

CONSTRUCTION[®] BUSINESS OWNER

THE LEADING BUSINESS MAGAZINE
FOR CONTRACTORS

TAKING THE FEAR OUT OF REBRANDING

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bring in bigger business

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5 Sure-Fire Ways to
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IN THE FIELD

Understanding Safety
Systems When Workers'
Lives Are on the Line



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Marcum's Q1 2019 Commercial Construction Index reported the highest levels of private nonresidential spending on record, with United States private nonresidential construction spending at \$460 billion in March, a 2.1% increase over the last year. The report also includes other optimistic numbers, with public spending up 9%; manufacturing construction spending up 10.3%; the largest subsector of nonresidential spending was highway and street, which was up 13.4%; and total spending in the 16 nonresidential construction subsectors was up 4.8% year over year. Marcum's National Construction Industry Group Leader Joseph Natarelli voiced concern about increasing labor needs, but was otherwise confident about the report's findings.

The report, authored by Marcum's Chief Construction Economist Anirban Basu said, "With lengthy backlogs in hand and given the ongoing momentum apparent in the U.S. economy, contractors have little reason for concern regarding near-term demand for construction services. Accordingly, hiring activity continues to be robust even in the context of large-scale construction skills shortfalls."

In addition to his Q1 report, Basu was a featured speaker at the Construction Financial Management Association's (CFMA) Annual Conference & Exhibition in June. In his presentation, Basu reported improved conditions for many construction firms, but also posited the industry's growth and upward-trending numbers, suggesting that market volatility is sometimes a precursor to an economic downturn (think the Great Recession). While Basu predicts that the market in 2019 will likely remain strong, he warned that there is the possibility of a potential downturn in late 2020. For more economic insight from Basu's presentation at the CFMA conference, look for our coverage of the conference in CBO's August issue.

Meanwhile, in this issue, we're covering one of the CBO website's most frequently searched topics: construction marketing. In "Taking the Fear Out of Rebranding" on page 26, branding professionals Ryan Durant and Kyle Hildebrand share how small, strategic changes to a company's persona can bring in new opportunities for bigger business. Next up, on page 30, website expert Carl Sorensen covers 10 mistakes contractors are making with their websites (and how to fix them) in "What in the Worldwide Web?" Finally, in "The Current Face of Marketing" on page 32, construction marketing maven Neil M. Brown explains why your company's digital marketing transformation doesn't have to mean bringing in a new hire. Look for more marketing expertise at constructionbusinessowner.com/marketing.

Take good care,

Kathy Wells

In June, Associate Editor Rachel Fulford attended Hilti Innovation Day 2019 in Irving, Texas, where she checked out the newest construction solutions from Hilti. Pictured above, Fulford tests the new SPX grinding wheel—now with a wheel life of 2.5 times longer and self-sharpening grains for ultimate performance and overall cost savings.



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► UFPI Acquires Wolverine Products

Universal Forest Products Inc. (UFPI) has announced that one of its affiliates closed on the purchase of the operating assets of Wolverine Wood Products, a Grand Rapids, Michigan-based manufacturer of wood panel components for furniture, store fixtures and case goods. The previously announced acquisition expands UFPI's capabilities to produce value-added wood components for customers in the Midwest. Mike Petersen, owner and president of Wolverine Wood Products, is remaining with the company as general manager. Visit ufpi.com.

► Kabbage Inc. with BTEA to Fuel Access to Funding for WMBE Contractors

Kabbage Inc., a cash-flow technology and automated lending platform for small businesses, has formed a strategic alliance with New York's Building Trades Employers' Association (BTEA) to provide access to fast and flexible small business funding for BTEA members through the Kabbage platform. The alliance will support women- and minority-owned business enterprise (WMBE) contractors who often have difficulty accessing the funding required to procure contracts for New York's largest construction projects. The alliance provides BTEA's 1,300 contractor companies, including more than 100 WMBE contractor members, the opportunity to access lines of credit as high as \$250,000 and attain greater financial capacity. Visit kabbage.com.

► Minnich Manufacturing Announces New Leadership After Owner Jim Minnich Retires

Minnich Manufacturing's owner Jim Minnich has retired after more than 25 years with the concrete vibrators, vibrator monitoring systems and concrete dowel pin drills

manufacturer. Jim led an era of innovation and expansion at the business his father started out of a Mansfield, Ohio, gas station in 1968. Under Jim's ownership, Minnich Manufacturing introduced several innovative technologies, grew to more than 40 employees and moved into a larger manufacturing facility in Mansfield. "My father, Roger, built Minnich Manufacturing on customer service," Jim said. "He

and impacts, damages, cost overruns, cost recovery audits, construction fraud investigations, unforeseen site conditions, change orders, inefficiency claims, contract terminations and project management. These engagements have been performed for both private and public sector owners. He also has provided expert testimony in various dispute forums, including United States federal court, state

construction subsector. Spending in all 16 nonresidential construction subsectors totaled \$775.2 billion in March, up 4.8% from a year ago. The greatest percentage gains were in water supply (13.8%), conservation and development (13.5%), and highway and street (13.4%). Only three subsectors (commercial, religious and communication) registered declines for March compared



**\$226
million**

Tractica forecasts that growing interest in construction robots will drive an increase in market revenue to \$226 million annually by 2025. During that period, the market intelligence firm forecasts that more than 7,000 construction robots will be deployed to address a variety of construction and demolition tasks. The largest market, in terms of unit shipments, will be for robot assistants used on construction sites. Visit tractica.com.

would do whatever it took to support his paving customers, from shipping products after hours to making staff available 24/7. As I pass on the family business to the next generation, I'm proud that we continued that tradition of around-the-clock service during my years with the company. And nothing is going to change." As planned for years, three family partners will lead Minnich Manufacturing into a bright future: Todd Jurjevich (president/chief sales officer), Jeff McDaniel (president/chief operating officer) and Rob Minnich (president/chief marketing officer). Visit minnich-mfg.com.

► FTI Consulting Construction Solutions Practice Appoints Senior Managing Director

FTI Consulting Inc. has appointed Frank Regnery as senior managing director in the Construction Solutions practice. Regnery has more than 30 years of experience in the engineering and construction industry, including dispute resolution and expert testimony engagements. He has analyzed a wide variety of issues in the construction industry, including delay

courts, the American Arbitration Association and the International Chamber of Commerce. Prior to joining FTI Consulting, Regnery was a principal at Exponent. Visit fticonsulting.com.

► Marcum Commercial Construction Index Sees Industry Surging

The Marcum Commercial Construction Index, for the first quarter of 2019, reports the highest levels of private nonresidential construction spending ever recorded. The index is produced by Marcum's National Construction Services group. Bolstered by increasingly strong spending in manufacturing construction, private nonresidential construction spending reached \$460 billion in March on a seasonally adjusted, annualized basis. This represented a gain of 2.1% from a year earlier. Manufacturing construction spending was \$70.3 billion for the month, up 10.3%. Public construction spending in March increased 9% year over year, reaching \$314.6 billion. Spending in the highway and street category expanded 13.4%, surpassing power as the largest nonresidential

to a year earlier. Nonresidential construction added 32,400 net new jobs in April and 163,000 year over year. The industry's unemployment rate continued to fall, dropping 2.2% in April from the same month a year ago. The 4.7% unemployment rate in April was the lowest construction unemployment recorded for any April since the Bureau of Labor Statistics began reporting this statistic in 2000. Visit marcumllp.com.

► Hyundai L&C USA & Wilsonart Engineered Surfaces Open Solid-Surface Manufacturing Plant

Wilsonart Engineered Surfaces and Hyundai L&C USA has opened a new manufacturing plant under a joint venture, American Surfacing Materials LLC (ASM). Developed to support the continued expansion and growth of Wilsonart Solid Surface and Hanex Solid Surfaces product lines, the facility will also create more than 50 new jobs for the local area. The 135,000-square-foot facility has the capacity to produce up to 300,000 sheets of solid surface annually. The facility will produce solid-surface sheets up to 60 inches wide, allowing a

much higher degree of flexibility and efficiency in fabrication and installation, saving fabricators and their customers time and money. Additionally, the plant's central location allows both companies to maximize product availability, proximity to customers and better serve the solid surface market with American-made products. Visit wilsonart.com.

► Fluor Corporation Announces New CEO



Carlos M. Hernandez

Fluor Corporation has announced its board of directors has confirmed the appointment of Carlos M. Hernandez as chief executive officer (CEO) and named him a member of the board of the company. Hernandez was named Fluor's interim CEO in line with the company's established succession plan following David T. Seaton stepping down. The board of directors also named John R. Reynolds as the new chief legal officer of Fluor. "Hernandez's engineering and legal background, combined with his 12 years successfully serving in executive leadership roles at Fluor, makes him uniquely qualified to lead the company and our team of talented global professionals," said Alan Boeckmann, Fluor's executive chairman. Visit fluor.com.

► OSHA Requests Information on Possible Updates to the Lockout/Tagout Standard

The U.S. Department of Labor's (DOL) Occupational Safety and Health Administration (OSHA) is requesting information on a possible update to the Control of Hazardous Energy Lockout/Tagout (LOTO) standard. The agency is interested in comments on the use of control circuit-type devices to isolate energy, as well as the evolving technology for robotics. OSHA is requesting information about

how employers have been using control circuit devices, including information about the types of circuitry and safety procedures being used; limitations of their use to determine under what other conditions control circuit-type devices could be used safely; new risks of worker exposure to hazardous energy as a result of increased interaction with robots; and whether the agency should consider changes to the LOTO standard that would address these new risks. The current LOTO standard, published in 1989, requires that all sources of energy be controlled during servicing and maintenance of machines and equipment using an energy-isolating device. The standard specifies that control-circuit devices cannot be used as energy-isolating devices, but the agency recognizes recent technological advances may have improved the safety of control-circuit-type devices. Comments must be submitted on or before August 18, 2019. Comments and materials may be submitted electronically at regulations.gov. Visit osha.gov.

► Ellingson Acquires Directed Technologies Drilling

Ellingson, a nationwide specialty trenchless construction contractor focused on providing end-to-end solutions in water and underground infrastructure management, has announced the acquisition of Directed Technologies Drilling (DTD), a pioneer in the use of horizontal directional drilling (HDD) methods to mitigate soil and groundwater contamination and develop clean water supplies. DTD's team of field personnel and technical professionals, including engineers and geologists, uses HDD methods to design and install solutions ranging from remediation wells at the corner gas station to large industrial facilities. Horizontal wells enable all current remediation methods

to be used with greater efficiency than traditional vertical wells while offering minimal disruption to the surface infrastructure, which allows site operations to continue during the cleanup process. This creates both environmentally and economically sustainable solutions for customers. In addition, HDD wells can be utilized as ground water production wells, developing shallow or thin aquifers for irrigation, potable and industrial uses. DTD will become a division of Ellingson and do business as Ellingson-DTD. Visit ellingsoncompanies.com.

► SEAA Announces 2018 'Person of the Year' Award Recipient



Jack Vernon Nix Jr.

Jack Vernon Nix Jr., vice president of operations for Shelby Erectors Inc., was named 2018 "Person of the Year" by the Steel Erectors Association of America (SEAA). A veteran of the steel-erection industry for nearly 25 years, Nix is also currently serving his fifth term on the SEAA's board of directors. Shelby Erectors specializes in the installation of reinforced steel and stay-in-place metal decking for bridge construction. In addition, Nix is president of JVN Construction Management, which provides project management resources and estimating services to steel erectors. According to Nix, the SEAA Ironworker Craft Training Program is essential to battling the qualified labor shortages the industry faces. Visit seaa.net.

► Takeuchi Appoints Technical Trainer/Content Developer



Fred Hinton

Takeuchi-U.S., compact equipment manufacturer, has named Fred Hinton to a newly appointed position

as technical trainer and content developer for the technical training group. This position was added in response to keeping up with the market growth Takeuchi has experienced. Hinton's main responsibilities include helping the training group facilitate instructor-led technical training to Takeuchi dealers and customers, both at the Pendergrass, Georgia, facility and regional locations. Additionally, he will use his instructional design background to develop content for future courses and help take the training program to the next level. With a background in instructional design, technical documentation and project management, Hinton has 13 years of experience in construction and related industries. Visit takeuchi-us.com.

► Brokk Inc. Expands with New Service Training Center & Fleet Managers

Brokk, manufacturer of remote-controlled demolition machines, has opened a new Demonstration and Service Center in St. Joseph, Missouri. Randy Glidewell and Mike Brott join the Brokk team at the new facility. Glidewell takes on the leadership position as Brokk fleet service manager, with Brott in the role as service technician. The 10,000-square-foot facility incorporates an outdoor proving ground with various concrete structures to prove out the power and precision of Brokk and Aquajet products, including simulated Department of Transportation materials and steel reinforcement configurations. In addition to demonstrations, the site offers a complete service complex with a wash bay, workshop and welding station. This feature allows for more convenient access and quicker turnaround on service. Visit brokk.com.

NEED MORE NEWS?
constructionbusinessowner.com/news

What about your business keeps you awake at night?

Our industry experts share their solutions to some of the biggest problems facing construction business owners & their teams.

How can business owners use social media and/or newer marketing tactics to better communicate with clients?



LISA CRUZ

Owner & President
Red Shoes Inc.

The first step for determining the best way to reach the ideal client is research. In order to reach the right client, you must know who that is, both from a demographic and behavioral perspective. Based on that information, social media and emerging tactics may, or may not, be the best fit.

If it is decided that social media and newer marketing efforts can garner a new audience, the next step is choosing which of those items works best. Once the appropriate platform(s) is identified, select the best time to reach potential clients on that platform so you can post content when your targeted audience will see it.

Then, you must choose engaging, client-centered content to share. During this process, **it is important to engage with departments throughout the organization to determine appropriate content based on client requests and your research.**

For example, the sales department has insight into what current clients ask about during a business transaction. For other content ideas, look at pain points to build a communication sequence. The bottom line: your marketing tactics and messaging should be customer-driven.

Overall, when trying to convey a message to the masses, research is the best first step a company can take.



