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Roman Plumbing Helps FL Restaurant Comply with FEMA

SPECIAL TO CONTRACTOR

NEW PORT RICHEY, FL — The Widow Fletcher's is an 18,000 square-foot restaurant and bar in the historic community of New Port Richey, which is recognized for its cultural heritage and unique riverfront landscape.

The two-story restaurant sits on stilts and is surrounded by 45 boat slips, allowing customers to walk directly from their boats into the newly remodeled Widow's Den, a Key



Sanibest Pro grinder units installed to discharge the wastewater from three toilets and a urinal.

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Severe Winter Weather Creates Plumbing Crisis in the Southwest

BY STEVE SPAULDING OF CONTRACTOR'S STAFF

Snowfall, freezing temperatures and power shortages have combined to create a crisis in water supply and water quality.

On Monday, February 15th, more than a third of the continental U.S. recorded below-zero temperatures. The severe weather made it as far south as Texas, Oklahoma, and Louisiana carrying with it unexpected snow and ice. Texas was

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© Crystal Craig - Dreamstime.com

KBIS/IBS Virtual Shows Postponed

Both the Kitchen and Bath Industry Show (run by the National Kitchen and Bath Association) and the International Builders Show (run by the National Association of Home Builders) have been forced to postpone their virtual exhibit hall experiences, due to ongoing technical difficulties. Virtual programming and educational sessions are still available.

"After a deep dive into the ex-

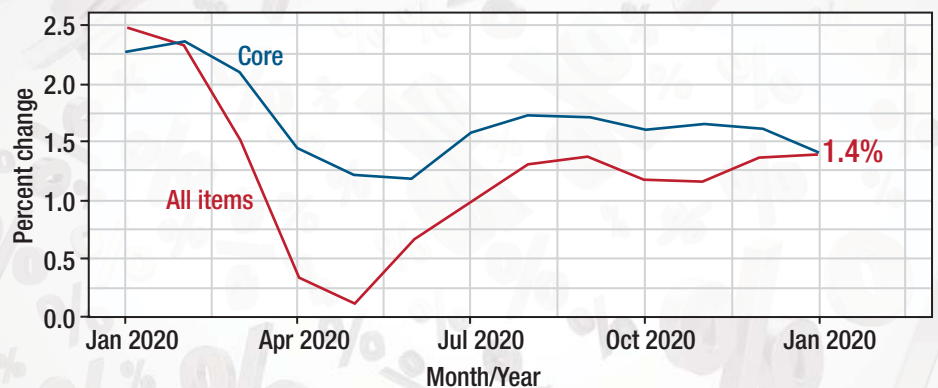


act sequence of events and consequences that occurred, we have learned that these are unresolvable technical difficulties," stated Brian Pagel, EVP, Emerald, which

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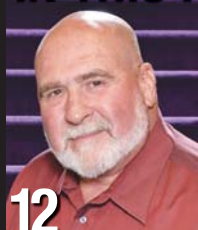
CONTRACTOR INFOCUS

Consumer Price Index – Annual Changes



Source: The Bureau of Labor Statistics

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Incoming MCAA President Armand Kilijian: Focus on Resources

BY KELLY FALOON OF CONTRACTOR'S STAFF

Editor's note: Last year, we ran this interview, not knowing the catastrophic pandemic knocking at the door. The Mechanical Contractors Association of America canceled its week-long convention and decided to keep Brian Helm as president for another year.

MCAA explains: "The role of the MCAA president is largely that of an ambassador to the contractor members, the local MCA affiliates and the national events we hold. COVID-19 put many of these events on hold, so the Executive Committee thought it would be best if we extended the officer positions for another year."

On these pages are portions of our 2020 interview, up
 ▶ **Turn to Incoming, page 39**



Armand Kilijian.

Gen Z More Open to Careers in the Skilled Trades

SPECIAL TO CONTRACTOR

MINNEAPOLIS, MN —After experiencing an unprecedented year marked by a global pandemic, racial unrest and a turbulent U.S. presidential election, today's teens have shifted their thinking when it comes to their educational path after high school.

Their likelihood of pursuing a four-year degree has diminished substantially over the past eight months with only slightly more

▶ **Turn to Gen Z, page 39**



WWETT+ Virtual Event Offers Conferences, Online Marketplace

SPECIAL TO CONTRACTOR

WWETT+, a virtual event held as a complement to the Water & Wastewater Equipment, Treatment & Transport (WWETT) Show was held February 23 through the 25th. The show included product spotlights and exhibits from a wide array of manufacturers in categories which included pipe inspection, pipe repair, waste-

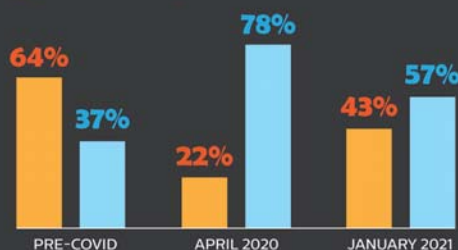
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CONTRACTOR INFOCUS

How Often Do Americans Wash Their Hands?

0-5 TIMES/DAY 6-15 TIMES/DAY



SOURCE: Bradley Co. - 12th Annual Healthy Handwashing Survey



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In Brief

Simplii Consulting has announced its partnership with Decision Analyst, a leading Arlington, TX- based market research firm, to deliver data-driven insights to home services industry partners. Decision Analyst specializes in strategy research, new product development, advertising testing, and advanced modeling. For more information visit www.simpliiconsulting.com.

Sloan now offers custom laser engravings for faucets and flushometers. The new engraving options are designed to give architects and designers the creative flexibility to express their design vision. Building owners can also extend brand awareness into the restroom by adding their own brand logo or pattern to restroom fixtures.

David Bernardino, Chief Client Officer and Head of Research + Planning at **Ammunition**, was recently appointed as Chairman of the National Association of Home Builders (NAHB) Global Opportunities Board and was re-elected as a corporate trustee on the NAHB Leading Suppliers Council. The Board aims to connect and educate the talent within the global residential construction industry.

Jacobs announced the appointment of **Susan Moiso** as Global Vice President and Water Market Director in the company's People and Places Solutions (P&PS) line of business replacing Peter Nicol, who retired after a 40-year career. Moiso, formerly Global Solutions Director for Conveyance and Storage at Jacobs, will provide strategic leadership to a team of more than 6,000 Drinking Water & Reuse, Water Resources, Conveyance & Storage, Wastewater, and Industrial Water visionaries.

Unilog, a provider of eCommerce solutions to mid-market businesses, announced today that it has acquired **Bravo Business Media**, the preferred eCommerce solution for more than 600 decorative showrooms, in an all-cash transaction. The terms of the deal were not disclosed. The combination gives distributors and wholesalers a larger selection of eCommerce solutions and enriched product content to support their digital commerce strategy.

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- Monthly Construction Input Prices Surge 2.5% in January, Says ABC
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- ▶ Want to know about how to get the flow rates right in hydronics from master trainer Steve Swanson?
- ▶ Want to know what the 14 characteristics are of a professional plumbing company? Matt Michel will tell you.

If so, our Industry Perspectives page is the place for you! Visit Industry Perspectives today at

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Want to converse with experts in the plumbing and hydronics industries? Then check out CONTRACTOR's Industry Perspectives, serving up thoughtful, conversational content from the industry experts you have gotten to know so well at www.Contractormag.com.

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Survey Finds Handwashing Diligence on the Decline

MENOMONEE FALLS, WI — Unfortunately, as the pandemic has worn on, Americans seem to be backsliding on their handwashing habits. According to the Healthy Handwashing Survey™ conducted in January, 57 percent of Americans are washing their hands six or more times a day. That's quite a drop off from the 78 percent of Americans who were washing that frequently when the survey was conducted in April of 2020.

The lackadaisical approach is a stark contrast to the 81 percent of Americans who say they are concerned about contracting the coronavirus. Case in point, just 53 percent say they wash their hands after returning from a trip outside the home. Last April, 67 percent were washing after venturing out. In addition, just 38 percent are currently reminding family members to wash their hands compared to 54 percent last year.

"Handwashing has been shown to be a simple, safe and effective way to reduce the transmission of viruses and



The Verge soap/faucet set. Image: Bradley Corp.

bacteria, including the virus that causes Covid-19," says medical microbiologist Michael P. McCann, Ph.D., professor of biology, Saint Joseph's University. "It is essential that everyone maintain high-levels of personal hygiene and that we not relax our guard now that vaccines are becoming available. Washing our hands, wearing masks and practicing social distancing are all easy things that we can and must do as we try to overcome this virus and return to a more

normal way of life."

The annual Healthy Handwashing Survey from Bradley Corp. queried 1,050 American adults Jan. 11-13, 2021, about their handwashing habits, concerns about the coronavirus and flu and their use of public restrooms. Participants were from around the country and were evenly split between men and women.

