best match the attachment to the machine. Optimized for G-Series Compact Track Loaders and K-Series Compact Wheel Loaders (RB84 and RB96 only), these buckets provide an additional 34 inches of dump reach when fully extended. Rather than requiring the machine hinge pin to be raised higher than the hopper for dumping, the roll-out bucket pivots near its cutting edge for additional dump height. The buckets incorporate high-strength, large-diameter pivot pins. Three bucket widths are available: the 72-inch RB72, 84-inch RB84 and 96-inch RB96.

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11 DRY-CUT MASONRY SAW WITH DUST COLLECTION

iQ Power Tools released the iQMS362, the newest in the iQ360 line of masonry saws. The iQMS362's 16.5-inch Q-Drive blade was engineered specifically for this tool. The Q-Drive blade cuts masonry materials in a wide range of shapes, sizes, weights and densities. The iQMS362 eliminates the dust cloud, allowing workers to increase their efficiency and productivity while staying compliant with the new OSHA regulations. The iQMS362 was designed with the health and safety of its operator in mind, meeting the OSHA Silica Permissible Exposure Limit (PEL) of 50 micrograms of respirable crystalline silica per cubic meter of air, averaged over an 8-hour day.

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12



13



14

12 RIGID HAULER

Volvo Construction Equipment (Volvo CE) will enter the rigid hauler market with its Volvo brand of rigid haulers in the second quarter of 2018. The new four-model range relied heavily on the longstanding rigid hauler expertise of Volvo CE's subsidiary Terex Trucks, combined with the technological strength of the Volvo Group. The range consists of the 45-ton R45D, 60-ton R60D, 72-ton R70D and the flagship 100-ton R100E. The E-Series R100E is a completely new Volvo CE 100-ton rigid hauler that combines a wealth of market and customer knowledge with components, new technologies and a new design.

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13 BLACK STEEL PIPE PRESS

RIDGID introduced MegaPress XL, the first tool to press black steel pipe up to 4 inches. The only tool on the market that lets contractors press black steel pipe between 2 1/2 and 4 inches, for use with and rings, builds on the RIDGID RP 340, attaching to the tool to multiply output for fast connections on larger diameter pipe. The new tool will make press connections on 2 1/2-, 3- and 4-inch black pipe in under 25 seconds—welding those same connections can take over 30 minutes. MegaPress XL weighs less than 22 pounds and comes with a built-in carrying handle and strap. The primary kit includes the XL Booster, 2 1/2-, 3- and 4-inch rings, and a high quality carrying case.

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14 TANDEM ROLLER WITH ECONOMIZER

The **BOMAG** BW 138 AD-5 tandem vibratory roller's 54.3-inch rolling width makes short work of granular soil and asphalt compaction. When equipped with the Economizer compaction measurement system, the BW 138 AD-5 requires no calibration and alerts operators to compaction progress of the soil or asphalt material. The system also warns operators of potential over-compaction to prevent aggregate fracturing as well as allows for the identification of "soft" spots in the material. A 35.4-inch drum diameter delivers more drum impact area with the surface than with smaller compactors to reduce rolling resistance, deliver smoother surface finish and improve asphalt mat quality.

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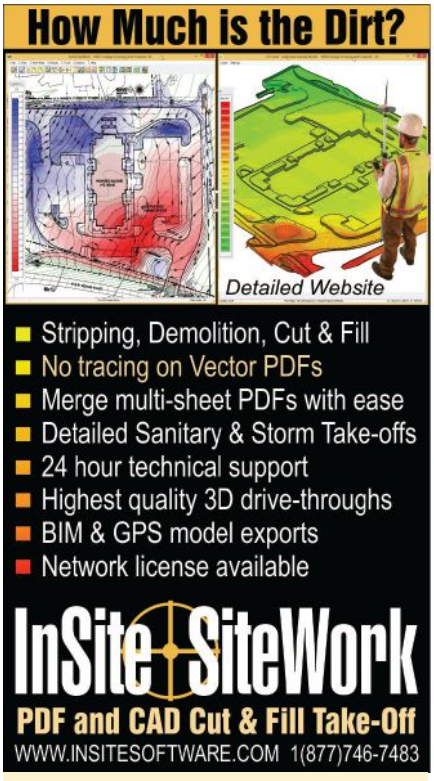
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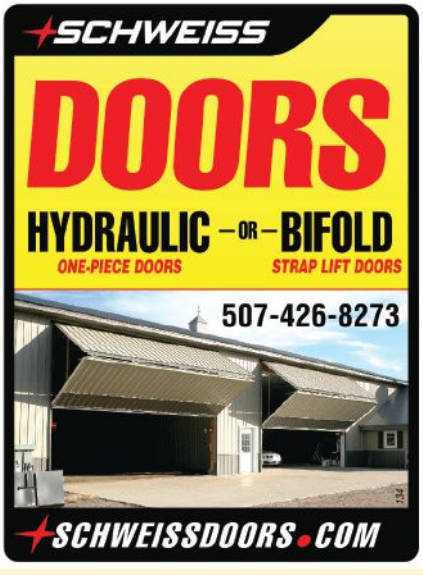
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Annual Value of Construction Put in Place

2015/2016/November 2017 Annual Rate Comparison

This chart compares the two previous years' total value of construction put in place to an annual forecast based on November 2017 figures. (Millions of dollars. Totals may not add up perfectly due to rounding.)