NINA IORG

Senior Director
Markstein

People look to social media platforms to be entertained, and that's why most companies struggle to communicate through them. But it doesn't have to be this way. For construction business owners, social media can serve as a project portfolio that not only entertains, but also inspires and educates.

To craft a strong social strategy, first you must select the right platforms. Many businesses only have the resources to post to one channel, but are attempting to manage multiple pages. Keep in mind that social algorithms favor consistency and engagement. Even if you only have a single Facebook page, commit to creating a schedule and posting regularly. Then, build a relationship with your followers through frequent interaction.

When creating content, ask yourself: Is it entertaining? Does it educate? Does it spur action? These elements are key to producing engaging content. For example: how can you elevate a time-lapse construction video? Educate viewers by sharing a tip, and then encourage your audience to take action (e.g., tagging a friend in the comments). This strategy ensures optimal engagement.

Social media is part of the foundation of any digital marketing strategy which, when executed correctly, can result in significant return on investment for your business.



YUMI CLEVENGER

Communications + Brand Leader
DPR Construction

The basics of communicating with customers is not much different than it was 10 years ago—except that it's being done online more and more. While technology and social media have changed the number of channels for communicating, the basics remain the same.

- 1. Be a good listener.** Use social media as an opportunity to learn more about your customers and what they are interested in. The amount of information you gather can help inform your sales and marketing strategies and allow you to better target your communication. The more often you can provide content that your audience is interested in, the better. #qualityoverquantity
- 2. Build a relationship.** Remember, good communication is a two-way street. When engaging in social media, it's important to be prepared to respond to requests, questions or even complaints that come in through your social media channels in a timely manner.
- 3. Be authentic.** The experience customers have with you online should match the experience they have with your company in the office and field. Show off your personality, but be yourself.

To submit your question, email Associate Editor Rachel Fulford at rfulford@cahabamedia.com.

“We need to buy equipment
without breaking the bank.”

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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.

When I ask my clients if anyone in their company could potentially move up from foreman or superintendent to estimator or project manager, the typical answer is an emphatic, "No!" I usually receive the same answer when I ask if they have a jobsite worker with the potential to become a foreman or superintendent. Some have even told me that of the company's team of four or five full-time project managers, none of them have the potential to become vice president of operations.

Bosses tend to see their employees as who they are currently—not who they have the potential to become. Most construction companies have reliable group of long-term field employees who consistently deliver great work. At several companies, I have observed crew bosses who protect their own roles, responsibilities, territories and control by discouraging those employees from doing more or taking on additional accountability.

You can't convince me that out of four or five managers, or 20 to 60 field workers, not one of them has the potential to move up to the next level, wants to grow and learn, or is willing to accept more responsibility and make more money. Rather, it seems that leadership doesn't want their own jobs taken and, as such, move employees out if work slows.

However, I attended a large electrical contractor's quarterly estimating meeting consisting of 10 estimators, each from one

of their regional offices in six states. Eight of these estimators started in the field as an apprentice, got promoted from there to journeymen, and then to foremen.

Eventually the company moved them into the office as assistant estimators. Now, they are all full-time commercial electrical contractor estimators, each bidding and pricing over \$25 million in jobs yearly. Who says field workers don't have the potential to become leaders? All it takes is a company culture of training and promoting.

YOUR FUTURE LEADERS ALREADY WORK FOR YOU

On the other hand, some companies work diligently to proactively build and develop future leaders. They have designed step-by-step, companywide programs to encourage their current foremen, supervisors and managers to train and promote people who already work for them. They maintain a culture of promoting within that doesn't allow leaders to discourage their people from wanting to become crew or team leaders as well.

One large civil contractor in the Northwest United States has developed promotional and training ladders for employees, clearly defining what it takes to move up. The company offers ongoing training for field-crew employees to move from general laborer, all the way to foreman and then full-charge supervisor. Their plan is formalized and written with

detailed job descriptions and training modules for each step along the way. Also required are classroom training sessions led by a senior manager every month.

At each level, there are tests and reviews to see if participants are ready to move up. In addition, each level of advancement receives a standard pay raise along with the added responsibility.

This training and promotion system has generated an ongoing supply of crew members who want to improve, as well as a wait list of new people seeking employment with this particular contractor.

INVEST MORE IN YOUR EMPLOYEES FOR MORE ROI

Another great example of investing in employees is taking place at a premier commercial general contractor in the Midwest. This company, with well over 100 employees, has become the leader in its market because of the two owners' visionary leadership, integrity, professionalism, insistence on expert craftsmanship, promotion of the highest safety standards, and focus on building a workplace that attracts and retains the best employees.

Their success is founded on taking strategic measures to develop a winning team of estimators, project managers, superintendents and foremen who go on to become effective leaders and managers. The company's major players are tasked with taking full ownership and responsibility to manage projects as professionals and exceed their customer's needs. In addition, they have a large group of crew leaders, journeymen and apprentices who are eager to build great projects, do what's right and keep their professional commitments.

Meanwhile, the leaders have committed to invest in their employees as stated in the company vision statement: "Develop

well-trained and productive team players in a rewarding work environment. Create a safe atmosphere in which employees thrive personally and professionally with honesty and integrity." To accomplish their vision, they hold several half-day and full-day training sessions on a regular basis.

These include all employees in team-building, participatory, interactive training, educational, and informational workshops and meetings. They bring in outside consultants and professional experts, as well as in-house managers, to present on a variety of topics, including equipment, technology, safety, best practices, construction methods, leadership, management, supervision, documentation and scheduling.

They also meet regularly to work with and mentor potential leaders to build a culture of excellence and promotion from within. For 3 days, I worked closely with the company's senior leadership team, accounting staff, project managers, field supervisors, foremen and field crews in coaching sessions to develop ways to become winning team leaders, better managers, and inspirational, results-driven supervisors and mentors.



ACHIEVE BETTER RESULTS

Some contractors encourage a culture of teaching and training subordinates. As part of the employee review process, leadership weighs potential supervisor and manager pay raises and bonuses available through mentoring and training the employees they supervise. As encouragement to participate in this program, they might offer attendance at state and national conferences, such as World of Concrete or International Roofing Exposition, where educational programs, workshops and peer sessions are available. Once employees experience the way other managers and leaders show up for their employees, it inspires them to improve themselves and their own teams.

Companies that really invest in their employees often tend to make more money, win better contracts, and have less trouble finding and retaining great talent. A small investment in developing your employees, for instance, committing 1 hour per employee every week, costs a fraction of your total expenses—nothing compared to the ROI. So, the question for you is: What are you doing to develop your future leaders? **CBO**

Launching a Topgun Training Program

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GREGG M. SCHOPPMAN

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

Maverick, Goose, Iceman, Slider, Merlin and, of course, Jester. Within a single Hollywood blockbuster exists one of the leading fighter-pilot development programs in the world. While most recognize "Top Gun" from its namesake 1980s hit film starring Tom Cruise and Val Kilmer, the real-life Topgun program was developed in fall 1968. And the losing war in Vietnam—specifically the United States Navy's air battle strategy—was the backdrop.

While hamstrung by faulty strategy and misguided politics, Naval aviators using the F-4 Phantom aircraft (in theory, a technically superior aircraft to the Vietnamese MiG-21) were seeing catastrophic losses. One of the first errors was the decision to remove cannons and guns in favor of smart missiles, which resulted in Russian MiG fighter pilots greatly tilting the kill ratio in their favor (2:1).

Enter "Top Gun." The foundation of the film's premise was formed from reams of data that supported the argument that U.S. air battle tactics in Vietnam were seriously flawed.

Additionally, it took into account the outstanding leadership of a young lieutenant named Dan Pedersen. According to his book "Topgun: An American Story," Pedersen and his "original bros" developed this training program to retrain and ultimately equip naval aviators with the right tools to be successful. The proof of success came in the form of shifting the 2:1 kill ratio to 22:1 in favor of the U.S. Navy. Through studying this incredible historical account of military might, ingenuity and perseverance, can the same lessons be applied to the built environment? How does a contractor develop the best operators in the business in a similar fashion?



CONNECTING THE RIGHT RESOURCES

In Pedersen's book, the foundation of the fighter tactics program (Topgun at Fightertowntown USA, in Miramar, San Diego, California) began with what might be described as a shoestring budget. While already fighting an expensive conflict in Vietnam, the tolerance for

an expensive and pointless undertaking that might not launch (no pun intended) was nil. In fact, Pederson said his team was not to be given money, facilities, resources, etc., and their budget was whatever they could scrap together on the base. This sounds like a losing proposition from the start—lack of any investment, but obvious expectations of a successful endeavor.

However, in the book, Pedersen also explains the mission of Topgun. “Topgun was best understood as a graduate school. It essentially functioned like a teachers’ college for fighter pilots. Our job was not just to teach pilots to be the hottest sticks in the sky; it was to teach pilots to teach other pilots to be the hottest sticks in the sky.” Pedersen describes the program’s intent as following a multiplier effect, with the expectation of teaching more people through this distilled fashion.

Many organizations have new-associate training programs, in which the basics are covered, and team members are oriented in firmwide best practices. But what about that middle tier of managers and supervisors? What advanced techniques do they continue to hone? Companies often stress that the return on investment (ROI) of a new associate isn’t realized until they’ve been in the position for 1 to 3 years. So, just about the time a manager is providing that ROI, the new employee becomes disenchanted, disenfranchised or simply burned out because they see the reinvestment in their future forsaken. Put another way, the group that should be the best cheerleaders and, in many cases, the developers of future talent, is not being leveraged appropriately.

Whether it’s Pedersen’s or Hollywood’s version you prefer, in both scenarios, the best of the best were handpicked to become students and, ultimately, the instructors. Consider a firm that takes a handful of its best employees and instills

in them a mission of capturing the best practices that should become institutional knowledge. There are plenty of examples of firms that create a group of future leaders, with the hope of inspiring them and cultivating their skill sets, but never take it to the next level. Don’t fall prey to the unrealized great idea. Solving an organizational problem, or simply creating a new proactive operational mindset, is a true investment realization.

APPOINTING SUBJECT-MATTER EXPERTS

Pedersen says that in the infancy of the Topgun program, he had an opportunity to network with an Israeli pilot and his team. They were engaging in a similar endeavor, and Israeli pilots explained that they designated subject matter experts on radar, weapons, aerodynamics, etc., and each subject had a designated expert/instructor. As it is in the Navy, it is difficult for managers within a construction organization to be experts in everything (Consider a building contractor with 10 to 20 different trades, multiple products, installation approaches, etc.).

But, the industry is continuing to evolve, and it is imperative that organizations find an edge. One solution is to identify the right subject-matter experts and deputize those champions to gather the best practices in technology, the trades, software, scheduling, etc. Make those individuals the internal go-to subject-matter experts, teaching the rest of the firm what they know.

The practices that Topgun instructors imparted to the U.S. Navy created a massive strategic gain in a complicated war. Had the Navy stayed their original course, the casualty rate would have been exponential, and the overall outcome disastrous. In fact, it was during a previous war that the world embraced the concept of “learning from history or being doomed to repeat it.” **CBO**

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Check T14 on index.

Why You Must Automate Today

The industry trends leading construction toward do-or-die decisions



AMY BOURNE is the content supervisor at ExakTime. She has over 5 years of experience writing about construction for ExakTime and interviewing construction professionals. ExakTime is a provider of digital time tracking and workforce management solutions for construction and beyond and was built almost 20 years ago by a contractor who felt his crews were taking advantage of his inability to be on-site all the time. Inaccurate, missing and even false time timecards were killing business, which was the inspiration for ExakTime's now cloud-based software solution. Visit exaktime.com.

It's an interesting time for construction. The market is strong: demand is still high; transportation funding is feeding new government contracts into the pipeline; and natural disasters are increasingly creating rebuilding needs in more cities and counties.

To an outsider, construction contracting probably seems like easy street right now. But there are two huge challenges facing the industry:

1. A severe skilled labor shortage not slated to correct itself in the near term
2. Materials costs that rose 9% from May 2017 to May 2018, the biggest increase in 7 years—with costs continuing to rise due to new tariffs and trade wars

This puts contractors in an unusual bind. The work is there, but it has to be done more efficiently than ever, with a more frugal use of materials and a potentially smaller, less experienced crew.

Add to that the fact that construction has historically changed at a much slower rate than other industries. Agriculture, for example, has improved efficiency by 1,500% since the 1940s. But now, for many construction companies, the choice is clear: change or die.

WHY CHANGE?

More contractors than ever are electing to enact change via automation. According to management consultant firm FMI

Corporation, over \$10 billion has been spent on construction technology ventures in the last decade. Investors have been banking on a technology upsurge in construction, but they didn't know how badly the industry would need it.

With the aforementioned industry strains, operational efficiency is crucial to keeping up with the workload you have taken on as a contractor. And if you can't keep up, you will overspend on labor and materials, disappoint your clients and, ultimately, risk the failure of your business.

Additionally, let's say you have been blessed with a reliable and talented crew. You will still need to hire new ones sooner or later if you want to grow, or even maintain, your current project load.

I hear it from contractors everywhere—right now, it's difficult to find skilled labor. And with baby boomers retiring out of construction and Gen Xers already settled in other careers, the new ranks will need to be filled by millennials and Gen Zers—a segment which, so far, hasn't exactly been knocking down doors to get into construction, despite loads of new programs designed to expose high schoolers and younger kids to the trades.

The good news is, even after their elders pushed college, a small but growing cadre of young people is deciding they would rather work with their hands, solving tangible problems, than be stuck at a desk while trying to dig out of college debt. One thing is certain: with the skilled labor

Find a manual process
for which simple tools can
be inserted to make that
process quicker.

– David Murray



shortage in full effect, there will be plenty of competition for high-caliber hires. And these would-be workers were born with cellphones in their hands, the internet at their fingertips and video games running through their dreams.

As such, they would find it incomprehensible if their potential employer took no measures to increase efficiency with the implementation of new technologies and automation.

WHAT NOT TO CHANGE

There are lots of shiny new tech advances that are bound to spark excitement (at least at first) among employees and new hires. And it's easy to be drawn in by the next big thing, whether it's self-driving equipment, robot bricklayers, exoskeletons or augmented reality (AR)/virtual reality (VR) headsets. The only problem with the industry's flashier automation options is that they're expensive, and their ideal uses haven't been worked out yet.