The survey found the length of time Americans are sudsing up has also taken a dive. In January, 67 percent said they

were scrubbing their hands for 20 seconds or longer compared to 77 percent who were washing that long in April 2020. The Centers for Disease Control (CDC) recommends spending at least 20 seconds to lather up, scrub and rinse.

The rinse-and-run phenomenon has also edged up – although it's better than pre-pandemic times. This January, when respondents were asked if they have simply rinsed their hands with water instead of washing with soap, 48 percent admitted to doing so. In April, the number of rinsers dipped to a low of 27 percent. However, the current incidence of 'rinsing only' is better than pre-Covid when 64 percent of Americans said they had taken that shortcut.

"We're all experiencing pandemic fatigue but it's important to maintain handwashing vigilance," says Jon Domisse, director of strategy and corporate development for Bradley Corp. "Taking at least 20 seconds to thoroughly clean your hands by washing them vigorously with soap and water – and drying them thoroughly – is time well spent."

Overall, Americans correctly believe handwashing is a better germ-fighter than hand sanitizer. 61 percent understand their hands are less germy after washing with soap and water than after using hand sanitizer – a fact supported by the CDC. For times when soap and water are not available, the CDC says that using hand sanitizer is a good, second option for hand hygiene.

In terms of other pandemic precautions Americans are taking, there has been a significant shift since spring. Mask wearing is now the number one action in response to the coronavirus followed by social distancing and then handwashing. In April 2020, wearing a face mask was the fifth most common action. In fact, the percent of Americans wearing a mask nearly tripled from April 2020 (24 percent) to January 2021 (69 percent).

As for greeting others, shaking hands seems to be a thing of the past. More than half of the population (53 percent) uses a friendly wave to say 'hello.' Other popular gestures are a fist or elbow bump (29 percent) and air hugs (16 percent).

For more information, visit bradleycorp.com/handwashing.

RWC Joins Forces with HBI to Address Skilled Labor Gap

ATLANTA, GA – Reliance Worldwide Corporation (RWC) is partnering with Home Builders Institute (HBI), a national leader in career training for the building and construction industry, as the exclusive Trade Sponsor for its 22 plumbing programs across the U.S., primarily serving Job Corps students and justice-involved individuals.

These HBI programs provide students with the skills, experience and placement services they need to have a successful career while helping the trade address labor shortages.

"We are thrilled to engage with HBI and believe this is the beginning of an important, long-lasting partnership," said Chris Carrier, Marketing Director, Americas at RWC. "HBI's ability to connect, train and place potential new talent into the trade makes them an ideal partner. Not only do we see this as an opportunity to help our trade, but also an opportunity to help

the local communities that these programs are in."

This partnership was a natural opportunity for RWC to double down

also provides them with job placement and transition assistance, and qualified graduates are able to enter advanced training programs to expand their education and experience.

"Home Builders Institute is proud to welcome our new partner, Reliance Worldwide Corporation," said HBI President and CEO Ed Brady. "Together, we are training the next generation of skilled labor for the building industry. As HBI's exclusive Trade Sponsor of our plumbing programs, RWC will provide its excellent products to help train our students in 22 locations nationwide. In the process, they will develop customers for life as our graduates enter the industry. I look forward to working with RWC and to seeing how the many resources they bring to the table will help enhance our training programs."

For further information, visit with RWC website at www.rwc.com, or the HBI website at www.hbi.org.

HBI's programs help approximately 10,000 students each year.

on its commitment to promote and further the plumbing trade after its Careers in Construction Month efforts, through its SharkBite and HoldRite brands, in October.

"Our diverse product portfolio enables us to produce solutions that are designed to help plumbing contractors work more efficiently in the field," Carrier continued. "In our conversations with them, we've recognized the need to help the trade address its labor challenge."

HBI's programs help approximately 10,000 students each year receive real life, hands-on training and find meaningful careers in the trades. HBI



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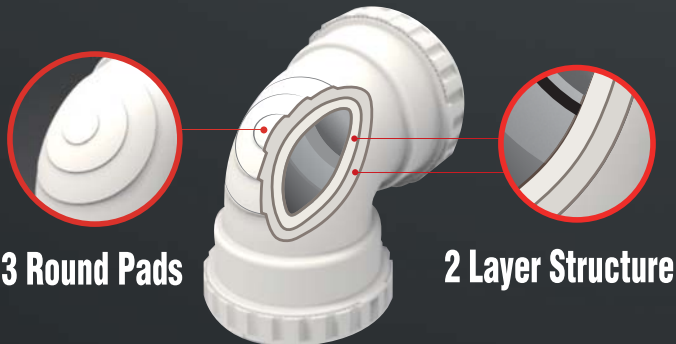
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IBSx: 2021 Housing & Economic Outlook

BY STEVE SPAULDING OF CONTRACTOR'S STAFF

Despite technical difficulties that paralyzed its virtual exhibit hall, education and events still proceeded (with some rescheduling). Perhaps the most anticipated general session was “The 2021 Housing & Economic Outlook,” a deep dive into the uncertain state of the nation’s economy and housing market, held on February 10th.

The presenters for the session were a trio of PhDs: Robert Dietz of the National Association of Home Builders, David Berson of Nationwide Mutual Insurance Co, Dublin, OH, and Frank Nothaft, CBE, CoreLogic, Vienna, VA.

Dietz welcomed attendees and quickly handed the session over to Berson who gave the first of three presentations, each addressing different facets of the overall economic picture.

Macroeconomic Outlook

In 2020, GDP growth declined at a 3.5 percent rate, mainly due to the COVID recession—the biggest drop since 1946 and the abrupt end of wartime production. However, strong growth in the second half of the year made it a much better number than it might have been.

For 2021, Berson and his group predict the growth rate to be near 5.5 percent, the fastest pace since 1984. The reason why:

- Vaccines — the leisure and hospital industry has been rocked by the virus; more and more people being vaccinated will open these indus-

tries up once more

- Easy monetary policy — interest rates are at record lows and the Fed

at the bottom of the slump (very near Depression-levels). The US is currently back to 6.5 percent. For 2021 Berson is

Due to technical problems, both virtual exhibit halls have been postponed; virtual programming and education sessions will continue.



indicates no urge to raise them any time soon

- Fiscal stimulus — the Biden Administration looks determined to push ahead with a package somewhere in the neighborhood of \$1.9 trillion, with or without Republican votes

Unemployment averaged 8.1 percent in 2020 and was nearing 15-20 percent

predicting an average unemployment rate of 5.5 percent, with strong hopes it may go lower and continue to decline.

The Federal Interest Rate is near zero, with no tightening anywhere on the horizon. The next raise might not be until 2025 or even later. Short term interest rates are effectively going to be zero for the next 3-4 years.

Long term interest rates—those tied to

the 10-year Treasury Note—have moved up one percentage point since the start of the year. This is happening not because the Fed is tightening, but because the economy is picking back up. The Fed will be watching inflation closely. Inflation will have to move above 2 percent for a considerable period of time before the Fed decides to raise long term rates. For the end of 2021, Berson thinks the 10-year Treasury Note Yield will go up to about 1.5 percent (it is now at about 1.1 percent).

Mortgage rates are heavily influenced by the 10-year Note. The 30-year fixed rate mortgage (according to Freddie Mac) fell to under 2.7 percent—an all-time low. It has moved up a little this year. By the end of the year, Berson estimates the 30-year rate will sit somewhere just above 3 percent.

Notable—and a notable difference between where we find ourselves today and where we were back in the Great Recession—is that spread between mortgages and Treasury Notes is falling. This means that, based on the strength of the economy, lenders feel the chance of homeowners defaulting on loans is not that serious.

Due to changes in the way census data is being collected, it is difficult to get a reliable number on new household formation, but an informed estimate indicates some two million more households this year will be needing a place to live. In addition, the share of the population between 25 and 39—those first-time buyers through first-time move-up buyers—has moved up significantly.

The problem those buyers will be facing is that there are just not that many new homes for sale. In December just 300,000 new homes were on the market. And as for existing homes, Berson and his team have never seen fewer existing homes for sale: slightly over one million. This lack of availability is shifting buyers over to the new home side of the market.

Strong demand coupled with a low supply in the middle of a growing economy spells higher home prices. Prices are, in fact, up 10 percent over last year. And these gains look to be more sustainable than they were during

➤ Turn to IBS, page 38

KBIS/IBS Virtual Shows Postponed

➤ Continued from page 1

produces both shows, on the KBIS website. “The servers that house the platform are down, requiring that we close access to the exhibitor booths. Looking forward, we remain committed to exhaust all efforts to ensure a successful future experience. We understand the gravity of the situation for our exhibitors and attendees, as the KBIS platform is critical to accelerate their business for the year.”