	2015	2016	Nov 17
Total Private Construction	**827,345**	**909,664**	**964,341**
Residential	433,108	475,167	530,844
Nonresidential	394,237	434,496	433,497
Total Public Construction	**296,153**	**279,277**	**292,652**
Residential	5,909	6,592	6,924
Nonresidential	290,244	272,685	285,729
TOTAL Construction	**1,123,497**	**1,188,941**	**1,256,993**

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

$1,256,993

NOVEMBER 2017 TOTAL ANNUAL VALUE OF CONSTRUCTION PUT IN PLACE

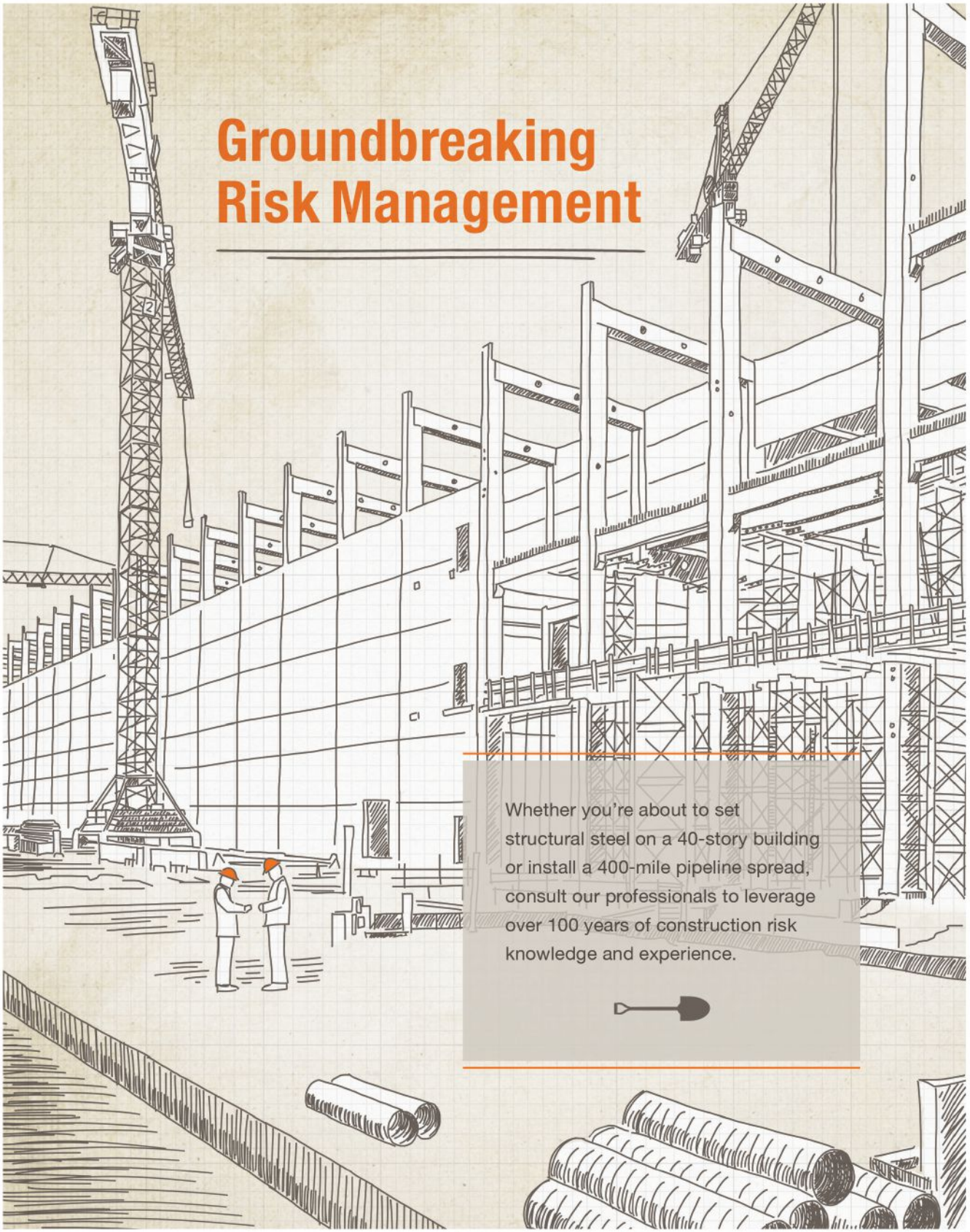
"Not only are design billings overall seeing their **strongest growth of the year**, but the strength is reflected in all major regions and construction sectors," said AIA Chief Economist Kermit Baker, Hon. AIA, Ph.D. "The construction industry continues to show **surprising momentum** heading into 2018."

AIA Architectural Billings Index (ABI)

National			*Regional - Billings				*Sectors - Billings			
Month	Billings	Inquiries	Northeast	Midwest	South	West	Multifamily Residential	Commercial/ Industrial	Institutional	Mixed
Jun-17	54.2	58.6	51.5	51.9	54.8	53.1	57.1	52.1	52.6	53.8
Jul-17	51.9	59.5	53.6	53.8	53.8	50.9	55.8	55.4	52.0	48.4
Aug-17	53.7	62.5	54.3	52.5	55.7	51.3	53.8	57.6	50.1	52.5
Sep-17	49.1	59.0	56.9	50.4	54.0	48.8	51.0	54.0	51.0	52.2
Oct-17	51.7	60.2	54.0	49.0	50.8	49.8	50.7	51.2	50.7	50.7
Nov-17	55.0	61.1	52.8	50.4	52.8	54.8	53.9	53.3	52.4	53.6

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

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



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