Take AR headsets—one ideal use is in conjunction with building information modeling (BIM) to see an overlay of what's being built on top of a blank—or

slowly filling—space and catch errors early, before they result in giant change orders. That said, the software available for the headsets has yet to project design onto reality within a fraction of an inch, so far precluding its use as a precision tool in routing duct, for example.

But looking at your work in progress through an AR headset could help you catch a larger error, like detecting when heating, ventilation and air conditioning (HVAC) systems have been misrouted.

The upshot: while bringing an AR headset onto your jobsite will undoubtedly thrill your workers at the outset, you better have a darn good idea of how you plan to maximize your return on investment (ROI) before the device loses its initial luster and begins to collect dust on a trailer floor.

WHAT TO CHANGE

The key in automating is to start with the low-hanging fruit (i.e., a single process that will bring reliable ROI) and then gradually move onto bigger processes that may not show direct monetary returns.

For instance, a form of automation that's easy to implement is a software that

streamlines one of your paperwork-heavy processes. This could be document management software, or software used for scheduling, budgeting, bidding or time tracking. If scheduling is available from the same vendor, you've got a one-stop solution for time management.

Time tracking software takes a key manual process that is time-consuming and error-prone and automates it from punch-in to paycheck, saving everyone time and shaving off the significant margin of error found in most construction company payrolls.

However you choose to automate your most labor-intensive, manual processes, if it's a strong product with a proven track record, it should save you time and increase efficiency, while also proving to young hires that you are open to evolving with the times.

Once you've brought in this guaranteed ROI, you can start deciding your second and third moves toward incorporating automation and becoming a state-of-the-art business that good workers will flock to, both new and old. **CBO**

5 Things Leaders Can Learn From Stand-Up Comedians

How to make the most of your management performance

BY ANDREW TARVIN

Stand-up comedy can make you a better presenter. After all, it's one of the hardest forms of public speaking you'll ever try. So it's likely that if you do even remotely well at stand-up, all other types of business presentations will seem easier. But, stand-up comedy can also make you a better leader.

During my time as an information technology (IT) project manager at Procter & Gamble (P&G), I led multimillion-dollar projects for a \$350-million business. This involved coordinating resources from multiple companies, delivering requirements for stakeholders from around the world and attending what seemed like 8,000 meetings each day. The only way I could influence up, across and down was by leveraging what I had learned from the internal leadership development program at P&G—and stand-up comedy.

The first source of leadership training is expected. After all, P&G is a promote-from-within company, so it has to be good at developing leaders.

The second is surprising but has been just as valuable in my career development. Being able to communicate clearly, deliver with confidence, and add a little, were vital to my corporate success. The following are five tips I've determined any business leader can take from stand-up comedians.



1. START STRONG

The most important part of any stand-up set is the first 30 seconds. It is in that small time frame that an audience decides if you are worth their attention. Those first 30 seconds are just like the first of any recommendation or proposal you give. My first manager at P&G explained that if you get people in agreement with you early on, they are much more likely to agree with you later. If you are proposing a solution to a problem or, better put, an opportunity, confirm with the audience that you all

agree that there is, in fact, a problem and that you agree on what it is. Then, once they've settled in and have already been nodding along (not nodding off), you can transition into the meat of the meeting.

In standup, a good introduction relates to something the entire audience can be part of, (such as a joke about the city, something a previous comic said or the ridiculousness of your own voice). In the business world, that may mean starting off a presentation by establishing that you are all on common ground in some way.

2. DELIVER WITH CONFIDENCE

Comedy is a mixture of both content and delivery. Yes, the material itself has to be good, but so does the delivery. In fact, good delivery can often make up for weak material. Just look at Dane Cook's early career—the jokes weren't mind-blowingly funny, but his delivery was.

The same is true for leading others. Early on in my career at P&G, I had the opportunity to deliver a 7-minute presentation to the chief executive officer. Normally, I would have been out-of-my-mind nervous about the situation, but 3 nights prior, I had done a stand-up set in front of 300 people. A short presentation supported by slides with no expectation of being funny suddenly seemed a lot easier.

If you're not confident in what you're doing, it will be much harder for people to follow you. As Adlai Stevenson said, "It's hard to lead a cavalry charge if you think you look funny on a horse." The keys to improving your confidence as a leader are the same as developing confidence as a comedian—practice and repetition. The more often you do something, the easier it tends to become and the more comfortable you get.

3. SEEK FEEDBACK

Comedy, in a way, is simple. How do you know something is funny? It makes people laugh. The only way for a comedian to know if people will laugh at a joke is to try it out and see what happens. The immediate feedback the comic receives on stage is invaluable as a performer.

Similarly, feedback is crucial for leaders. P&G does an annual employee survey to see how they are doing as an organization across key metrics. One of the most empowering leadership programs at the company requires leaders receive 360-degree feedback from direct reports, managers and project stakeholders.

Why? Because stopping to ask for ways to better connect with each of your direct reports, or improve a presentation

or particular meeting, can guide you in finding what works and what doesn't. Then you can start working on the right things—working smarter, not harder.

One key thing to note is that feedback doesn't just have to come from other people. Comedians record their performances so they can watch playback to evaluate the audience's response. Checking in with yourself periodically or tracking your daily progress can help you find what is and isn't working for you.

4. GIVE CREDIT WHERE CREDIT IS DUE

The cardinal sin of stand-up comedy (just after murder) is stealing material. Taking someone else's jokes and pretending they are your own is like buying a Coca-Cola, putting your own label on it and selling it as "Joe's Soda." After all, jokes are the primary product that comedians "sell."

In management, taking credit for what other people have done is not only dishonest; it's limiting for both you and your team because your team doesn't get the proper recognition they deserve. And you don't showcase your ability to inspire your team to great results. In fact, at P&G, upper levels of management are rewarded based on how their old team does after they move to a new assignment. They understand it's more valuable to have someone who can create an entire high-performing team than just have one high-performing employee.

Taking credit and stealing material may help you get ahead in the short term, but in today's world, frauds and thieves tend to get found out and left behind.

5. RESPECT OTHERS' TIME

The second biggest sin in comedy is going over your allotted time (called "blowing the light"). Nearly every comedian imagines they could entertain the crowd for hours upon hours, but shows typically limit the amount of time each comic has, often based on their skill level or connection to

the show. To perform past the amount of time allotted is to tell the show producer and all of the other comedians, "I think I'm more important than you," and "I don't respect you." When you, as a leader, hold people longer than the time scheduled, or consistently show up late to meetings, you're sending the same message.

To ensure that I respected the time of the people on my team, I gave people a notification when their time was almost up and then "cut the mic" (or politely interrupted them) if they went on too long. For some, this was jarring at first. But, over time, it established a culture of starting and ending on time. Respect people's time and they'll respect yours (and you) for it.

Becoming a stand-up leader isn't easy, but following some of these principles from stand-up comedians can make it easier. By starting meetings strong and delivering with confidence, you'll be more likely to influence people to take action. Seeking feedback will help you grow. Giving credit where it's due will build your team and your reputation. And respecting people's time will show that you mean what you say and say what you mean.

Whether you're leading million-dollar projects or a small team of volunteers, you can work to become a stand-up leader. Plus, this is the perfect excuse to finally give stand-up comedy a try, or at least watch some of your favorite comedians online. You won't just be having a laugh; you'll be on your way to becoming a better leader as well. **CBO**

*Andrew Tarvin is the world's first humor engineer, teaching people how to get better results while having more fun. He is the author of *Humor That Works: The Missing Skill for Success and Happiness at Work* and chief executive officer of *Humor That Works*, a consultancy for human effectiveness. Follow Tarvin on Twitter @drewtarvin and visit humorthatworks.com.*



3 Questions for Exiting Your Business by 2020

How to set up your company for long-term success even after you leave

BY PHILLIP ROSS & PAUL GEVERTZMAN

Coming out of the Great Recession, many companies have experienced tremendous growth, leading ownership to rethink long-term individual and business goals. For construction business owners, exiting their role as an active owner to retire or pursue other business opportunities is more attainable and logical than ever.

In addition to the role current market dynamics play—such as an extended real-estate development cycle over the last decade—developers pushing back against rising costs and the fact that many baby boomers are approaching retirement make succession planning an especially popular issue right now.

One solution does not fit all, but if you're a business owner contemplating your exit strategy, here are some fundamental next steps you should consider:

1. WHAT MATTERS MOST?

First, it's important to decide what your primary goal is: leave your company in the most advantageous position to build on your legacy, or leave with the most robust financial package possible. Ideally, an owner would like to accomplish both. However, you need to recognize the potential for these objectives to conflict and decide which side you will favor, should push come to shove.



To achieve either goal, you will also need to consider both short-term and long-term objectives, which may also conflict, such as maximizing current earnings versus reinvesting in equipment and technology.

2. WILL YOU PASS IT ON OR BRING IT TO MARKET?

Next, an owner must consider whether they would like there to be an internal transition within the company or an external sale. This involves analysis to determine if there are qualified internal candidates who can assume leadership already within the company. And there are many companies outside New York that are looking for opportunities to enter the

New York market. If not, you may have to start looking elsewhere for new leadership to put your company in the best position to succeed moving forward and/or be as attractive as possible to an external buyer.

When weighing these options, owners should consider that in larger markets like New York, where competition is tight and the complexity of doing business is high, exit opportunities can be more limited. Additionally, buyers are less interested in a business that gets most of its work through a bidding process. With this in mind, it may be best for owners of businesses with a strong flow of work and capable internal talent to devise an exit strategy that transitions

ownership to internal parties, while partially compensating exiting ownership with future revenue.

To prepare internal successors, you should start training them in all aspects of the company now. They must learn how to “think like an owner.” This takes time to develop, and in the event you do not have the future leaders internally, it will take even longer to first find the right people. There are also various compensation strategies to consider to incentivize the future leaders.

Alternatively, with a prolonged economic boom and, subsequently, record development growth in many markets, there may not be another time as advantageous as now for an external sale. With many new companies and heavy competition in your given specialty, mergers and acquisitions may come with more favorable terms and less urgency

now as opposed to during an impending market downturn.

3. WHAT ARE YOU WORTH?

Finally, owners need to determine how they will achieve the best valuation for the business and what thresholds must be met to make exit feasible for long-term personal financial goals. The business must be best positioned and able to give evidence of current and expected cash flow. Appraisers often value construction companies by earnings, value of upcoming and backlogged transactions, equipment, and other factors.

The business's physical assets, niche areas and human capital must be thoroughly evaluated before deciding future steps, and actions should be initiated for improvement wherever necessary. Does your firm have the infrastructure and controls in place to

allow successors or buyers to succeed in both the near future and long term? From the age of your equipment to the niche areas you work in to the technology you utilize—you may need to invest back into the company significantly to achieve your preferred exit.

Considering the amount of time every business owner puts into building their company, they should exit it on their own terms. To do this, exit planning and strategic succession actions should be taken sooner than later and be continually reevaluated. **CBO**

Phillip Ross and Paul Gevertzman are partners and leaders of the construction industry group for Anchin, Block & Anchin, the largest single-office public accounting firm in North America. Visit anchin.com.



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5 Sure-Fire Ways to Kill Innovation

How to better foster creativity & reap the benefits

BY STEVE BLUE

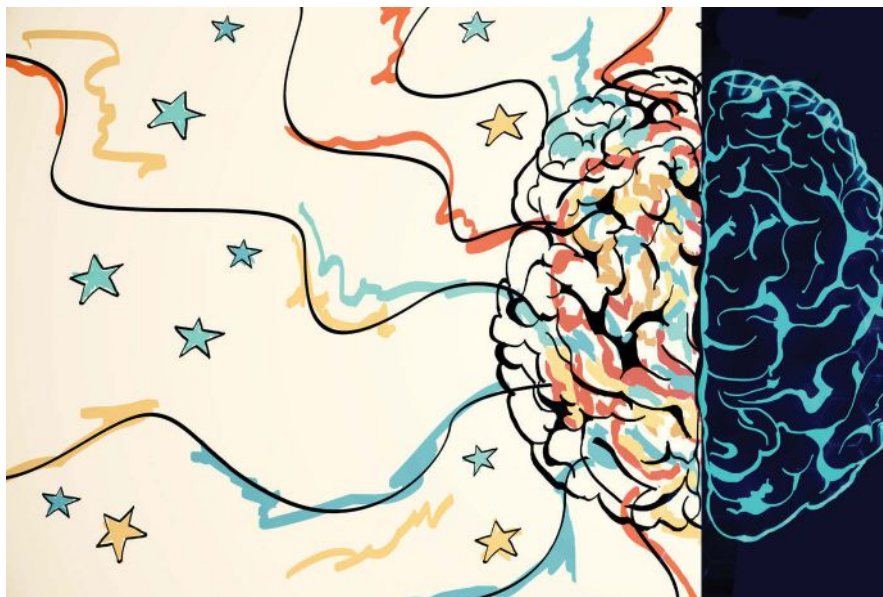
The odds of a new product idea reaching full commercialization are less than 4%. And that's the best-case scenario, which probably explains why most companies don't even attempt it. In fact, those that do often do so half-heartedly; just to check a box and move on to the next project. Or their efforts are doomed at the outset, because their boss commits one of the following five cardinal sins, guaranteed to make certain innovation never sees the light of day.

1. YOU DON'T MAKE INNOVATION A REQUIREMENT FOR EVERYONE.

Many chief executive officers (CEOs) want innovation but only after the "real work" gets done. News flash: If you want to survive in the business world, you better make innovation the "real work." Make it a top priority for everyone in the company, not just the engineering department. How do you do that? By writing it into every job description, by rewarding and recognizing people who innovate—and yes, by asking people to leave if they don't.

2. YOU DON'T GIVE PEOPLE THE TRAINING THEY NEED.

Making everyone responsible for innovation can be scary. Some people will be afraid they aren't up to the job because they don't perceive themselves as creative.



But the truth is that everyone can be creative if they are trained in the principles of creativity. Your job is to train every single employee—not just white-collar engineers. Train the whole workforce, especially workers out in the field.