In an email to attendees on Wednesday, Feb. 10th, the NAHB said they were pursuing alternative solutions to

provide the exhibit hall experience at some future date. Along with an apology, registration fees were automatically refunded.

NAHB Chairman Chuck Fowke also released a statement reading, “We had to make the very difficult decision to postpone the exhibitor portion of IBSx due to unexpected and significant site performance issues across both the IBSx and KBIS Virtual platforms. We are investigating alternative solutions to allow the exhibit experience and virtual booths to open in the near future. This did not live up to the high

standards we expected, and we truly regret the inconvenience this has caused. While the exhibitor portion of the show was not available, we still made all of our educational programming, special events and press conferences available for show registrants as scheduled this week.”

KBIS and IBS have been co-locating since 2013 as Design and Construction Week. In 2020, the joint show drew over 100,000 attendees to Las Vegas, NV to view 1.2 million sq. ft. of exhibits. The 2022 show is scheduled for Feb. 8-10 in Orlando, FL. [G](#)

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ServiceTitan Connecting Contractors Hit by Texas Storm with Businesses Ready to Help

LOS ANGELES, CA — ServiceTitan is responding to the winter storm crisis throughout the central Southern United States by coordinating volunteer assistance and relief efforts with service professionals around the country.

“We’re putting out a call to all Titans who are available and willing to help their fellow contractors continue to meet the needs of their communities during this emergency,” said Ara Mahdessian, co-founder and CEO of ServiceTitan. “We had over 50 plumbers reach out to help in the first 24 hours, and we are matching them as they come in with businesses that need help. We know that tradespeople show up during difficult circumstances, and we’re in a position to connect contractors on the ground in the affected states with colleagues who can help them continue providing essential services to their customers.”

Severe winter storms and freezing temperatures in Texas, Oklahoma, and Louisiana have sparked an unprecedented emergency. In addition to widespread power outages, residents in the region are experiencing frozen and burst pipes, flooding, and water shortages. Plumbing contractors in the affected areas have been unable to meet demand for service and products, and cold, icy conditions have further slowed response times and interrupted supply chains.

“The dedicated professionals in Texas and sur-



rounding states have been working tirelessly to respond to this urgent situation, which unfortunately is likely to continue for several weeks,” Mahdessian said. “There are multiple ways that our customers and other contractors can support their efforts, whether it’s sending a plumbing crew to the area, assisting with phone calls, or donating equipment.”

To further assistance efforts, ServiceTitan is collecting information to match contractors offering help with those in need:

- If you would like to offer assistance, visit bit.ly/TradesShowUp
- If you are in an affected area and would like to request help, visit <http://bit.ly/TitanStrong>

Severe Winter Weather Creates Plumbing Crisis in the Southwest

► **Continued from page 1**

hit especially hard. By the end of that Monday, rolling blackouts plagued Texas as the power grid, unable to cope with the conditions, began to fail. At one point more than four million Texans were without power.

Nation-wide, the death toll from the storm stands at 58, according to the Washington Post, with 32 of those deaths in Texas. Deaths came as the result of exposure, carbon monoxide poisoning (due to misused or malfunctioning space heaters), traffic accidents, associated fires and other causes.

Plumbing systems that had never been designed with such conditions in mind failed during the cold snap. Along with the attendant property damage—of which there is not accurate estimate as yet—burst pipes created water shortages and water quality issues throughout the state of Texas. Reporting in the Wall Street Journal on February 19th estimated more than 14 million Texans were without safe drinking water. Urban areas such as Houston, San Antonio and Austin were all under boil water notices, with some residence bringing snow inside their homes in order to flush toilets. (The boil water notice has recently been lifted for many areas.)

The PHCC-NA issued a statement in the wake of the crisis.

PHCC—National Association and its leadership are extremely concerned about the deep freeze-related power outages and water shortages occurring in Texas, Louisiana and Oklahoma. The PHCC—National Association has received calls from PHCC chapters whose PHCC

members in other states are looking to also provide support to include potential emergency repair of consumers’ plumbing and HVAC systems if requested.

*Discussions also are underway with our network of partners who may help us provide the type of assistance that our impacted PHCC members and/or PHCC chapter leaders determine will be of greatest value. If you have an interest in providing assistance to these impacted states, please contact PHCC National at executiveoffice@naphcc.org. In the meantime, the **PHCC Disaster Relief Fund** is available for donations or to request assistance. According to the Houston, TX ABC-affiliate, Governor Greg Abbot was quoted as saying busted water pipes “may be the largest challenge in the next week” for Texans. To that end, the state has been working to grow the ranks of available plumbers, and as of noon on Feb. 19th over 320 had renewed their license.*

The state plumbing board is also coordinating with out-of-state companies to bring more plumbers to Texas. Abbott’s office announced it is giving out provisional permits to out-of-state plumbers, and waiving some fees and examination requirements for plumbers whose licenses have expired.

Bramlett Residential, an Austin-based real estate company, also provided the following suggestions for those interested in making donations (links can be found at www.contractormag.com):

- **Warming Centers in Texas**
- **Feed the People Dallas Mutual Aid**
- **Mutual Aid Houston**
- **Austin Pets Alive**

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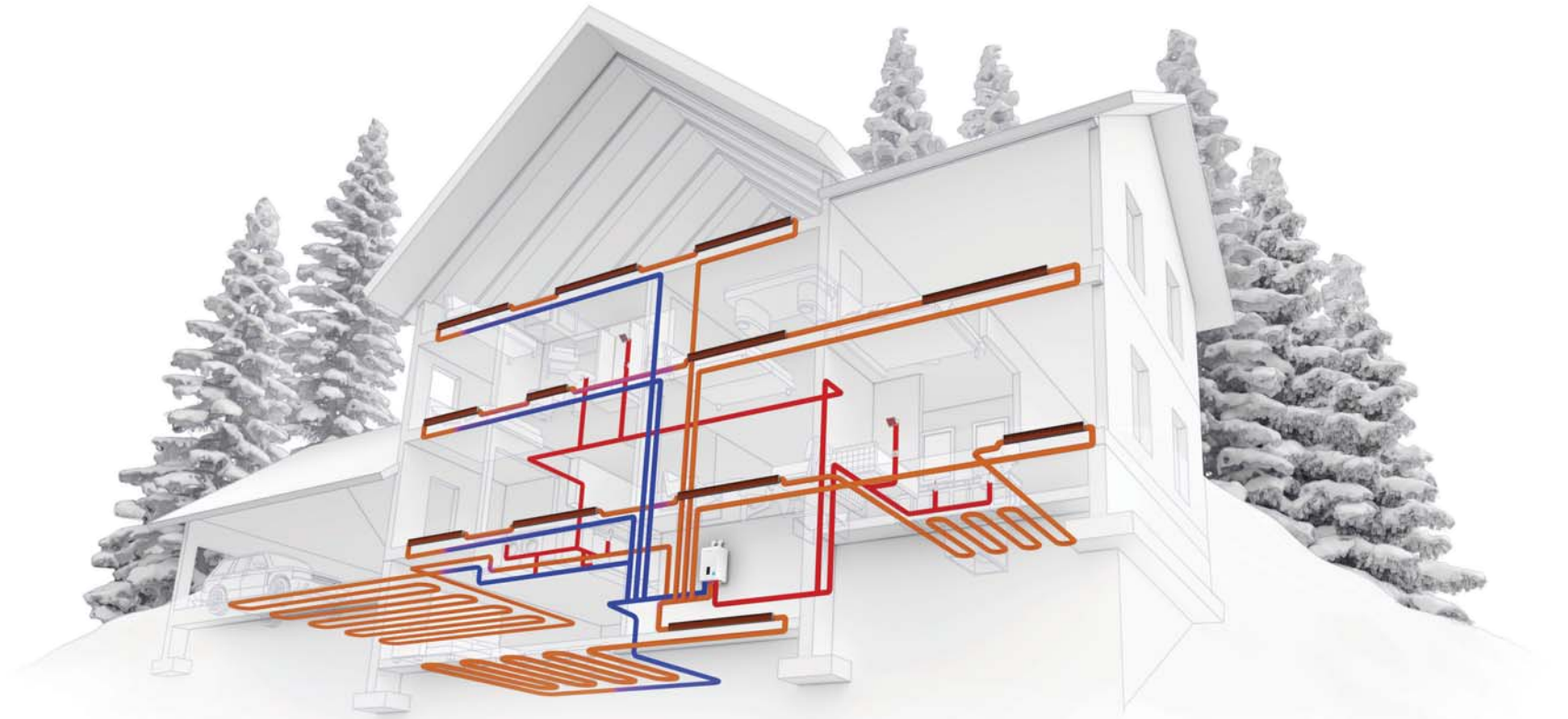
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by Al Schwartz
PLUMBING CONTRACTOR



Digitization in the Trades

Reading today's trade magazines is an adventure in emerging digital technology as it applies to our industry. The introduction of new and, frankly, amazing products and programs occurs at a pace which is hard to imagine, especially if you have been in the trades for longer than twenty or more years.