I commissioned the previous chief creativity officer of the QVC network to teach my company's entire workforce how to generate new and novel ideas. He rode shotgun with teams for the better part of a year, and now, creativity is in the company's DNA. In the beginning, leadership told employees what it wanted them to work on, where and when they

should work on it. Then they would come back to leadership with ideas, who would then decide if the ideas were worth further pursuing. Now, employees decide which innovations or problems they want to work on and where and when they want to work on them. Then they implement the ideas without a boss being involved.

3. YOU DON'T GIVE PEOPLE THE TIME THEY NEED TO INNOVATE.

It is all well and good to expect innovation, but you must give people the time and space to do it. If you don't, employees will default to the tasks at hand. After all, they

get paid to complete such tasks. In fact, not only must you give them permission, you must make it mandatory. I tell my employees that I expect 20% of their time to be spent on innovation, and I hire extra people so we can have both production and innovation.

4. YOU DON'T GIVE PEOPLE A PLACE TO INNOVATE.

I built a high-tech space designed to facilitate innovation, which employees have named the "Creation Station." They are welcome to gather there whenever they want to. And they often do, collaborating across the organization in the pursuit of new products and processes. Some people will tell you such a space is a waste of money and offers no return on investment (ROI). Yet, most CEOs won't think twice about spending a ton of money on a computer numerical control (CNC)

machine because it has a calculable ROI. So does my Creation Station, which has generated ROI many times over with new products and improved processes. The difference between the Creation Station and a CNC machine is that the machine has a finite useful life and must be replaced—not so with an innovation space. Other critics have said building such a space only gives employees the excuse to goof off there. To that, I say that if you cannot trust your employees not to goof off, you have the wrong employees.

5. YOU DON'T TAKE RISKS IN THE NAME OF INNOVATION.

Boards and shareholders do not like risk. And neither do employees. They have all been conditioned to avoid and abhor it, so they avoid it like the plague. But, without risk, there can be no innovation. Without risk there can be no success.

The world rewards risk takers only when they succeed. But success is elusive in the world of innovation. The world of innovation is murky and uncertain.

You shouldn't expect guarantees. Instead, expect failure and set the expectation with your board and employees that failure is likely, but not a given. You must give people permission to fail. Otherwise, they won't even try. I tell CEOs all the time, don't take risks; take big risks. Little risks have little returns. **CBO**

Steve Blue is an internationally recognized expert in transforming rust-belt companies into high-tech powerhouses. He is a bestselling author, leader, speaker and media contributor. Blue is president and CEO of Miller Ingenuity, a company revolutionizing traditional safety solutions for railway workers. Visit milleringenuity.com.



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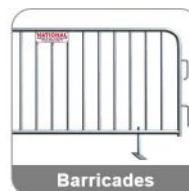
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Removing the Mystery from Indemnity Agreements

How to work smarter & avoid undue contractual obligations

BY LAURA A. COLCA & KELLY A. MCGEE

Most, if not all, construction projects begin with a contract, which usually includes a critical provision—the indemnity provision (aka the hold harmless clause). The indemnity provision is a promise by the indemnifying party (the contractor) to cover the other party's (owner's) losses if the contractor's actions cause harm or a lawsuit.

In other words, the indemnity provision protects an owner or general contractor from exposure to liability if a loss occurs during construction. The provision is used in favor of one party to mitigate risks and shift potential costs to another party. It is triggered by breach of the contract, misconduct or negligence of the contractor or subcontractor (the “indemnitor”).

In many states, including New York, the law prohibits the indemnification of another party's negligence in the context of a construction project. The General Obligations Law (GOL) states in part that “a construction contract that includes a provision where one party agrees to indemnify or hold harmless another party for its negligence, is against public policy and is void and unenforceable ... ”

UNENFORCEABLE LANGUAGE

We often come across contracts that favor our client but are unenforceable,



as the provisions violate the term of the GOL. Sometimes the unenforceable language is buried in the provision. One such contract included, “ ... subcontractor shall indemnify and hold harmless the owner, general contractor, etc. ... from and against claims, damages, losses to the extent caused by the negligent acts or omissions of the subcontractor and all acts other than the sole negligence or willful misconduct of the party to be indemnified.”

A subcontractor cannot indemnify a party (whether it be the prime contractor

or the owner) for the prime contractor's or the owner's own negligence. The GOL mandates that indemnity agreements, in which owners or contractors seek to pass along the risks for their own negligent actions to other contractors or subcontractors, are unenforceable.

MAGICAL LANGUAGE

“To the fullest extent permitted by law, the contractor shall indemnify and hold harmless the owner ... ” This language is also called the “savings clause,” given

that if an indemnity provision contains unenforceable language, the words “to the fullest extent permitted by law” can save the contract. If a legal dispute arises over the contract terms, the court will not completely disregard the indemnity provision. Rather, it will assess the agreement to find its original intent and favor under the GOL.

PECULIAR/PROBLEMATIC LANGUAGE

A critical part of risk management for all parties involved in a construction project is practicing good “contract hygiene.” This consists of analyzing the proposed contract and evaluating the risks associated with the services to be performed and contractual risk transfer that can create or expand liability for contractors. If indemnification provisions are not properly worded, they can shift risk, exposing parties to large claims that may not be covered by their respective professional liability insurance policies.

While owners may be justified in seeking indemnification, provisions that are unfair, poorly worded, ambiguous and/or uninsurable do more harm than good. Even a well-drafted indemnification provision cannot let a party avoid all disputes, but a clear and concise indemnification reduces the likelihood of litigation.

The following indemnification provision has problematic/inappropriate language that should be avoided: “Contractor shall indemnify, defend and hold harmless the owner, the owner’s employees, directors, officers’ agents, representatives, subsidiaries, affiliated companies and lenders from and against any and all liability, costs and expenses, including, but not limited to: attorney’s fees that occurred in whole or in part as a result of the contractor’s acts, errors or omissions.”

In analyzing the aforesaid provision, the problematic concerns are as follows:

1. *Duty to defend*—The term “defend” should be deleted because the duty

to defend can be broader than the duty to indemnify. If the provision is not stricken, it could be argued that the contractor has the duty to defend and pay all associated costs immediately upon the filing a lawsuit, regardless of whether or not there is a claim of negligence. Without a claim of negligence, the contractor has acquiesced to liability that would not exist absent the contract and may not be insurable.

2. *Agents, representatives, subsidiaries, affiliated companies and lenders*—The agreement to indemnify the above parties is problematic on two fronts. First, this language could create an obligation to indemnify parties to whom the contractor otherwise may not have liability, thereby creating an uninsured exposure. Additionally, this language could be inferred as creating a privity with these parties, which again creates exposure where none previously existed. Thus, this language should be removed, and indemnity should only extend to the owner, its officers, directors and employees.
3. *Any and all*—This phrase is problematic, as it could extend the indemnity to claims beyond those relating to negligence.
4. *Attorney’s fees*—When indemnification extends to attorney’s fees, the phrase “attorney’s fees where recoverable under applicable law on account of negligence” should be used. In jurisdictions where attorney’s fees can be covered under a professional liability policy, they are likely based on a negligence claim, as opposed to a contractual obligation to reimburse.
5. *In whole or in part*—This language should be avoided. Instead, the phrase “to the extent caused by” should be used. If the “in whole or in part” language is utilized, it can create an uninsured exposure. Typically, professional liability insurance only

extends coverage for the insured’s share of the liability.

FLOW DOWN

When working with various construction contracts, including architectural or design contracts, engineering contracts or subcontracts, it is critical that indemnification provisions “flow down,” meaning that the indemnification terms of the prime contract between the owner and contractor are incorporated into the lower-tier agreements.

In other words, flow-down provisions are clauses in a subcontract that incorporate the general contract by reference and bind the subcontractor to the general contractor in the same way the general contractor is bound to the owner. This is extremely important to ensure that the indemnification obligations on the project are consistent.

Overall, one of the best ways to mitigate risk and avoid disputes arising from a construction contract is to carefully analyze all relevant indemnification obligations or have legal counsel do it. By negotiating language that can potentially result in uninsured exposures and by removing provisions that are unfair and unenforceable, parties place themselves in the best possible position to avoid expensive and protracted litigation. **CBO**

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Managing the Hispanic Workforce

Why knowledge is power when it comes to culture, communication, compliance & planning

BY JACOB M. MONTY

In legally representing employers with large Hispanic workforces, many of the errors I have seen have been perpetrated by good-hearted employers who did not acknowledge the unique background features, social norms and histories of their Latino workers. The right knowledge helps construction employers recruit and hire Hispanic employees efficiently; treat Hispanic employees appropriately; maintain their workforce; prevent costly mistakes; remain in compliance with regulations; and obtain a competitive advantage.

TAKING THE HISPANIC WORKFORCE MORE SERIOUSLY

The United States has seen an unprecedented growth rate in the Hispanic population. In 2017, the growth reached 58.9 million, constituting 18.1% of the nation's total population. Hispanic workers make up approximately 17% of the 150 million employed people in the U.S. That number skyrockets when it comes to the construction industry, where nearly 30% of workers are Hispanic.

Hiring Hispanic employees can give your business a competitive advantage beyond the hardworking immigrant work ethic. However, the differences in culture and language present significant barriers. If these barriers are not adequately



addressed, employers can expect persistent problems with safety, quality and productivity, which could negatively affect virtually any other competitive advantage they may have.

CULTURAL FACTORS

Employers should note that "Hispanic" is not a race, but an ethnic distinction, referring to a person or descendant of a family from a Spanish-speaking culture.

Hispanics share a common language, but their cultures, values and beliefs are very unique. To assume that all Hispanic cultures are the same, or lumping all Hispanic cultures into one demographic, is a critical mistake. Notably, this workforce group places a high value on family and culture, and they have a strong desire for self-improvement.

It makes sense, then, that these three aspirations should be considered

Hiring Hispanic employees can give your business a competitive advantage beyond the hardworking immigrant work ethic. However, the differences in culture & language present significant barriers if they are not adequately addressed.

foundational points when a construction company is developing its recruitment and retention strategies.

Understanding the varied Hispanic cultures and the law, both here and in the home countries of immigrant workers, helps employers capitalize on the great value these employees can bring to the workplace. The differences are important and need not be divisive.

WHAT SHOULD EMPLOYERS KNOW?

According to latpro.com, employers informed themselves about Hispanic workers' cultural preferences, as they pertain to:

- *Degree of intimacy*—Many Hispanics want to establish a personal connection, including a close relationship with coworkers. Small talk is the way of learning about the wants, needs and feelings of others.
- *Social harmony*—Hispanic employees generally do not like to rock the boat and have a need to maintain smooth and pleasant relationships. Blatant confrontation does not come naturally, and they may prefer to use a more indirect approach.
- *Personal contact*—In social situations, Hispanics find physical contact with others quite normal. Handshakes, hugs, kisses on the cheek and pats on the back are all part of daily interaction.
- *Respect for authority*—Hispanic employees tend to treat those in positions of authority with a great deal of respect.

Employers should use universally common ground to unite a diverse workforce. Language, music, style and cultural practices are the currencies with which people define their identities and establish social capital. Something as simple as sharing a meal with your Hispanic employees is a big deal.

WHAT CAN EMPLOYERS DO?

Additionally, latpro.com advises employers to do the following:

- *Make a conscious effort to recognize your Hispanic employees on a personal level.*—Employers should initiate small talk and avoid discussions that involve the employee's immigration status or the current politics in their native countries.
- *Be a leader, not a boss.*—Hispanic employees respond to managers who lead through vision and inspiration, not fear and intimidation. As such, offer praise in front of others, and do not criticize publicly.
- *Explain and align your actions with company culture and policy.*—Many employee handbooks contain a section that describes the company. This is an important page for your entire workforce to read, but especially your Hispanic workers.
- *Work to break down communication barriers.*—Employers should learn more about their workers' native languages. Misunderstandings can lead to poor job performance, low productivity, workplace injuries and violation of personnel policies.

PREVENTING COMMUNICATION & WORKPLACE INJURY

Imagine a Hispanic construction worker standing with fellow crew members at the start of the workday. The supervising contractor lists off safety instructions for the hazardous tasks they could encounter and finishes with the question, "Does everyone understand?" The worker nods along with the rest of the crew, except he didn't understand. The instructions only given were in English, which is his second language, but he chooses the risk of uncertainty over the risk of speaking up. This situation poses serious danger for a construction company and its employees. Employers should always ensure that instructions are fully understood by their Hispanic workforce.

CARELESS COMMUNICATION CAN CAUSE CRISIS

When dealing with a Hispanic workforce, careless communication can result in much more than hurt feelings. In one case, according to the U.S. Equal Employment Opportunity Commission (EEOC), *EEOC v. Koper Furniture Inc.*, "a dark-skinned Puerto Rican man was fired in retaliation for complaining to the company about harassment by his supervisor because of his dark skin color." One immediate takeaway is that employers must educate their Hispanic workforce about communication in the workplace.

Employers attempting to bridge language-barrier issues must be careful. English-only policies could get the company sued, soil its reputation and

harm the life of an employer. In September 2018, The U.S. EOCC filed suit against La Cantera Resort and Spa in San Antonio, Texas, for discrimination and retaliation.

Court documents said one manager directed strong racial slurs and derogatory comments toward employees in the banquet department, and at least two dozen Spanish speakers were barred from speaking Spanish, while employees of other nationalities were allowed to speak their native languages. When workers complained about the discriminatory behavior, the lawsuit says, they were punished through demotions and terminations, with some replaced by non-Hispanic workers.

MAINTAINING COMPLIANCE

Federal and state laws require employers to post certain notices to employees in both English and Spanish. Government-issued and other official employment notices are the first things an investigator will verify when conducting an on-site workplace investigation.

Here are a few things to consider when deciding whether your company's written material must be available in Spanish:

- Does federal or state law require

written communication to be in Spanish? Some administrative agencies, such as the Department of Labor (DOL) Wage and Hour Division and the Occupational Safety and Health Administration (OSHA), require certain communication and training documents be made available to employees in the language the employee understands best.

- Non-mandatory translation into Spanish typically involves handbooks and other directives to employees. Putting these company materials in Spanish demonstrates that the employer made an honest effort to help workers, who do not speak English primarily, understand.

ICE & THE HISPANIC WORKFORCE

Hispanics make up a large portion of the U.S. workforce, which means the potential for work authorization violations is high. Noncompliance with federal laws could mean hefty civil and criminal penalties against an employer.

The U.S. Immigration and Customs Enforcement's (ICE) enforcement strategy focuses on criminal prosecution of employers who knowingly break the law,

and I-9 audits and civil fines encourage compliance with the law. According to USA Today, ICE was ordered to quadruple worksite enforcement in 2018—an order they carried out.

In 2018, 6,848 worksite investigations were opened. In 2017, 1,691 investigations were opened, demonstrating roughly over a 400% increase in worksite investigations. In 2018, 5,981 Form I-9 audits were initiated, compared with the 1,360 Form I-9 audits initiated in 2017—a 439% increase. In 2018, 779

criminal arrests were made, compared to 139 in 2017—a 560% increase in criminal arrests. And for administrative, worksite-related arrests, there were 1,525 in 2018 compared to 172 in 2017—an 886% increase.

PREPARATION & PLANNING AHEAD

Employers can attract and retain a strong Hispanic workforce by making an effort to:

- Understand and value the cultures of all employees
- Present solid opportunities for advancement
- Provide training
- Offer competitive salaries and benefits

Employers can remain in compliance with federal and state laws by incorporating a few of the following strategies concerning their Hispanic workforce:

- Having an audit protocol in place
- Knowing the percentage of workforce made up by immigrants
- Making copies of all I-9s and crucial documents
- Understanding the business's interruption risks
- Taking advantage of attorney-client privilege
- Developing an immigration-compliance plan **CBO**

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MARKETING: Taking the Fear Out of Rebranding | By Ryan Durant & Kyle Hildebrandt

HOW SMALL, STRATEGIC CHANGES CAN BRING IN BIGGER BUSINESS

Photo courtesy of Mike Vraneza



Your brand goes far beyond
a logo & a choice of colors.
It shows through in employee
engagement levels & customer
interactions every day.

The thought of a rebrand can spark terror in even the most seasoned business owner. For the uninitiated, the process seems shrouded in mystery, the end result uncertain. Cautionary tales abound from across the corporate world—Uber’s much-maligned 2016 rebrand, the Sci-Fi Channel’s 2009 rebrand to Syfy, and IHOP’s rebrand to IHOb, which leaders later said was a publicity stunt.

Decidedly one of the most important decisions a business owner will ever make, the rebrand is an attempt to move brand equity from one vessel, in essence, to another. It requires the precision of a drill, not a dozer, to identify the core components worth retaining. It demands internal reflection and a certain level of self-awareness, as a successful rebrand takes into account not only what clients value about the existing brand, but also the organizational culture.

Dan Koffel, current chief executive officer (CEO) of Snyder Roofing & Sheet Metal Inc., realized that the company he was

operating, previously known as Snyder Roofing of Oregon, needed to rebrand after he learned at a trade show that customers thought they offered only commercial roofing. That perception was hindering its waterproofing and coating services business. Following a deep dive into the awareness and perceptions of the brand, the company determined a rebranding was necessary.

“We took a deliberate approach to our rebrand, closely examining our challenge before we brought in professionals to help create a new identity,” he said. “It allowed us to get highly specific about what needed to be changed and what didn’t—and to create an efficient roadmap to put our new brand into action.”

An effective rebrand proceeds as more of an evolution than a big bang. In doing so, it enables construction companies to retain the brand equity they’ve amassed, while shifting to respond to changing markets, better integrate new services or leverage new value following a merger or acquisition. But there’s a lot at stake.

With strong B2B brands outperforming the weak by up to 20 percent, according to McKinsey Company, the fear of getting a rebrand wrong can be paralyzing. This is particularly true for

commercial and residential construction business owners, for which word-of-mouth referrals are critical to gaining new clients. Whether an organization turns to an internal team or external branding agency for help with rebranding, there are some common fears that may halt progress.

FEAR 1: WE HAVE TO BLOW UP THE BRAND & START FROM SCRATCH

It’s fairly easy to blow up something and recreate it from the ground up. It’s much more difficult—and often much more important—to take a restrained approach that doesn’t discard the years of brand equity your business has built. It’s important to give respect to the brand’s foundation, but also find a way to build on it.

To help your brand evolve, ground the rebranding process in practical research and data. The first step to achieving this is to examine your brand’s equity, including:

- Brand awareness
- Brand perception
- Brand associations
- Proprietary elements

If you choose to rebrand through an agency, ideally, the one you select should guide your rebrand and play the role of translator, serving as an intermediary between the company and the clients with whom you want to communicate. It might even feel like an intervention at



The Snyder team at work. When rebranding, it’s important to remember to ask for opinions across the company—even if the final result doesn’t mirror their thoughts, they will feel valued and heard. *Photo courtesy of Mike Vraneza*

times. Be prepared to address tough questions, respond to research and establish channels to better understand feedback from customers and their habits.

There will be uncomfortable moments and times when it may seem easier to maintain the status quo. But that’s likely also why now is the time to roll up your sleeves, trust your chosen partners and avoid killing the messenger.

FEAR 2: THE REBRAND WON’T FEEL LIKE US

There’s a distinct difference between a good branding agency and a designer able to recreate a specific aesthetic at scale. The team you partner with for your rebrand should be design-agnostic (i.e., personal preferences for look and feel should have no influence on

the end result.) Instead, a rebrand is about respecting the history of the brand and understanding its unique visual identity. It needs to reflect what the organization really is now.

Keep in mind that your clients aren't the only stakeholders your new brand must connect with. Your employees and subcontractors need to feel just as confident that the rebrand captures the essence of your construction company and the value it provides—especially those employees and subcontractors who mostly work in the field and have little interaction with the main office.

Ask your office employees, foremen, general managers and subcontractors for their opinions throughout the rebranding process, whether through surveys or face-to-face interviews. Even if the final result doesn't mirror their thoughts, they will feel heard and valued, which goes a long way toward creating alignment with your company's new branding.

Otherwise, a rebrand can feel out of touch to field employees or subcontractors. That sentiment leads to resentment and prevents your new brand from being realized in client interactions. The more excited employees are about your brand, the more engaged they will be in the company.

Gallup Inc. research has shown that companies with highly engaged employees have more than four times the earnings per share compared to those in the same industry whose employees are less engaged with their company's brand.

FEAR 3: OUR CUSTOMERS WON'T LIKE THE REBRAND

It's normal to second-guess yourself during a rebrand: Will our clients know it's us? Will they like it? Will the reputation we've built translate under the new brand? These doubts can paralyze your efforts.

Overcoming this barrier requires having a strong internal champion able to sell the rebranding internally. Support has to come from the top; it's almost always up to the CEO, president or chief marketing officer (CMO). This champion needs to be able to explain where the brand is going and why, without letting divergent opinions diminish their enthusiasm for the chosen course.

FEAR 4: THE TOTAL COST IS UNCERTAIN

How much will a rebrand cost? That all depends. Arthur Andersen spent \$100 million to rebrand itself as the consulting firm Accenture; while Nike reportedly spent \$35 to design its iconic swoosh. As you evaluate potential partners, consider all of the touchpoints you use to interact with customers and keep your end goal in mind. Establish a budget and work with the agency to tailor a scope of work that meets it. The service fees for the branding agency you partner with directly reflect the value you receive: Is your partner merely redesigning a logo or website, or is the partnership a more extensive one, with the agency conducting research to uncover the drivers behind your brand's equity?



Snyder Roofing & Sheet Metal realized that a rebrand was needed after hearing that customers thought they only offered commercial roofing. Photo courtesy of Mike Vraneza

Ultimately, the service fee is one small portion of the total rebrand cost. There are also costs associated with employee training, marketing materials, signage, legal filings and more. Most construction businesses also have a lot of branded physical capital—heavy equipment, vehicles, employee uniforms, etc. Take into account the cost to reorder or paint all of these items to align with your company's new identity, as these factors will affect the cost of a potential rebrand. But, also consider that a rebrand is ultimately an investment in the longevity of your business.

LAYING THE FOUNDATION FOR LONG-TERM SUCCESS

A brand is a promise made and a promise kept, and it goes far beyond a logo and choice of colors. It's about engagement. It's about the customer seeking you out (rather than you enticing them to start a project). It's a shared relationship, and it must be built on what is really true of them and what is really true of you.

As a discipline, branding is an extended effort that requires the long view. Rather than swinging for the fences, effective rebranding is about rounding the bases on consistent singles and doubles. It's about building on the foundation that your business has already created. The most successful construction rebranding is the result of countless smaller, strategic efforts intended to position a business to go big, but only if and when the proper groundwork has been laid. **CBO**

Ryan Durant and Kyle Hildebrandt are the co-founders and principal partners of Portland, Oregon-based branding agency OVO. Founded in 2005, OVO solves complex brand-marketing and communication challenges for leading brands, such as Nike, Kindercare, Thunderbird School of Global Management and Phoenix Art Museum. They have over a decade of experience in brand development, messaging, creative direction and design. Visit brandsbyovo.com.



10 MISTAKES CONTRACTORS ARE MAKING WITH THEIR WEBSITES & HOW TO FIX THEM

Having a website for your construction company is a must, but many contractor websites are poorly built and riddled with mistakes, rendering them largely ineffective. The following covers the 10 most common mistakes being made on contractor websites and advice for how to fix them.

1. IT'S NOT MOBILE FRIENDLY

Construction and specialty trade contractors who jumped onto the website bandwagon early in the 2000s have likely not touched their website since. These websites are usually horribly outdated, which can cause problems with the way visitors interact and with search engine rankings, such as those from Google.

If your website isn't mobile friendly and responsive, then it likely offers a poor user experience. And websites that offer a poor user experience don't get good results.

A responsive website is one that can automatically resize itself for the user's device. Whether they're on an iPhone, an Android, a tablet, a laptop or desktop, a responsive website is more appealing and easier to use. If you're hiring a web developer to build your website, make sure the site is going to be responsive. If you have an older website, sometimes it's not cost-effective to optimize it for responsiveness. In these cases, the site should be rebuilt.

2. IT USES THE WRONG TITLE TAGS

One of the most common mistakes we see with construction contractor websites is poorly or incorrectly written meta title tags. Your title tag is what shows up in search engine results pages describing what your website (or webpage) is about. It's also the first indicator to search engine bots of the existence and content material of your website.

The two most common title tag mistakes are home pages with titles like "Home" or those identical to the company name, like "John's Construction Company." Neither of these send strong signals to Google to describe what your company is about and, more importantly, where you provide your services. Your title tags should

always contain your service and your geographic area. For example: "Commercial Construction Company in Seattle, Washington."

3. IT DOES NOT HAVE ENOUGH PAGES

Another very common issue with contractor websites is a services page that lists every service the company offers. This does not indicate to search engines what your website is about, and it makes it difficult for searchers to find you when they need you.

A better strategy is to create individual pages on your website for every service you offer. This takes more time, but it's a much more effective way to garner more appearances in search results. For example, if you're a commercial contractor, you might want to have individual pages for the specific types of projects you complete, such as commercial tenant build-outs, office remodeling, warehouse improvements, etc.

4. IT FEATURES POOR-QUALITY PHOTOS

Your website should have compelling photos showcasing your best work. If you're working on large projects, don't hesitate to hire a professional photographer to take a few photos for you—it's worth the money and can drastically improve the visuals on your website. Strong visuals help build your credibility, makes you appear more trustworthy/transparent, and lets potential customers know you take pride in your work.

Don't just create a "photo gallery" page and call it a day. You should organize your photos by specific project or project type. That way, if a browser looking to remodel their office space comes to your site and lands on your office remodeling page, they will see a selection of photos from similar projects you've completed. This type of organization provides a much better user experience.

5. IT HAS SLOW LOADING SPEEDS

The downside to older websites or webpages that are built on inferior platforms (usually by lazy web developers) is that they can be incredibly slow. With so many users on mobile devices today,



it's critical that your website loads very quickly. This can be challenging for a contractor, especially if you have a great collection of photos, as the photos must be optimized for fast loading speeds.

For help with this, use the Google PageSpeed Insights tool (developers.google.com/speed/pagespeed/insights/) to check your website speed and get suggestions on making it faster. These are usually somewhat technical in nature, so you may want to ask your web developer to implement them.

6. IT DOES NOT USE DATA FROM GOOGLE ANALYTICS

Most contractors have absolutely no idea how many visitors their website receives, what pages are the most popular, where visitors are coming from, what devices visitors are using, etc. Google Analytics is a free tool that can quickly be implemented on any website, and it helps provide you and your web developer with important metrics to help learn when it's time to make improvements and squeeze more results out of your online marketing. It's free to sign up (analytics.google.com/analytics/web/) and it takes about 5 minutes to get started.

7. CONTACT FORMS LACK THE NECESSARY DETAILS

Many contractor websites have basic contact forms—if they have one at all. Your contact form should be detailed and ask for the information you actually need to be able to help a customer. Instead of merely asking for a name, email and phone number, ask your potential prospects for more details.

Consider including contact form fields like “What is your project street address?” “What city are you located in?” or “Tell us about your project.” If your prospect is serious, they will usually explain what they need from you. Anyone truly interested will not be turned off by being asked for these details. And as a business owner or salesperson,

you'll be armed with critical information when you follow up with that project lead, which will also save you time.

8. IT DOES NOT IMPLEMENT SCHEMA MARKUP (MICRODATA)

Schema markup, or “microdata,” is something that few web developers are adding into their websites, but it's a very important piece to the puzzle. Microdata are small snippets of code that send detailed information to search engines about your business. This additional information can help improve how your website appears in search results.

Details that can be marked up with microdata include your business type, such as general contractor, roofer, plumber and/or heating, ventilation and air conditioning (HVAC). You can also include business contact details, business hours, accepted payment methods and project-type price ranges. This is a more technical aspect of your website, so it's best to ask your web developer to implement schema markup for you.