If you have been in the industry for that long, you know that change comes very slowly, or at least it always has before now. Many "innovations" in product or technique are resisted by both the powers that regulate our trade (read: plumbing inspectors, municipal officials, etc.) and by the tradesmen themselves. There is a good reason for this. It has been proven, over time, that new products come on the market with new methods of installation that are not as tried and true as they ought to be.

The people who pay for the failures of those new and emerging products are the plumbers, pipefitters and HVAC guys who sell, purchase and install them. The industry is rife with the bones of products that have been brought to market but do not perform as advertised in actual field conditions. The end result is that the plumber or HVAC technician is the one who gets the black eye, so caution is the word of the day when it comes to jumping on the 'new and improved' product bandwagon.

That is one reason that change is resisted by the trade. Another reason is human nature. "That's the way we have always done it!" is a mantra most of us have become familiar with in the industry. So when a change is warranted, and is tried and true, it becomes an accepted part of the industry that we can all agree on.

When products like No-Hub Cast Iron, PVC, ABS DWV came out, they were given the "hairy eyeball" by most municipalities, and the inspectors who enforced code compliance. Pressure by the manufacturers, at a political level, pushed those particular products until they were accepted in the field. Still, shops who chose to install these new materials were subject to the most mercurial and draconian installation pro-

cedures by the inspectors.

This was not because of some nefarious payoff scheme, but because the

ABS and PVC DWV piping came on the scene, and they made our jobs even less labor intensive.

If you have been in the industry for that long, you know that change comes very slowly, or at least it always has before now.



inspectors were not sure about the materials and could only go by the manufacturers literature when it came to how the materials were to be installed. A lot of the time, those instructions were ambiguous and open to interpretation. Inspectors—like every other political animal field mechanics have had to deal with—are not risk-takers. If a product called for several methods of installation, it was not uncommon for an inspector to require use of all of them!

Now, in most cases, the products were actually superior to the then prevailing material they were designed to replace. It just took a long time for them to be accepted, and for everyone, journeymen and inspectors, to get used to seeing them and understanding any particular requirements for proper installation. Once that happened it was back to business as usual.

If you are old enough to remember installing an underground soil system using hub and spigot cast iron with lead and oakum joints and then being allowed to use No-Hub, you get my drift here. The difference in labor alone was so significant that it made no financial sense to use the older method. Hot on the heels of that innovation,

Still, the municipalities resisted the new products and restricted the plastics to use in residential construction only, as well as limiting those products to single story structures. It took over twenty years for plastic DWV piping to be fully allowed in commercial buildings and even today there are instances where it is still restricted for reasons that vary from fire code to "because we said so."

The upshot of all this resistance and slow change is that it protects the end user as well as the guy who installs the product and the jurisdictions where the products are installed from product failure problems, recalls, bad publicity and lawsuits to the extent that it is possible in today's litigious society.

Considering the foregoing, how does the new digital technology that we see on every page or article of every trade publication measure up to scrutiny? That question may be very hard to answer.

There are so many new digital productivity programs being advertised today that is difficult, at best, to determine which products work as advertised, and which are merely window dressing or hollow imitations of

those that do. If we apply the foregoing yardstick to these digital programs, and then factor in the speed of change it becomes clear that there are, or will be, a bunch of these programs that will not survive.

As an example, there are many AI related programs that purport to help keep your trucks and drivers safer by tracking drivers' habits, controlling timing, speed, etc. Some actually do that. Others act more like Big Brother and just spy on the journeyman while pretending to make driving safer.

It is not a very good feeling to think that you are being watched at all times or (as an example) to be questioned by the office as to why you stopped where you did so long, etc. In fact, the sensibilities of field personnel do not seem to be taken into consideration at all by the users of this type of software. In my opinion, this is a big mistake and will eventually not end well for those using that technology. I could be wrong, but I wouldn't like it if it were applied to me.

Many in today's workforce are at least partially familiar with the digital world, as they have grown up with it and are more accepting of the intrusiveness of these types of programs. Changes in personal space and privacy seem to be occurring at a very rapid pace. Perhaps it is inevitable that digital and AI-related technology will integrate into our trade—just as the products that were mentioned earlier in this article have been—and become the norm.

How our workforce accepts and adapts to this new paradigm will be interesting to monitor moving forward. Is it a "brave new world" or just the march of technology? You decide. **C**

The Brooklyn, N.Y.-born author is a third-generation master plumber. He founded Sunflower Plumbing & Heating in Shirley, N.Y., in 1975 and A Professional Commercial Plumbing Inc. in Phoenix in 1980. He holds residential, commercial, industrial and solar plumbing licenses and is certified in welding, clean rooms, polypropylene gas fusion and medical gas piping. He can be reached at allen@proquilldriver.com.

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by Dave Keane
SALES MANAGER OF TRIMBLE MEP



Ants and Mitigating Project Risks

The risks that mechanical contractors face on projects just seem to grow every year, and this past year, there were some new curveballs added to the mix. All of a sudden we are contending with issues like how to be productive during a work stoppage, trying to move projects forward while social distancing, and of course working from home. The overall craft labor shortage, continual compression of project schedules, and the commoditization of mechanical contractors by construction management firms also remain a constant threat to efficiency and profitability. Team members have to be more vigilant than ever to navigate projects through these minefields.

So how can you mitigate risk and equip your teams to make good choices that protect both your margin and your reputation? Act like ants. Seriously. Let me explain.

In an ant colony, a single ant operates moment to moment guided purely by stimulus-response. Yet, as a colony, ants are a remarkably successful and sophisticated collective. Each ant has a specialized role such as soldier, sentry, builder, gatherer, farmer, nurse, breeder or scout. They can quickly communicate information far and wide across the group thanks to the highly effective use of pheromones, and individual ants can even switch roles temporarily when a threat or advantage to the colony is detected so the response is proportionate to the issue.

The colony is, therefore, incredibly adaptive and thrives because it can efficiently build and maintain complex housing structures, food systems, sanitation, and defense systems. This is a classic example of Emergence, which in biology and social sciences is considered the greater intelligence that a collective group displays, and which is not evident in its individual members. So how does this relate to a mechanical contractor?

For construction projects, let's consider Emergence as the phenomena that equips a project team to send feedback events throughout the life of a project. These feedback events drive decisions and workaround solutions allowing for optimal project delivery

in terms of quality, cost, and schedule involving the efforts of architects, engineers, managers, craft labor and

ect information." This is a staggering obstacle to productivity, but not too hard to imagine given the flood of data

cial forecast. I come up with no less than 16 updates or data entries to account for and execute on this change. Ouch.

The valves and the work are just like the hundreds of other valves on the project, but they now carry context like what piping system they belong to, tag numbers, drawing revision number and revision date, a change order number, a new cost code, new purchase orders, resultant revised spool sheets, and new billing lines, just to name a few. For the rest of the project life, if your systems don't make these connections, your team will waste valuable energy chasing this context, instead of spending their time on higher value efforts managing the project outcomes.

It's not hard to imagine why even a modest amount of issues on a job quickly compound the complexity of the original plan, and why so many cross-checks and snap judgements are imposed on your team every day. This brings us to the third requirement for Emergent Intelligence, action triggers.

Historically, processes such as quantifying, seeking approval and executing on a change order like the example above requires interaction with several systems and tools within your company. When these systems and tools are siloed, it requires many redundant efforts of data entry, evaluating results, and porting information over to the next step in the chain. When your systems talk to each other, or bring contextual data into the next step, your team will have fewer steps to execute, and less chances for human error to enter into the process. For instance, if your VDC models are cost loaded, or can interact with your estimating program, and your estimating program is connected to your supply chain, this workflow is profoundly improved. The project manager can derive the quantities and logistics from the VDC model, which will change the fabrication downstream at the shop or job-site, while the same exact data set gets pushed to estimating software, eliminating any takeoff or data entry so it can have indirect cost like rentals, subs, general conditions and allowable

► Turn to Story, page 37

How can you mitigate risk and equip your teams to make good choices?



the supply chain. The greater intelligence—and effective communication—of the group and its sub-components leads to efficient work, reliable margins, and repeat business.

So surely the way to achieve Emergent Intelligence is to hurl more data points at everyone and then hope that once equipped with all that data, good decisions result? Right? I'm a sales leader for a construction technology firm that specializes in data, and even I know this cannot possibly be the answer. There is no doubt that technology is adding relevant data at every turn in construction processes, but without connective tissues relating data points to the most important decisions, your outcomes will likely be impaired. Data points are certainly one of the three pillars of Emergent Intelligence in your organization, but without two others, namely context and action triggers, you won't get the rapid feedback loops that are needed to produce the desired outcome.