9. IT DOES NOT CLEARLY DEFINE SERVICE AREAS

Most construction or contracting companies offer services in a specific geographical region. It might be a single city, a metro area, multiple counties, one state or multiple states. Whatever your service area, be sure to list it on your website. A best practice for listing covered areas is to create a page for each city, town county or state that you provide services in. This helps searchers find you when they search for your services in a particular area, and it sends a clear indication to them that you can help.

10. IT LACKS A PROPER CALL TO ACTION

You must make it easy for your visitors to contact you through your website. You might think it's easy for a visitor to scroll to the bottom of your website to find your phone number and contact details, but it's not. Effective calls to action prompt visitors to take immediate action. Ideally, you should have a phone number at the top of your website, and it should be clickable on mobile devices so people can quickly call you.

Another important call to action is your contact form. Instead of just having a contact form on your “contact” page, consider placing a simpler version of your form on every page of your website. **CBO**

Carl Sorensen is the owner of sites4contractors.com, a web design company that specializes in helping construction and trades contractors improve their websites and digital marketing campaigns. Visit sites4contractors.com.



WHY YOUR DIGITAL MARKETING TRANSFORMATION DOESN'T HAVE TO MEAN A NEW HIRE

Without question, digital transformation is a mega business trend. The hallmark of the digital transformation movement is the adoption or use of technology to change processes to scale faster, beat competition and ultimately achieve greater results. The process may also require organizational change, as well as new skill sets or talent. But what about marketing? Does marketing have a role in digital transformation? And if so, does marketing become “digital marketing transformation (DMT)?” And in the construction industry—“digital construction marketing transformation (CDMT)?” That’s a lot of acronyms.

As such, this article will provide the Construction Marketing Association’s (CMA) perspective on DMT, including a definition, details about the digital marketing mix of top strategies and tactics, and some insight into the role of marketing technology.

DMT DEFINED

Without question, marketing is changing rapidly, evolving from traditional strategies and tactics to digital ones. In fact, for many

brand scenarios (business and consumer), traditional marketing tactics are quickly becoming obsolete, or secondary at most. For example, traditional advertising is no longer used by a majority of business marketers (and only by a minority of consumer marketers).

Lastly, digital marketing is infinitely more measurable than traditional marketing, allowing marketers to calculate a return on investment, as well as test and improve marketing campaigns and initiatives before implementation.

DMT is defined as the evolution and transition from traditional marketing to a digital marketing mix, including the use of digital marketing technologies and tools to more effectively manage, scale, measure, test, optimize and report on marketing activities and results.

TOP STRATEGIES & TACTICS

What is the so-called “marketing mix,” or in the case of DMT, the “digital marketing mix?” In addition to being digital instead of more traditional methods, it uses technologies like marketing automation (MA), analytics and newer technologies like artificial intelligence (AI). The following are top digital marketing strategies and tactics in the digital marketing mix:

- Website design: mobile, security and user experience (UX)
- Search engine optimization (SEO) for desktop, mobile, voice and visual search
- Social media including social advertising
- Paid search, including pay-per-click (PPC), display, programmatic advertising and remarketing
- Content marketing (blogs, videos, checklists, interviews, whitepapers, e-book, case studies, infographics, etc.)
- Email, including click-through optimization and email lists
- Automation
- Analytics
- Influencers
- Diagnostics
- AI, including chatbots (computer programmed to chat with customers)



MARTECH

It goes without saying that DMT requires marketing technology, now called “martech.” Intuitively, martech is the intersection, or combination, of marketing and technology. The technology part is often software, tools or apps that support some or all facets of a marketing initiative or program.

MA is typically software that manages customer and prospect data, ongoing communications and analytics, including websites, blogs, email, social media and more. Some of the top MA platforms include Marketo, HubSpot, Pardot, Salesforce, Microsoft Dynamics 365, Act-On, and Active Campaign.

Other tools and technologies used for marketing. In fact, the annual Marketing Technology Conference - MarTech identifies the “Marketing Technology Landscape Supergraphic” that lists 7,040 solutions. The graphic can be found at chiefmartec.com/wp-content/uploads/2019/03/marketing-technology-landscape-2019-slide.jpg.

EMBRACING TRANSFORMATION

Like its big brother digital transformation, DMT is in full force. Experts agree—marketing has changed more in the last 5 years than in all the prior 50 years combined. The digital marketing mix has replaced much of the traditional marketing mix, while adding

incredible measurement, testing and analytics tools that can identify and improve marketing effectiveness.

The future of marketing portends additional and rapid digital transformation, with marketing being increasingly automated. New technologies will be required, along with new skill sets and talent. MA, AI and machine learning will be among the tools and within the skill sets of the next generation of marketers.

While the construction industry lags others in technology adoption, construction firms that embrace DMT will certainly have a measurable advantage. **CBO**

Neil M. Brown, CCMP, is chairman of the Construction Marketing Association and chief marketing officer (CMO) of Modern Marketing Partners. He has been chief executive officer of numerous marketing, consulting and creative agencies for the past 20 years, managing some of the biggest brands in the construction sector. Brown is the author of “Tools of the Trade: Modern Marketing for Construction Brands” and “Breakthrough Branding: Brand Naming Tips & Trade Secrets.” Brown holds a master’s degree in business administration from Northern Illinois University and a bachelor’s degree in marketing from Southern Illinois University. Visit constructionmarketingassociation.org.



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Not Your Father's Diesel Engine

The major changes making today's equipment more efficient

BY AARON KLEINGARTNER

It's likely no surprise that the diesel engine in your construction equipment today is a far cry from the ones used 30 years ago. Even significant updates within the past 10 years have changed diesel engines dramatically. What is under or behind a machine panel today is a sophisticated and connected diesel engine with less emissions.

Before Tier 4 was a common phrase in the industry, diesel engines were still the lifeblood of construction equipment, including excavators and wheel loaders, providing the muscle to do heavy earthmoving tasks. They may have supplied the power and torque needed to get the job done, but they were not as productive as the diesel engines of today.

Major changes to nonroad diesel engines have resulted in emissions reductions due to changes from Tier 3 to interim Tier 4 and, finally, to Tier 4. Construction equipment manufacturers have designed systems more holistically—instead of producing a diesel engine that is just a component of the larger system.

In years past, the diesel engine itself could be mixed and matched. Now, the whole system is designed very tightly with the specs of the engines so that the hydraulic system or the transmission, depending on the type of equipment, are optimized for one another. The component



optimization means owners and operators can enjoy enhanced machine productivity, especially better fuel efficiency, which can lead to significant cost savings.

Massachusetts contractor Ralph DiGiorgio says newer equipment, particularly his wheel loaders with diesel engines, use much less fuel than previous generations. "We have a couple of big machines that are eating 75 or 80 gallons of fuel a day," he said. "The new machines are burning a third less than that."

PERFORMANCE ENHANCEMENTS

One of the benefits of today's more sophisticated diesel engines is improvements to how the engine performs. Advancements in more consistent fuel burn and fuel-delivery systems combine to help maintain the optimal torque levels. In other words, while horsepower may be the same as it was a decade or 2 ago, the lugging ability of the engine (also known as the torque curve of the engine) has been optimized within that same horsepower

level. The advancement from mechanical to electronically controlled engines has also brought significant change to diesel engines. Electronically controlled engines are much more efficient. There are multiple injection points for fuel within the combustion cycle to help maximize the fuel burn and generate the most power with every stroke of the engine's cylinder.

Improvements to high-pressure, common-rail systems—with very fine droplets of fuel injected at multiple points within the combustion cycle—have helped improve productivity in addition to reducing fuel consumption and emissions.

DESIGN CHANGES

Although the physical dimensions of today's diesel engines haven't changed, the space for the engine compartment has increased. Additional space is needed to accommodate the extra components necessary for diesel engines to meet strict emissions requirements. As a result, some machine envelope sizes have been widened or heightened to allow space for the additional components.

In some cases, a larger engine compartment can impact the operator's visibility into the area behind machines, such as wheel loaders. Many equipment manufacturers now offer rearview cameras to provide operators with assisting visibility to their surroundings.

KEEP MAINTENANCE TOP OF MIND

It cannot be overstated how critical it is for owners and operators of construction equipment to properly maintain the machines. Skipping daily maintenance may lead to debilitating machine shutdowns, resulting in downtime during the peak work season.

It goes without saying that operators must check the engine oil every day. It's also a good idea to check for leaks around the filters and the oil pan. Operators should keep track of and change oil at the recommend intervals,

as service-interval schedules are designed to make sure the engine and other components are kept working at optimal efficiency.

Quick reminder: oil is used in machines to help keep the engine cool or running at its optimal temperature. It also helps disperse impurities that may be within the system. The oil is designed to help dissipate the impurities and the heat within the system. Today's Tier 4-compliant engines require CJ-4 oil, which has been optimized for working with new high-pressure fuel systems. Another good tip: Be sure there is no major debris around the engine.

Operators should also monitor components, like aftertreatment devices, to ensure they are well maintained, including when diesel particulate filters

What is under or behind
the machine panel today
is a sophisticated &
connected diesel engine
with less emissions.

need to be replaced. The newest CJ-4 oils help minimize issues with these filters. Still, it's recommended that you monitor the machine's diesel exhaust fluid (DEF) system if the machine is equipped with selective-catalyst reduction.

If an operator is lax with proper engine maintenance and aftertreatment systems, serious issues can develop. For example, the machine's diesel particulate filter may start needing more frequent regeneration, as well as replacement, due to the trapping of oil additives. Over time, the

machine may experience a reduction in engine performance because it has to work harder for the exhaust to breathe properly.

Operators should keep a supply of oil and oil filters on hand, especially if the machine is working at a jobsite for an extended time. Use genuine original equipment manufacturer (OEM) filters that are designed for use with the engine, since they have the optimal filtering capacity and fluid flow, maximizing the ability for enough fluid to pass through the filter.

Air filters should not be overlooked either. The air filters are designed for specific engines with an airflow window that is optimized for the engine. It helps maintain the proper flow of air into the engine, allowing the combustion process to work properly.

Lastly, even though newer telematics management systems on construction equipment can alert customers and dealers about critical issues, operators should not depend on these warning signals alone. Attentiveness is still crucial for both safety and efficiency on the jobsite.

Diesel engines have come a long way in the last decade. They are more productive, allowing for increased machine performance. However, they also require more vigilance and increased maintenance checks to ensure the engines and the aftertreatment systems are working properly. Visit with your operators to make sure they understand the importance of properly maintaining the engines for peak performance this season. **CBO**

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



4 Myths About Propane in Construction

And the truth about how this alternative fuel can be a benefit

BY JEREMY WISHART

Propane has long been used as a reliable, efficient fuel for jobsite heaters, lights and portable generators. The fuel is widely available across the United States and is often used by equipment dealers and rental companies. However, despite propane's established reputation, a few misconceptions remain about the fuel—mostly due to contractors having less familiarity with propane versus gasoline or diesel and not realizing the extent to which propane can benefit a construction jobsite. The following are the most common myths associated with using propane for light construction equipment and the truth behind each one.

MYTH 1: PROPANE IS EXPENSIVE.

Truth: On average, propane is 30% to 50% less expensive per gallon than gasoline.

Contractors will find that propane is consistently less expensive than gasoline, even when the price of gasoline is low. And when gasoline prices start trending upward, as they currently are based on reports from the American Automobile Association (AAA), the savings from operating propane equipment are even greater. For one, propane is a product of both natural gas and petroleum, and the price for propane falls between that

of the two other fuels. Additionally, the majority of the propane supply used in the U.S. is produced in North America, providing cost stability even when global fuel markets fluctuate. Contractors who commit to using propane equipment can further protect themselves from market fluctuations by entering into a fuel contract with a local propane supplier, too. The fuel contract can provide an advantage in forecasting project costs by locking in a set price per gallon for a period of time.

MYTH 2: PROPANE IS UNSAFE.

Truth: Propane is a safe fuel and can even be used indoors.

Ensuring safety with propane is primarily a matter of following safety regulations and guidelines before and during construction. Propane has a much narrower range of flammability and a much higher ignition temperature than gasoline and many other alternative fuels. It is also recognized by the Environmental Protection Agency (EPA) as nontoxic and a noncontaminant of air, water and soil. In comparison, fuels like diesel and gasoline contain harmful chemicals, and ethanol is both highly flammable and corrosive.

Safe practices when using propane include locating storage tanks a safe distance from property lines and buildings, protecting tanks and smaller propane

cylinders from construction traffic, and avoiding open flames near fuel storage or operation. Propane cylinders are also tested to be 20 times more puncture resistant and to withstand four times the operating pressure of gasoline and diesel tanks. Information on propane safety can be found in National Fire Protection Association (NFPA) No. 58, "Standard for the Storage and Handling of Liquefied Petroleum Gases," applicable Occupational Safety and Health Administration rules, and any additional rules from the local authority having jurisdiction. Using propane equipment is advantageous for contractors working on indoor projects, because propane produces fewer emissions than gasoline and diesel equipment. This includes carbon monoxide emissions, as well as greenhouse gas emissions, such as nitrous oxide and sulfur oxide. With proper ventilation, propane's emissions profile enables the fuel to be used both indoors and outside, reducing potential trip hazards from electrical cables.

MYTH 3: PROPANE CAN ONLY BE USED IN A FEW APPLICATIONS.

Truth: Propane is versatile and can be used in multiple types of light construction equipment.

Most contractors encounter propane on

a jobsite in fueling heaters and portable power generators. But the amount of equipment that can be powered by propane has grown to encompass a wide range of light construction equipment. Now, contractors can find propane models for jobsite lighting and concrete equipment, including riding trowels, grinders, polishers, dust extractors, shot blasters and concrete saws. The fuel can be used to move materials across sites with forklifts or wheel buggies, as well as vertically with aerial lifts and small cranes. Propane can also provide the high, consistent temperatures required for asphalt heaters and tar kettles. Contractors can also use propane autogas in vehicle fleets. An increasing number of light- and medium-duty work trucks and vans can be converted to run on propane autogas, including chassis upfitted with dump bodies, cranes or box options.

MYTH 4: PROPANE IS A TREND.

Truth: Propane is a proven fuel for construction equipment.

The amount of light construction equipment powered by propane continues to grow primarily because of the increased demand for sustainability in construction and on jobsites. Manufacturers have responded by incorporating propane into equipment lineups. In addition to producing fewer emissions than gasoline and diesel equipment, propane is recognized by the EPA as a noncontaminant of soil, water and air—a fact that contractors can call out when working with green-minded customers.

Manufacturers and users are also increasingly implementing alternatives beyond corded equipment. Brands that were once electric-only are now offering engine-driven solutions powered by propane and even hybrid options. This is

in addition to the trend over the past couple years of manufacturers exploring options beyond diesel for light construction equipment. Several research and development projects are also in progress with the Propane Education & Research Council to make propane engines even more efficient and applicable for use in new equipment.

No matter what myths a contractor has heard about propane, the truth is that this alternative fuel offers several advantages for construction jobsites and your company's bottom line. **CBO**

Jeremy Wishart is the director of off-road business development at the Propane Education & Research Council. Contact Wishart at jeremy.wishart@propane.com. Visit propane.com.



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Understanding Horizontal Lifelines & Anchors

The fall protection you need when your workers' lives are on the line

BY BAXTER BYRD

One of the most challenging aspects of building a robust fall-protection solution is installing enough anchorage tie-off points to provide sufficient access to all required work areas. Further complicating matters is the fact that, as work progresses, available structural members are covered or can otherwise become unavailable. Horizontal lifeline (HLL) systems can offer safety professionals the necessary flexibility to create a fall-protection solution during tricky periods of transition on the jobsite.

HORIZONTAL LIFELINES

HLL systems are composed of two endpoint anchors connected by a varying length of rope or cable to which workers attach a fixed-length or self-retracting lanyard, allowing a high degree of mobility across the jobsite. Compared to a single-point tie-off anchor, HLLs permit workers to access a large area without the need to detach or reattach their lanyard, which helps maintain compliance with the all-important 100% tie-off requirement when working at height.

The most practical way to think about an HLL is as an extended anchor point. Although technically the HLL's endpoint anchors remain in a fixed location, connecting those anchor points with a compatible rope or cable HLL system, in



essence, distributes the anchor's strength along the rope or cable. This provides a safe tie-off point along its length. All HLLs have energy absorption capabilities to shed forces generated in the event of a fall; however, the actual method of absorbing fall energy may differ. The three main types of energy absorption are deforming post/stanchion, external energy absorber and deflection of the line itself.

Deforming post/stanchion systems utilize a steel cable connected between end posts, often with intermediate posts

between the end posts, creating "bays" of cable to which workers connect. In the event of a fall, the forces generated by the falling worker travel through the cable lifeline and into the end posts. These posts deform as the forces increase, thereby shedding fall energy and reducing the forces felt by the worker. These types of systems are often found on structural beams or in poured bridgework applications.

External energy absorber systems may be of low-stretch rope or steel cable and

include one or more energy absorbers made of steel or rip-stitch nylon. In the event of a fall, the HLL's attachment points do not deform. Rather, the metal or nylon energy absorber tears, shedding energy that would otherwise be transmitted to the worker.

HLL systems that rely on the deflection of the lifeline itself have neither deforming posts nor external energy absorbers. Like an external energy absorber HLL, these systems utilize nondeforming anchor points. But in the event of a fall, the rope itself stretches, absorbing fall energy, as opposed to depleting force via an external energy absorber. The rope used in these systems is typically suppler than that used in external energy absorber systems.

ANCHOR INDEPENDENCE

Excepting the deforming post/stanchion HLL systems, a major advantage of an HLL is the fact that it is largely anchor independent making it flexible enough for nearly any jobsite at any stage of work. For example, it is perfectly acceptable to connect an HLL to an anchor bolted to a concrete wall on one end, and a beam clamp or cinch-style anchor on the other.

Although the likelihood is that both anchors will be of the same type, the point is they do not have to be. And, given the variable lengths of HLL systems, this flexibility can permit an HLL to reach an anchor that may otherwise be out of consideration—an angled I-beam or rebar stack at the edge of the work area, for example. But remember: Always adhere to manufacturer's guidelines.

INCREASED WORKER CAPACITY

HLLs can vary in total worker capacity, which is the number of workers that can be connected to the system, depending on whether the application is a fall arrest (where the potential exists for the worker from accessing an edge) or fall restraint (no potential exists for the worker to access an edge). HLL capacities vary by

manufacturer, but a common HLL capacity is two workers in fall arrest and four workers in fall restraint.

For the two workers in fall arrest scenario, it might not seem like a worker/anchor advantage since there is still technically one worker for every installed anchor, but the fact is that the workers could potentially access up to 100 linear feet along the HLL, as well as the additional area allowed by their connector stretching perpendicular from the HLL, all without having to transition between anchors. In fall restraint, on approved HLL systems, the number of workers increases to four, doubling worker capacity on the same two-anchor system.

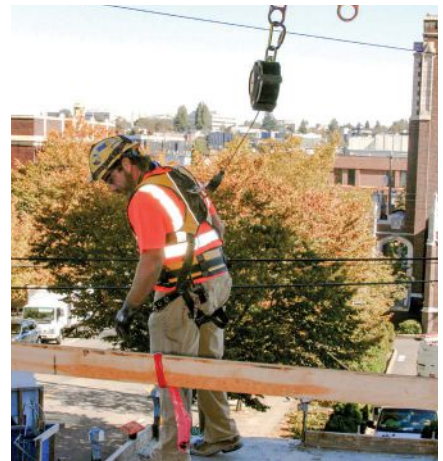
QUICK & EASY DEPLOYMENT

For all their flexibility and effectiveness in preventing falls and keeping workers safe at height, it might seem HLLs are complex systems with lots of moving parts, complicated installation procedures or the need for special engineering—not so. While there are certain applications that may require special engineering (generally due to substrate restrictions), the vast majority of HLL systems are easily installed by the user because they are pre-engineered, taking much of the work out of designing a system.

Select an HLL-compatible anchor for your substrate; choose the cable or rope HLL system that best suits your application; and install per the supplied instructions—no engineer required. Most cable HLL systems require some simple assembly using familiar components like wire thimbles, fist-grips, shackles and turnbuckles; whereas, most rope systems come fully assembled and include a built-in, self-adjusting tensioner and carabiners for connecting to the anchors.

PERMANENT SOLUTIONS

HLLs are also an excellent solution for providing a safe tie-off point to workers who need access to potentially dangerous



areas after the job is done. Just because the building is complete doesn't mean the work stops. For the entire life of the building, maintenance staff, inspectors and other contractors will need to tread where the last workers did when they topped it off.

How do you help keep them safe? An effective solution is to install a permanent HLL designed to give 100% tie-off protection from the point the worker accesses the roof to wherever their work may take them. Common designs not only have HLLs around the perimeter of a roof, they also include single-leg spurs that allow ready access to heating, ventilation and air-conditioning (HVAC) units, load decks, elevator equipment, and any other system that may need routine maintenance.

Whether it's a work in progress or a finished architectural masterpiece, when designing a fall-protection system, safety professionals should always consider HLLs a serious contender. In both temporary and permanent applications, they punch well above their weight. **CBO**

Baxter Byrd is a technical writer at Pure Safety Group, an independent provider of fall-protection equipment and training. His primary mission is translating dense regulatory standards to increase understanding and practical applicability. Byrd holds a bachelor's degree in communication from the University of Washington. Visit puresafetygroup.com.



Exploring the Role of the Materials Planner

4 tips that help them improve project productivity & profitability

BY DEDE DARROW

Today, contractors are faced with scheduling constraints from end users, a shortage of skilled workers, issues with jobsite workflow and organization, and low productivity. But could adding a dedicated materials planner alleviate these jobsite problems?

Materials management focuses on the optimization of construction site planning and organization and the movement of all tools and materials. As such, having someone committed to this role increases the value of a contractor and their profits.

1. WORK AHEAD OF SCHEDULE

Construction projects take a considerable amount of planning. One contractor's poor planning can create a domino effect, impacting all trades on a project. Small initial delays can easily put the entire job behind schedule, costing money and creating frustration for contractors and the end user. Many construction projects use a pull-planning system to keep all contractors aligned, with the leaders of all trades present on regular project meetings used to appropriate, sequence and agree upon upcoming work tasks.

Material delivery has a substantial impact on a construction timeline as well. Time is wasted waiting to install equipment when vendors deliver a product later than scheduled. In pull-planning meetings,



contractors work together to define the upcoming tasks for a time period, along with which materials will be needed. Issues with delivery schedules are identified and proactively addressed as a team so that work keeps moving forward.

The information from these meetings is disseminated by the trade superintendents to their planners, and tasks are broken down by person, per day, and are used to develop a 24-hour planner. As the name implies, 24-hour planners map out future tasks and the people responsible for those

tasks over throughout the next day. These planners are used to:

- Communicate priorities set by the superintendent for their team without having to talk every person through their duties
- Provide materials planners with a guide for upcoming tasks so they can plan and organize the tools and materials needed and review inventory
- Provide a roadmap for the on-site logistics team, letting them know where work will take place so they can

properly set up work areas and move materials to points of use

The 24-hour planner is a beneficial tool for keeping projects on schedule, especially for materials planners. Using the 24-hour planner, 1-week and 2-week planners, and a monthly schedule enables them to analyze short- and long-term inventory needs and work with vendors to schedule materials for delivery.

It is crucial that all parties, including general contractors, subcontractors, tradespeople, materials planners and all vendor suppliers, have effective communication to ensure the materials needed for each task are ordered and delivered on time.

2. SUPPORT SKILED LABORERS

A skilled trade background and experience are not required for the materials planner position. Instead, they should understand the materials, how to order them and how to manage them when they arrive on-site.

Some companies may have similar positions referred to as “helpers.” However, many helpers are hired with the intent of moving into a trade apprenticeship. Consequently, these positions can have higher turnover rates.

A better option would be to hire someone with the intent of having them work in the materials management role and provide advancement opportunities for them, such as increasing responsibility on larger construction projects or having them train and manage more materials management professionals as the department grows.

3. KEEP SITES ORGANIZED

Materials planners ensure the contractor has the right type and amount of materials in inventory, as well as the right tools for all upcoming tasks. They analyze project schedules and work directly with vendors and suppliers to audit the materials needed on-site and communicate when

materials need to be delivered. They work with the on-site logistics team to move materials from a supplier delivery or a storage container to their point-of-use areas, often using just-in-time delivery (JIT) for skilled tradespeople to install the necessary materials.

Some companies work directly with their suppliers to assist with JIT delivery by implementing a vendor-managed inventory. Suppliers come in and audit the contractor’s available materials and the materials needed for upcoming tasks. Vendor-managed inventory helps suppliers increase productivity by allowing them to monitor the customer’s supply levels and plan production of the product accordingly. Likewise, customers don’t have to worry about processing orders or running out of inventory because the supplier takes care of restocking materials.

This strategy brings a team approach to the materials management and vendor/supplier relationship, which requires a high level of communication and trust.

JIT delivery also reduces the amount of materials on-site, either out in the open, exposed to the elements or in storage containers. Materials sitting on jobsites have a high potential for waste—the longer a product sits, the more likely the materials will be damaged or lost. Sitting inventory also poses a safety risk, as the more a product must be handled or moved, the more potential it has to cause injury to a worker.

Because materials planners work closely with vendors and on-site logistics to keep the flow of materials moving, they reduce excess material on construction sites.

4. INCREASE PRODUCTIVITY

One of the greatest aspects of having a materials planner is that skilled labor professionals on the jobsite can focus on the job they are being paid to do. And construction companies can measure the productivity of their employees by using

time studies, tracking how much time is spent on primary tasks, secondary tasks and waste.

Primary tasks are the necessary, value-added work the customer pays for, such as laying concrete, installing electrical work and framing walls. Secondary tasks are defined as supporting work the customer is not paying for, such as moving materials to their point-of-use areas. Wasted time is time spent doing unnecessary, nonvalue-added tasks like waiting for material to be delivered, moving materials from one space to another without an intended purpose, and setting up or cleaning up a work area.

Time studies can show exactly how much a person is being paid for their time spent on nonproductive tasks and how much money is being wasted. One contractor focused its efforts on decreasing waste and secondary time, and its employees now spend about 65% of their time on primary tasks—far above the industry average of 42%.

Skilled trade professionals are generally paid at a higher level than helpers and materials planners; therefore, their time is more profitable for the contractor when it is being spent on primary tasks. Materials planners help decrease the amount of time skilled laborers waste and spend on secondary tasks, making the entire team more profitable. **CBO**

As productivity specialist at Faith Technologies, DeDe Darrow is responsible for the review and implementation of system and process improvements and continuous improvement principles to increase productivity. She conducts jobsite coaching and mentoring, audits key project expectations, completes productivity time studies, and trains employees to advance productive performance and support a culture of productivity throughout the organization. She also assists in leading electrical apprentice training programs focusing on productivity and site logistics. Visit faithtechnologies.com.



Are You Sure You're Secure?

3 cybersecurity best practices for safer software use

BY SRIKANTH VEERARAGHAVAN

The construction industry is crossing the bridge from outdated processes into digitization. Firms everywhere are now embracing software throughout their organizations. The upside is that work can be done more productively. The downside—as is the case with adopting connected technology anywhere—is the introduction of cybersecurity risks.

With insufficient safeguards, organizations can become vulnerable to a host of security risks, including data loss and theft of valuable organizational intelligence, which could interrupt operations and result in the lost business opportunities. The following are some best practices construction companies should employ to maintain their security posture.

1. DEFINE SECURITY PARAMETERS

First, you have to understand what you need to protect. Are you storing project and organizational information in the cloud? How much and what types of data do you have to secure? Does it contain financial data? Personal data? Intellectual property? Do your clients have particular compliance measures? These are just a few of the questions to ask.

Once you know what data to secure, you can map out what you need to secure it. Do you require encryption? Two-factor authentication? Do you need



vendors that have certain types of security certifications? What level of complexity will your employees be able to manage?

Regardless of the approach to security, the first step should be to understand what the most important assets to protect are, and then intentionally build protection around them.

2. LOOK FOR TRUSTED VENDORS

Construction companies are trusted to manage sensitive client data, including the proprietary details of projects and contracts, private financial data, user information and more. To keep all of this data secure, it's imperative to seek

out trusted software vendors. Service organization control (SOC) certifications provide a good baseline understanding of a vendor's security capabilities.