Let's first look at context. A 2018 study by Plangrid and FMI found that, "construction workers lose almost two full working days each week solving avoidable issues and searching for proj-

sources that our estimators, detailers, operations managers, project managers, accounting and procurement personnel, field supervisors, and shop supervisors interact with every day.

To illustrate this, let's consider a situation where the owner of a project is considering alternative equipment that isn't procured yet, and needs to change the scope by adding isolation valves, and removing the original scope equipment. The change to the mechanical is pretty minor, just install isolation valves to services supplying that project area, and credit back the work to connect the original equipment. This will require the collaboration of several project team members to calculate the impact, prepare a change proposal for the value added or credited to the contract, and once approved, implement the revised plan to internal and external team members.

Even for simple changes like this, there is a lot of data to retrieve and synthesize like evaluating the change to the coordinated model, determining what is already procured, fabricated or installed, and what the new work does to the field labor allocation, the shop schedule, the testing plan and finan-



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COVID or Not, Prefabrication is Trending Up

by John Mesenbrink

Part of the fab shop at MacDonald-Miller.



Doing prefab right means working to exact specifications.

Prefabrication and modular construction have been trending, and according to the pre-COVID Dodge Data & Analytics SmartMarket Report, “Prefabrication and Modular Construction 2020,” prefabrication and modular construction are poised to transform several sectors of the construction industry.

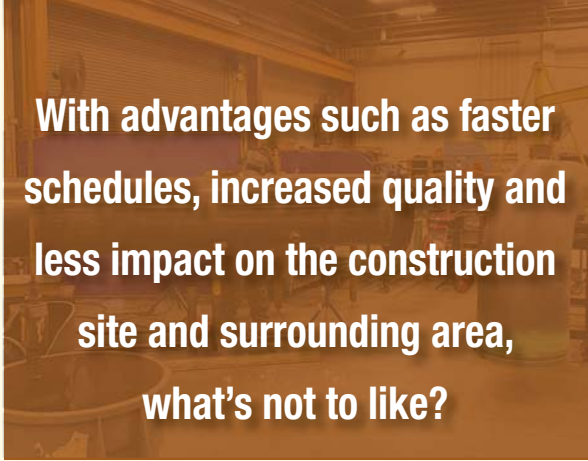
The Dodge report shows that architects, engineers and contractors that have used these methods plan to significantly increase their engagement with them, especially for healthcare facilities, hotels and motels, multifamily projects, and college buildings and dormitories. Critical trends in the construction industry, such as shorter project schedules and workforce shortages, are several drivers of wider use of these methods, and technology—like building information modeling (BIM)—is enabling increased use.



Prefab allows for better social distancing.



All wrapped up and ready for the job site.



With advantages such as faster schedules, increased quality and less impact on the construction site and surrounding area, what's not to like?

Prefabrication offers some very obvious and tangible benefits. “For a long time, studies have shown how contractors can work on labor-intensive parts of the project before the workspace may be available to them, allowing them to level their manpower and avoid resource peaks and valleys. For instance, the decision to skid equipment like pumps, heat exchangers, variable frequency drives (VFDs) and the like, enables a contractor perform 200 hours on their own schedule, with specialized shop labor, and install a complete, tested system in place in four hours,” says David Keane, sales manager, Trimble MEP.

Take MacDonald-Miller Facility Solutions, Seattle, a full-service, design-build mechanical contractor in the Pacific Northwest, whose primary fabrication shop is 80,000 sq. ft. of indoor space and 100,000 sq. ft. of outdoor space, and two additional project-specific prefabrication locations near its shop for large assemblies and storage. Its shop prefabricates duct assemblies, mechanical piping, plumbing kits/assemblies, equipment skids and modular racks. “Our prefabrication space has virtually tripled in the last year to accommodate some large prefab-heavy projects we are working on,” says Rylan MacCay, operations manager, MacDonald-Miller Facility Solutions.

“We’ve always been on the progressive side of prefabrication, our first modular racks were over 10 years and the amount of prefabrication continues to increase—for new construction projects we typically have 70%-90% of the materials run through our shop,” says MacCay.

Meanwhile, Hill Mechanical, located just outside Chicago, has dabbled in prefab and modular construction for nearly a decade. “We have seen an increase growth in the modular industry over the last eight years. Healthcare has been one of the largest contributors to this increase along with the data centers. As more owners understand the benefits, more of the industry is looking for modular opportunities on each project,” says Kari Holtz, project manager, Hill Construction.

When evaluating a modular project, Hill Construction is looking at what items have the potential to benefit the schedule. Typically, the prefabricated units are being built while site work and MEP overhead is being installed. “When creating a schedule this means a portion of the finishes will be done significantly earlier than what a traditional build method would see. The time savings that comes from being able to move up the finishes results in the owners being able to open their building earlier which results in the overall costs savings,” says Holtz.

On the supply side, manufacturers like Aquatherm are realizing the value of prefabricated piping assemblies. “Our prefabrication team has seen a vast increase in orders, both in terms of size and scope. We have continued to invest in our team and tooling to meet the demands of our customers,” says Barry Campbell, vice president of marketing, Aquatherm.

The COVID Effect

Prefabrication was increasing in popularity prior to COVID as a way to reduce risk and shorten project schedules. Now that projects are ramping back up after almost a year of COVID delays, says Mark Gil-

bert, vice president, Victaulic, the industry is looking for ways to make up ground on delayed schedules, and prefab and modularization are viable tools to shorten the entire construction timeline. “Prefab allows contractors to do more with less—what was once a two-person job can now be a one-person job, limiting jobsite density and making it easier to adhere to social distancing requirements,” says Gilbert.

Since COVID-19 began last year, MacDonald-Miller Facility Solutions’ business has remained nearly the same mainly due to the fact that prefab requires upfront planning and things were already in motion prior to the pandemic. But that’s not to say that internally, the company was not without its challenges.

“Navigating through COVID-19 was a challenge for all areas of our business,” says MacCay. “To support our healthcare and essential facilities, our shop had to stay open since the beginning and throughout all phases of the pandemic. We implemented strict distancing, mask, and sanitation requirements. To support these requirements, we staggered all of our breaks and added a third shift—we were already working two—to reduce density and make it easier to social distance.”

Aquatherm and its Prefabrication and Operations teams have done a masterful job of navigating the COVID-related challenges that seemed to change not only by the day, but by the hour. “Our safety committee has consistently adapted to ensure that CDC and local recommendations are followed. Fortunately, our fabrication process and production floor lend themselves to a lot of work that can be done by one person isolated from coworkers, and we have enacted all the CDC recommended precautions regarding PPE and distancing,” says Campbell.

Advanced Technology

According to MacCay, the expansion of BIM and Robotic Total Station Layout is what allows MacDonald-Miller to increase its prefabrication volume. Both an accurate 3D model and the ability to precisely install are needed to make sure the systems will come together successfully in the field.

The company is also leveraging software to digitize its processes. “Digitizing how we work allows us to streamline processes, which reduces labor, lead time and increases accuracy. As we look toward the future, we are evaluating robotics, cobots (collaborative robots), augmented reality tools—like Spectar 2.0 with Microsoft HoloLens—to improve quality, optimize our workflows and leverage computer vision with AI for counting and quality control,” says MacCay.

Three years ago, Aquatherm began offering its

Scan-To-Fab service to contractors. With the combination of a 3-D scanning and Revit, Aquatherm’s team can help customers successfully complete projects ranging from retrofits to new installs. “The accuracy of a 3-D scanner combined with Aquatherm’s Revit families streamlines the process of moving from existing field conditions to digital coordination to fabrication and installation. Aquatherm’s Fabrication Services is currently in the process of converting the production floor to a seamless digital process,” says Campbell.

According to Victaulic’s Gilbert, the adoption of 3D scanning has allowed traditional retrofit projects to embrace prefabrication as a worthwhile option, compared to the typical onsite cut and fit approach, thus reducing time on the jobsite for projects with already shortened shut-down and/or maintenance schedules. In addition, having the ability to improve the connection between the virtual design and construction (VDC) team and the fabrication shop is something many contractors now see as a competitive advantage.


In the past, a building model was converted to paper or PDF documentation. From those documents, fabrication details would be entered in the contractor’s systems and processes, continues Gilbert. Now, with the ability to easily connect the data in the model with manufacturing tooling like plasma cutters, pipe cutters and connected assembly stations, the limitations of PDF workflows have been removed, and the time it takes to go from design to fabrication has never been shorter. This does put more responsibility on the VDC team to get the details right and to have an accurate model with the best content.

“Fortunately, Victaulic can ease this workload with smart—embedded with all the data needed—accurate—dimensionally correct—and active—always up-to-date—content that allows the contractor to take his prefab process to the next level,” says Gilbert.