SOC certifications, available on three levels, demonstrate to increasingly detailed extents that an independent auditing firm has reviewed and examined the vendor's security control objectives and activities and has tested those controls to ensure that they work as they should.

Given that the construction industry is increasingly adopting cloud-based software solutions to improve document management and collaboration with real-time communication, companies should

seek vendors with SOC 2 certification and above, as this certification indicates vendors who are able to provide privacy in cloud environments.

Contractors should look beyond the baseline certifications, too. Research the vendor's data breach history and ask questions to determine if the solution and the team behind it is trustworthy, such as:

- How is security managed for software integrations and any other software the vendor uses?
- What do your security maintenance operations look like?
- How does your company react to various breach scenarios?
- How do you keep your local offices and equipment secure?

The list goes on, but the point is that a trustworthy team is also an important piece of the security equation.

3. HOLD WORKERS ACCOUNTABLE

If the employees who use the solutions on a daily basis do not understand their responsibilities for keeping the system secure, breaches are inevitable. As such, it is wise to ensure employees know not to share their passwords or to write them down. Employees should also avoid sharing information through channels that are outside of the purview of the organization's own information technology (IT) department or the vendor's. These practices are particularly important given how many parties are often required to coordinate on construction projects. In addition, it may seem easier for teams to share passwords, but doing so will only open the company up to security risks.

When any software used across the company issues a security patch, confirm everyone has applied it on his or her devices. Train employees on how to

recognize suspicious links and emails, even those coming from your projects' partner organizations. If a bad actor is able to compromise the email accounts of one team on a project, sharing infected links and documents with partners is an easy way to get to data of the other teams. And of course, if possible, test all employees, including the IT department, on their approach to security so that everyone remains aware of best practices. **CBO**

Srikanth Veeraraghavan is the head of security and privacy at PlanGrid, an Autodesk company. He is an experienced security leader, having worked at McAfee Labs and Zendesk prior to joining PlanGrid. He sees huge potential for security initiatives in construction because the industry has lagged technologically and harbors a lot of data that could be of interest to attackers. Veeraraghavan holds a master's degree in information security from Johns Hopkins University. Visit plangrid.com.



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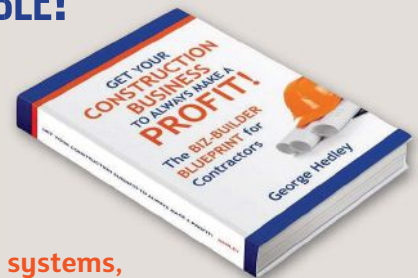
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New Products to Watch

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

LINK MFG. LTD.

Triton Tri-Drive Air Suspension

Released: 5/14/19

Availability: U.S. & Canadian markets

What's new? Ultra-high-capacity, tri-drive air suspensions, engineered to be used in multiaxle configurations for heavy-haul and off-highway applications

Specs: Equipped with both longitudinal and lateral control rods; trailing beams interconnected by a torsion bar; unique dual-height control valves, which help the suspension maintain optimum ride height, independent of load levels; heavy-duty shock absorbers on all units

[Check 200 on index.](#)



◀ KEEN UTILITY

The Manchester Boot

Released: 1/16/19

Availability: U.S., Canadian & European markets

What's new? Lightweight, workhorse of a boot built for versatility and comfort and designed for a variety of skilled trades and work applications, including general construction

Specs: Features a silhouette crafted from full-grain waterproof leather and a KEEN Dry breathable waterproof membrane; signature asymmetrical aluminum safety toes; the lightest weight toe protection that exceeds ASTM safety standards; oil- and slip-resistant, nonmarking rubber outsole that satisfies Mark II and Satra nonslip testing standards; Cleansport NXT lining for natural odor protection; locking metal lace hooks and reflective webbing; availability in both men's and women's sizes

[Check 201 on index.](#)

ATLAS COPCO POWER TECHNIQUE ▶

Smart Air Xc4004 Controller

Released: 5/1/19

Availability: U.S., Canadian & European markets

What's new? Increases the efficiency of operations by providing powerful insights and an easy-to-use interface, putting the user in full control

Specs: Features a 7-inch controller display available in 30 languages on its large compressors and boosters; flows up to 4,500 cubic feet per minute; pressures up to 5,000 pounds per square inch; monitoring of no less than 15 key parameters; an antiglare and freeze-free, IP67 screen, providing protection from water, dust and dirt contamination

[Check 202 on index.](#)





PURE SAFETY GROUP

Guardian Fall Protection GR6 Tie-Back Self-Retracting Lifeline [SRL]

Released: 4/22/19

Availability: U.S. & Canadian markets

What's new? An SRL for use in personal fall-arrest and restraint applications that prevents workers from reaching the leading edge of a fall hazard

Specs: Features high Modulus polyethylene (HPME) webbing; 6-foot minimum fall clearance; average arresting force of 1,350 pounds; maximum deceleration distance of 24 inches; a double-locking carabiner; load-bearing steel chassis; and a fall-arrest indicator that shows if the SRL has been exposed to impact

[Check 203 on index.](#)



▲ HITACHI

EX 1200-7

Released: 5/1/19

Availability: U.S. & Canadian markets

What's new? An improvement in total fuel economy by 6% more than the previous model

Specs: Features a 4.5% increase in bucket capacity a 7-cubic-meter [9.2-cubic-yard] capacity; three single-sided upper rollers on each side of the track frame that help maintain track shoe clearance and reduce debris build-up

[Check 204 on index.](#)

▲ TRIAX TECHNOLOGIES INC. ▶

Spot-r Access Control

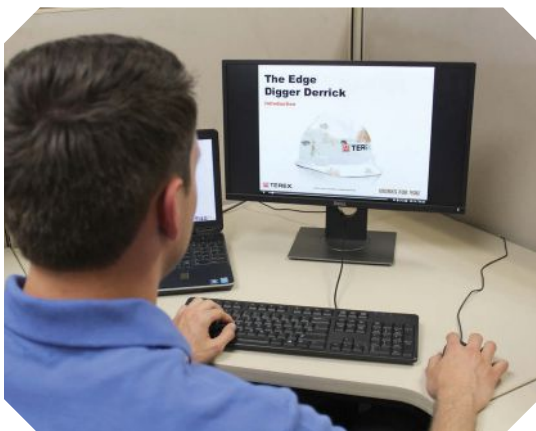
Released: 6/3/19

Availability: U.S. & Canadian markets

What's new? Advanced perimeter security combined with end-to-end jobsite visibility into worker location, safety events and activities—all in a single solution

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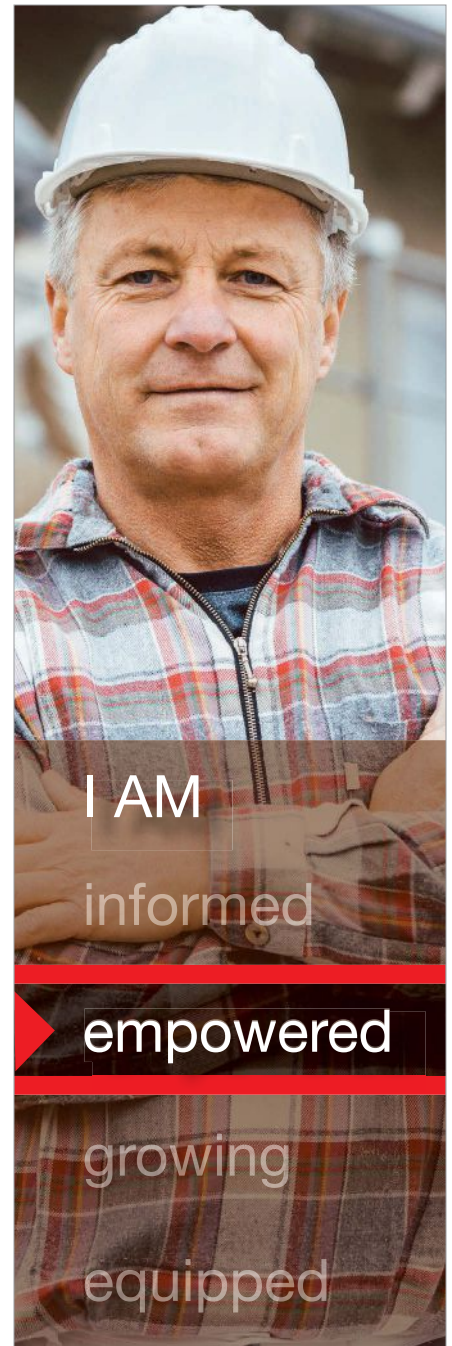
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- ☐ 07 Excavation Work
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- ☐ 13 Architecture, Engineering and Construction Management Services
- ☐ 11 Consulting Contractor
- ☐ 99 Other (please specify)

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

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

3. Approximate annual contract sales volume:

(Check Only One)

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

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(Check All That Apply)

- ☐ 01 Earthmoving Equipment
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- ☐ 05 Safety Equipment and Apparel
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Annual Value of Construction Put in Place

April 2017/2018/2019 Annual Rate Comparison

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

	2017*	2018**	Apr 19
Total Private Construction	942,600	1,015,286	953,982
Residential	507,841	563,367	499,320
Nonresidential	434,759	451,920	454,663
Total Public Construction	275,058	299,405	344,565
Residential	5,646	6,621	6,584
Nonresidential	269,412	292,784	337,980
TOTAL Construction	1,217,658	1,314,692	1,298,547

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

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

\$1,298,547

APRIL 2019 TOTAL ANNUAL VALUE OF
CONSTRUCTION PUT IN PLACE

“In contrast to 2018, conditions throughout the construction sector recently have become more unsettled,” said AIA Chief Economist Kermit Baker, Ph.D., Hon. AIA. “Though we may not be at a critical inflection point, the next several months of billing data will be indicative of the health of the industry going into 2020.”

AIA Architectural Billings Index (ABI)

National			*Regional - Billings				*Sectors - Billings			
Month	Billings	Inquiries	Northeast	Midwest	South	West	Multifamily Residential	Commercial/Industrial	Institutional	Mixed
Nov-18	54.7	63.1	56.8	53.1	50.5	49.0	51.2	53.8	50.8	53.8
Dec-18	50.4	55.6	51.6	56.3	49.4	49.2	49.8	51.2	53.1	50.2
Jan-19	55.3	59.6	52.4	54.4	54.7	51.5	52.6	52.6	52.9	53.8
Feb-19	50.3	59.8	51.5	51.3	58.3	51.6	51.6	53.9	50.9	57.2
Mar-19	47.8	59.8	43.5	48.7	54.2	47.2	47.7	47.0	48.9	53.1
Apr-19	50.5	60.9	45.1	49.3	51.6	49.0	47.4	46.6	49.2	53.2

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

*Regional and Sectoral indexes are 3-month moving averages, due to small sample size. All data is seasonally adjusted.

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

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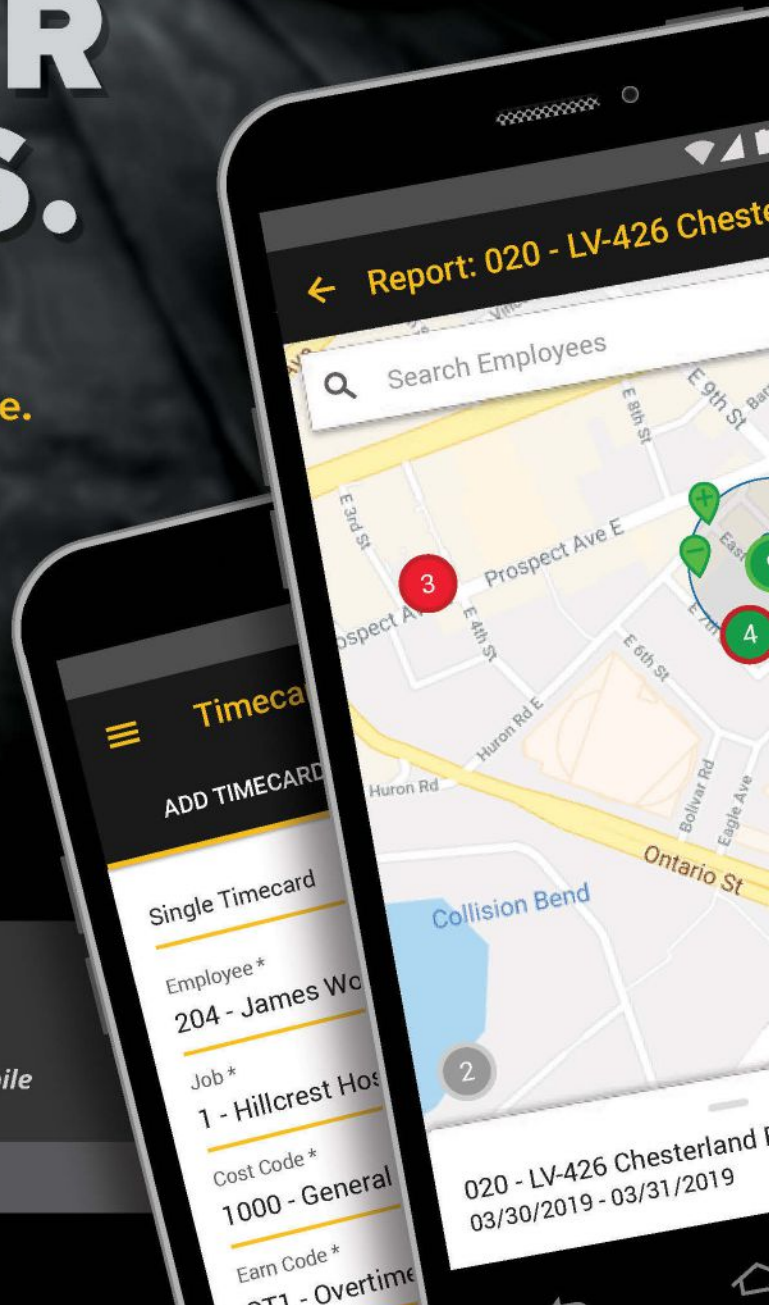
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