Furthermore, “When your modeling software can deliver the scope change to estimating software automatically, and when either your estimators or VDC folks have visibility into the supply chain’s price/availability without having to pick up a phone,” says Trimble’s Keane, “they can make a stronger decision earlier in the process.”

“These contractors are truly positioned to break the historical stick building molds of mechanical construction and become an agile fabrication, rigging and installation company. The contractors who build data-driven workflows that support a manufacturing and procurement mindset are the most insulated from risk, and by far the most profitable.

“What really separates a great prefabrication plan from a good one is being agile enough to change or modify as external issues arise. It is so common that changes are imposed on plans that are already in-flight due to jobsite conditions, construction sequence or schedule, system performance criteria, or delays in the supply chain.

“Contractors that have developed workflows that allow them to pivot quickly, and never yield their control on engineering, logistics and cost are poised to outperform those who have siloed workflows,” says Keane. 

by Scott Milne
OWNER OF MILNE PLUMBING AND HEATING



Baby It's Cold Outside

Here in New England we get a lot of cold weather. Not that we have a lock on bitter cold weather. Milwaukee, North Dakota, they both get bitter cold weather. Let's not forget Alaska. You get used to it. Well, not everyone. Some run for the warmer parts of the country. Whether it's global warming or just a change in weather patterns, parts of the country are getting really severe weather. Or as we call it in New England, "Wickad Cold." Texas is the latest state to experience extreme weather. My heart goes out to those people. I've been reading about the trouble with plumbing in the homes in Texas. Broken pipes and flooding homes—it's so sad.

In New England we get our share of cold weather and broken/frozen pipes. Most are located in a protected environment, which eliminates or at least decreases the chances of freezing. We still run across some faulty installation that was either a homeowner doing it themselves, or else a contractor who shouldn't be running a business.

I cut my teeth on frozen pipes. I was in the trade only about five months and we got hit with below zero cold. The company I worked for at the time was overwhelmed. Not just with no heat calls, but with no water and frozen water mains. Some customers waited days just to have water to the house. We had a couple of portable thawing machines which would handle that frozen pipe. For frozen water mains we hired a guy with a welding machine. He was a nice man with an easy style of conversation. I remember standing around for a few hours waiting for the water main to thaw.

My boss gave me a cardboard box with a torch, solder, flux, san cloth and

a handfull of slip couplings. He gave me a handwritten piece of paper with names on it and said, "Call when you're done

frozen pipes. It's not just the cold that freezes the piping, it's the wind. When the weatherman says its five below zero

I cut my teeth on frozen pipes. I was in the trade only about five months and we got hit with below zero cold. The company I worked for at the time was overwhelmed...



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with these." I took my own car and off I went. For most in that situation it's sink or swim. I swam and learned a lot. Talk about on the job training! My favorite memory was my boss came onto a job and I had cut a little hole in the wall to repair a pipe. I was having a tough time working in such a small spot. My Boss said, "Give yourself room to work. You can fix a big hole just as well as a small hole." Great line isn't it? I still use that expression when we are doing other work and need access to a ceiling or a wall.

I seem to have a knack for thawing

I'm not so worried, but when he says the wind speed is going to be picking up, that's when I get worried. People put couches and beds in front of baseboard heat and block the warmth of the room from getting to the piping (especially when they set back the thermostat ten to fifteen degrees at night). The cold wind blows through a crack in the space between the floor and the wall. Or worse they leave window open just a little. BAM you've got a frozen pipe.

I think it's funny when people say it froze a few days ago but it must have just split because it's pouring water out. Well,

no. It froze and split a few days back. It's just turned warm enough to melt that ice in the pipe. Water expands eleven times its volume when it freezes and everyone thinks it's the ice that expands and splits the pipe. Actually, tests have been done and it's the hydraulic pressure of the water being squeezed between two frozen sections of pipe that does it.

Think about it: the water freezes in one spot and two feet away the water freezes in another section of piping. As the ice begins to expand it squeezes a section of water between the two ice sections and the hydraulic pressure builds up in the water and you've got a split pipe. Ever notice right where the split is there is a small puddle of water, right where the floor? That's where the water built up enough pressure to blow out the pipe or fitting. Sometimes the pressure is so high that it pushes a soldered joint right apart without splitting the copper. These days it's a Pro-Press joint that blows apart. There's got to be a lot of pressure built up to blow apart a Pro-Press fitting.

Another misconception is the frost-proof sill cock. In the spring we get the call that the "new" sill cock is defective. We have to explain how the sill cock works and that if it froze and split or broke the vacuum breaker then "someone" left the hose on it. "No I don't think that's what happened." Here we go again ... let me explain how this works...

Freezing cold weather and split pipes is no fun for anyone. I had a friend who ran a large plumbing company and he had a customer say, "Oh you plumbers must love this weather and all the money you make." My friend answered, "Oh yeah, I love it. I just sold 20 half-inch slip couplings." Not much profit there. As all of you know, the customer loves us when we are there at ten at night but they don't like us when the bill comes through. Then things get cold again. **C**

Scott Milne is the owner of Milne Plumbing and Heating. He and his company have been serving the greater Boston area for nearly 30 years. He specializes in high-efficiency heating systems for custom homes.

ABC Releases Statement in Opposition to the PRO Act

WASHINGTON, DC — Associated Builders and Contractors President and CEO Michael Bellaman released the following statement in response to Congress's reintroduction of the Protecting the Right to Organize Act:

"The PRO Act would radically change the employment and contracting landscape for 7.4 million essential

construction workers trying to rebuild our economy and cost small businesses—and ultimately taxpayers—a fortune.

"Under this legislation, the 87% of construction workers who choose not to join a union could be forced to pay union dues as a condition of employment. The PRO Act would overturn the

voice of the voters in 27 right-to-work states and wipe out employee privacy rights during unionization drives."

Founded on the merit shop philosophy, Associated Builders and Contractors is a national construction industry trade association established in 1950 that represents more than 21,000 members. **C**

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by Pat Linhardt
HYDRONIC MANAGER AT THE CORKEN STEEL PRODUCTS CO.



Best-Case Scenarios

Scenarios. Now there is a funny word. Maybe it means something like what might happen in the future? Actually, it is a theatrical term meaning the outline for the plot of a play. I like to think of it as series of events that lead to a conclusion. With a play, the playwright gets to choose the events and the ending. As applied to reality, you choose the events and who knows how it will end.

It was my birthday in February like every other year, but this year was one of the milestones, the 65th. It is one of those years like turning 50 when you have your mid-life crisis. It catches your attention early. In my case, I was thinking of my 65th on or around my 60th.

I decided that I wanted to enjoy my mid-sixties and to do that I would need to be in good physical health. My idea was to be in better shape when I turned 65 then I was at 60. Luckily I have a good genetic make-up, and I wasn't in bad shape to start. I usually passed the annual physical without a hitch.

However, like many men of my age, our doctor's focus is on our prostate health, since cancer in that gland is very common. One of my coworkers has been bravely fighting it for at least five years now with chemo, surgery, experimental drugs and who knows what else. He is working exclusively from home, lending his years of experience via the cell, text and what he calls the "inner-web", and always with a cheerful disposition.

Luckily for me, my urologist determined that my dangerously high prostate numbers one year were nothing more than normal fluctuations. Of course, I do get it checked every year, like you should if you're a male over 50, or whatever age the medical community or your doctor recommends. How about that for a disclaimer?

So, for the last five years, my focus was on exercise and eating what my wife says is healthy (when she's around). I found you don't have to always be working out or always watching what you eat in order to get in better shape. There were plenty of times, especially early on, when exercise was interrupted or a binge lunch was

scheduled. My experience was that as I got in better shape, it was easier to do the right things, and only occasionally

he could get away for a few days to share my birthday adventure. We agreed on a resort in the northern

Get in the habit of planning the steps to achieve a determined outcome. Then, follow through with what you planned and celebrate the successes.



order an extra cheese coney at the local chili parlor.

This January, since I ended up being in much better shape than I originally expected, I announced to my wife that I wanted to go snow skiing on my birthday. As a husband, I have to check with my spouse about things like this, especially since she wouldn't be going on the trip. She has never skied and hates the cold. I have skied for fifty years now and tolerate the cold fairly well. One morning in Jackson Hole, Wyoming, it was 30 below zero on the morning news. Turned out to be a nice sunny day for skiing.

The trip was approved and I proceeded with the planning. As with most things in life, plans change and evolve. A good friend decided that

part of the southern peninsula of Michigan. As the date approached, a major winter weather event was being predicted by every weatherman. One prediction would be more dire than the previous.

As a stubborn person that wanted to get his reward for five years of getting in better shape, I wasn't going to change the date. My friend was still in and now wanted to also ski the night before. I got on the road early and picked him up on the north side of Columbus Ohio before ten. The roads were clear and dry up to the last half hour, when it started to snow, which is what you want when you're going skiing. So far, so good.

We were on the slopes for three hours of night skiing in a very light snow-

storm. I hadn't skied in eight years, but it's like riding a bike. At the end of about the sixth run, when I tipped over from exhaustion, we stopped for the dinner break. Maybe I'm not in that great of shape.

The next morning was sunny and clear as we skied a full day in near perfect conditions for Michigan. We took a lot of breaks, with a tequila shot at lunch to celebrate being 65. No injuries, despite our wives' predictions.

The predicted snow apocalypse finally happened overnight, but to our south. The drive back from the Great White North was uneventful on recently plowed roads. My appreciative shout out to the road crews of the Michigan and Ohio Departments of Transportation. Safe at home, I realized how my little adventure had turned into a best-case scenario.

But enough about me. This article is supposed to be about what helps you, hopefully with a hot water or steam heating system. How I'm trying to help you is with hope. All my above stories had happy endings, to get you in a positive frame of mind, to encourage you to realize that my best-case scenario can be yours. Not literally my little adventure, but any series of your planned events that would lead to a favorable conclusion.

This could be as short as the steps to troubleshoot a leaking relief valve, or as long as a five-year plan to increase boiler sales. Get in the habit of planning the steps to achieve a determined outcome. Then, follow through with what you planned and celebrate the successes. Make yourself, your family, or your trade better with best-case scenarios.

I will get off the soap box now. Next month's column will get back to hydronics and hot water boiler sizing and/or mis-sizing. **G**

Patrick Linhardt is a thirty-five-year veteran of the wholesale side of the hydronic industry who has been designing and troubleshooting steam and hot water heating systems, pumps and controls on an almost daily basis. An educator and author, he is currently Hydronic Manager at the Corken Steel Products Co.

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Nicholas Rossi, field production manager
at Gulf Mechanical Contractors

AN RWC BRAND
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by Steve Swanson

NATIONAL TRAINER AT UPONOR ACADEMY IN APPLE VALLEY



Look Like a Pro With Reset Control

2021 is a milestone year for me. This year I will have been in plumbing and hydronics for 50 years. My first job in the industry came in 1971 working for a plumbing and heating company that concentrated on very large multi-housing apartment units. This industry has provided an amazing living for my family and has allowed me to meet some really smart, knowledgeable tradespeople and contractors all over the United States who have become lifelong friends.

Over these five decades, I was the vice president of a plumbing and heating supply house for 20 years where I traveled over much of the U.S. doing classes on steam and hydronics. I also taught the State of Minnesota Boilers License training for 15 years, and for these last 12 years, I've been the customer trainer at Uponor. The best part of the whole journey is the amazing people I have met who make this the best place on earth to live.

In addition to all that, I have some pretty amazing stories! Learning doesn't come without mistakes, and I've made a few really good ones. Remind me to tell you the sewer machine story someday. I nearly took apart a whole apartment with a sewer machine once. It was awesome. I bet that lady is still having nightmares. Boy, could she scream.

I am also getting older, and as long as I've been doing this, I am constantly amazed there are pieces of equipment used today that are older than me and are still not understood very well or used to their optimum potential. You'd think by now we would have figured all this stuff out. But, we haven't.

So today, I'd like to talk about just one of these truly amazing devices that you may already be using and aren't even aware of it or using it to its full capacity. I'm talking about the venerable reset ratio control (also called the outdoor reset control or boiler reset control or whatever name you use for it in your neck of the woods).

Reset controls are by no means new. The Honeywell T475 outdoor reset control has been around longer than I have, and they are still controlling the boiler water temperature in hundreds of thousands of boilers in North America alone. And today's reset controls have capabilities that will make your hydronic system send you

a thank you card.

So, what is a reset control and what does it do? Or even better, what's its capability of doing? In its simplest form, it raises

house will carry you through. That's why you don't size a boiler for the absolute coldest day it can ever get. Otherwise, every boiler north of the Mason-Dixon

lating boilers only).

Modulating condensing boilers can do another trick where they modulate the flame size based on the supply water temperature and the return water temperature. It's kind of like when you step on the gas to get your car moving. Initially, you press your foot down with intensity when the light turns green to get the car going. But, when you get to your desired speed, you let up a little bit. You "modulate." See what I mean? Coupled with a reset control, you can dial in a really efficient system.

And so, we put a reset control on the boiler to raise and lower the supply water temperature based on the outside temperature. There are different kinds of reset controls. Some have a fixed reset ratio. In a 1:1 (pronounced one-to-one) reset ratio controller, for every 1°F the outside temperature drops, it raises the supply water temperature of the boiler 1°F. In a 1:2 reset ratio, for every 1°F the outside temperature drops, it raises the supply water temperature of the boiler 2°F. In a 2:1 reset ratio controller, for every 2°F the outside temperature drops, it raises the water temperature of the boiler 1°F. You need both kinds for very severe cold climates (1:2) and for milder climates (2:1). Additionally, there are digital versions that allow you to choose a multitude of reset ratios.

Now, here's where it gets interesting. This is where we separate the comfort pros from the rest of the pack. There are also three different reset controls strategies. There is "full reset", "partial reset", and "load reset" (or "heat emitter reset"). The names of the three might change in

I am constantly amazed there are pieces of equipment used today that are older than me and are still not understood very well.



An old Honeywell T475A outdoor reset control for sale on Ebay.

and lowers the boiler water temperature based on the outdoor temperature. The colder it gets outside, the warmer it makes the boiler water. Conversely, the warmer it gets outside, the cooler it makes the boiler water. Simple, huh?

You're probably thinking, "So, if I set my thermostat at 72 degrees, and it stays at 72 degrees no matter what the outside temperature is, why does it matter?" Well, I'll show you.

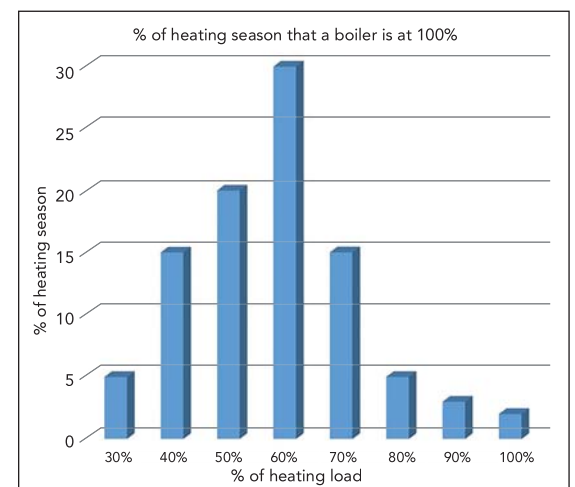
Boilers are sized based on what is called "outdoor design temperature." Outdoor design temperature varies depending on where you live. It's the outdoor temperature that your part of the world is at or above 99.6 percent of the time. To put it more simply, "How cold does it get where you live?" Here in Minneapolis, the outdoor design temperature is -14.9°F, which should immediately trigger the question, "Why does anyone live up there?"

It can, and does, get colder than that. However, it is assumed that it will be for a short time, and the thermal mass of the

Line would be way oversized.

Below is a chart that comes from ASHRAE. It shows the percentage of time for the heating season and what percentage of those times the boiler is running at 100%.

You can see from the chart that the boiler is only operating at full capacity 2% of the time. The other 98% of the time, the boiler is oversized. As a matter of fact, for 30% of the entire season, the boiler is running at 60% of its capability. To keep it set at its highest water temperature setting would cause it to short cycle more than half of the entire heating season, especially the shoulder seasons of spring and fall. It may need 180°F water for a few days in January, but it certainly doesn't need that when it's 40°F outside. The boiler will sit and short cycle every time it gets a call for heat (non-modu-



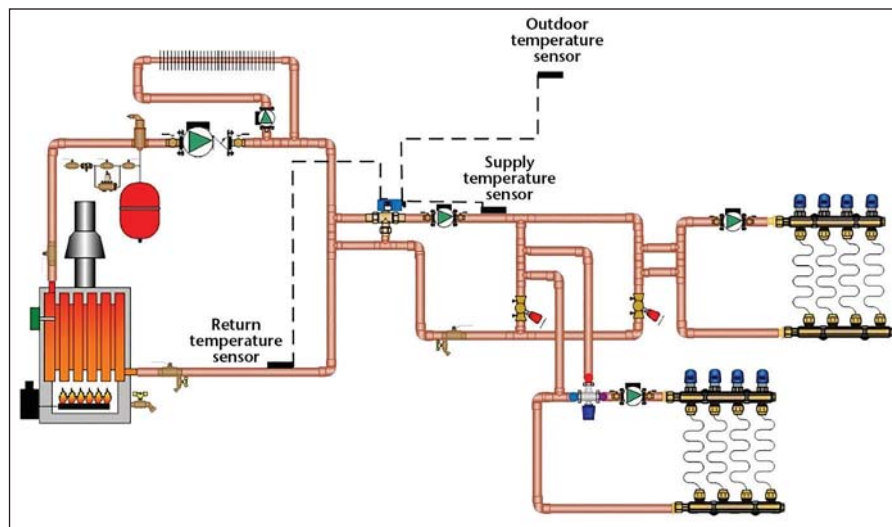
different parts of North America, but it's the same idea.

Full reset is where the reset control, usually mounted on the boiler, near the boiler, or in the boiler, resets the entire load temperature. All of the supply water temperature is controlled by this one reset control. Other mixing valves might be downstream, but the supply water temperature is the same. These are usually used for mod-con boilers and low-temperature heating systems, such as radiant. Their range could be anywhere from 180°F to 80°F, as an example. This works well on most modern houses built today.

Partial reset is used when you don't want the supply water temperature to drop below a fixed temperature, such as 140°F. They will raise and lower the temperature anywhere from 200°F to 140°F. These are usually used for non-condensing boilers to prevent them from becoming condensing boilers.

And finally, there is **load reset** or heat emitter reset. This is where just a particular heat emitter, such as a single zone of a 10-zone radiant system, has its supply go up or down based on the outside temperature. This is for the comfort pros. Here's how it is used.

Load reset is a type of mixing valve



where the mixing device provides different water temperatures based on the outdoor temperature rather than just the return water temperature that other mixing valves use. The best part is, it's not limited by the boiler manufacturer's minimum recommended operating temperature. This ability provides much finer comfort settings by reducing indoor temperature swings and increases system efficiency by reducing system distribution losses because of higher heat, particularly in large, custom homes.

One of the great benefits of this reset is that it allows older, cast-iron,

non-condensing boilers to fire to their high limit where you might have some high-temperature heat emitters and some low-temperature heat emitters all on the same system.

In this drawing, you have a high-temperature loop and two low-temperature loops. The load reset mixing valve provides the primary loop with high temperatures for baseboard and two individual low-temperature radiant loops, and the reset protects the boiler from going below 140°F to prevent it from condensing. With this design, the low temperature loops go up and down


based on outdoor temperature. For older custom-home remodels, this is a great solution.

Most of these new digital controls have a warm weather shutdown (WWSD) temperature that cuts all heat off at a pre-set outside temperature, such as 60°F. Some even have unoccupied/occupied settings to change if there is no one in a room for a particular period of time. Isn't that great?!

It's important to remember that all of these reset controls do not take the place of limit controls. Reset controls are strictly operating controls. You must also have high-limit controls to protect the system from overheating, as well.

I hope this explanation helps you see a fresh picture of a very useful older product. Kind of like me!

I would be grateful to hear your thoughts, ideas, and stories. You can reach me at steve.swanson@uponor.com.

Until then, best regards, and happy heating. 

Steve Swanson is the customer trainer at Uponor Academy in Apple Valley, Minnesota. He actively welcomes reader comments and questions at steve.swanson@uponor.com.

How to Troubleshoot Hydronic Pipe Size in the Field

BY ROB "DOC" FALKE

You can best test and diagnose a residential hydronic heating system using pressure ports and balancing valves. However, few residential systems have either of these accessories. A commonly encountered hydronic system problem is the pipe sizing. Let's take a look at how you can use a table and calculation to "see" if pipe size is causing your problem or not.

Equipment Rated BTU

Start with the equipment rated Btu output listed on the nameplate of the water heating equipment. Since many smaller systems have only one heating unit, you can use the rated BTU output of the equipment and the system rated temperature change (Δt) to determine the required system flow in gallons per minute (GPM).

In this sample diagnostic exercise, we'll use an equipment output of 50,000

Btu and a 20° F system Δt .

System Required GPM

The core formula to calculate the amount of Btu moving through a system is **BTU = GPM x ΔT x 500**. The number 500 is a constant that comes from 8.33 pounds (the weight of one gallon of water) x 60 (number of minutes in an hour.) Use this formula when you calculate Btu/hour after the water flow and temperature have been measured.

To find the gpm needed for this system, we use a cousin to the BTU formula. It is **GPM = BTU ÷ (ΔT x 500)**. When working this formula, the parenthesis means "do this part of the formula first."

$$\text{GPM} = \text{BTU} \div (\Delta T \times 500)$$

Use the formula to find the required system **gpm**.

- $\text{GPM} = 50,000 \text{ Btu} \div (20^\circ \text{F } \Delta t \times 500)$.
- First multiply $20^\circ \times 500 = 10,000$.
- Then divide 50,000 by 10,000 to

find 5 GPM

- This is the water flow needed to move the required Btu through this system.

Adjust the numbers in the formula to match the Btu and Δt of any system you diagnose to find the required system gpm.

What Size Pipe is Needed? Once you know the required system gpm, use a table to identify the pipe size needed to move the required gpm through the system.

This table is for clean copper pipe and shows the minimum and maximum gpm that will move through each pipe size at the speed of between two and four feet per second. Use a fluid speed of about three feet per second or right between the two gpm values shown on the table for optimum design: Min & Max Flow Rates for Copper Piping NCI

Since the system we're diagnosing

must move five gpm, the table shows 3/4-in. copper tubing moves between 3.2 to 6.5 gpm. Five gpm falls within the appropriate mid-range flow. So, a 3/4" pipe would be the correct size.

Other tables and apps are available online for different piping materials and flows. Select a table or use the app matching the system type you are diagnosing to evaluate if the piping size matches the required gpm.

Pipe Sizing Solutions

Should the system we're diagnosing contain 1/2" copper tubing to carry the five gpm flow, the piping would be undersized. In some cases, a re-pipe of the entire system may be required.

Another solution may be to install a secondary dedicated piping circuit to and from a high gpm coil, radiator, or heat exchanger in the system. This will lower

➤ **Turn to Troubleshoot, page 26**

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by Duane Huisken

INTERIM EXECUTIVE DIRECTOR, RADIANT PROFESSIONALS ALLIANCE

RPA Interim Executive Director Report

One of the significant efforts of the Radiant Professionals Alliance is being done by the Hydronics Industry Alliance – Commercial Committee. By listening to our membership, it became clear that a simple tool is needed to rationalize the lab results with what really happens in a building.

The issue is that once a particular comfort system goes in, it is very difficult to switch it out, if the selling point behind the product selection decision doesn't live up to the marketing literature. The BEST software rerates the various systems to model energy consumption between systems, quickly and easily. The BEST system evaluates a building HVAC system early before plans are drawn.

There are four main elements of hydronic based systems that are universally applicable. The details are available throughout the website (www.radiantprofessionalsalliance.org) and at www.hia-c.org.

1. The lowest cost to move comfort in a building is in water piping by a factor of 10 or more.

2. Central hydronic systems improve



and maintain efficiency because the HVAC system is not directly exposed to outdoor temperatures – hot or cold – controlling PEAK demand charges

As with past changes in refrigerants it is even more critical that refrigerant be contained in factory-sealed and tested circuits as the move to flammable refrigerants is being considered. Yes, A2L or R-32 is better but it still as a GWP of just under 700.

A key element in the application of hydronic central systems is, what is referred to as heat transfer capability. The Efficiency comes from speed. "Think" about a skillet on a hot burner... To cool

We all know stories about old boilers and old chillers or cities with central heating or cooling pipelines being in service for years. HVAC is not about short-lived products. Today's technology in the hydronics industry is forward- and backward-compatible. Upgrade as you choose, incorporate renewables and enable energy sharing within and among buildings.

If you use hot water your cooling load should be heating that water. To further the thought process. Water entering your building from the street must be raised about 85 degrees. That means one ton of air conditioning will provide enough BTU's to heat about 2 ½ gallons of water a day. So, is heating (within and among buildings) the answer to cooling? Absolutely, and hydronics makes it easy.

Today's concerns for ventilation, filtration and moving heat around that building at the lowest net cost is what hydronic systems are all about.

The H2Oaccepted site is about opportunities and information. We are a non-profit so growth will be slow but continuous. Do not hesitate to ask questions. I promise we will address your needs. **C**

There are four main elements of hydronic-based systems that are universally applicable.

3. There is a hydronic solution for every owner requirement that will meet the budget and deliver at the utility bill, especially on those high demand days.

4. Competitive bidding is standard from original installation to operation for the life of the building.

For your consideration water has a global warming potential of ZERO, CO2 is 1, methane is 84, and refrigerant is 2000.

that skillet what is faster? Wave it around in 70-degree room air or put it in a sink full of 100-degree dishwasher? Now that's Water-cooled versus outdoor condensers. The principle is why most large building have central hydronic systems saving 30-40 percent. Plus, do not add to the "Urban Heat Island Effect" in cities caused by air-cooled condensers lined up on the roof or hanging on the exterior.

How to Troubleshoot Hydronic Pipe Size in the Field

► Continued from page 23

water flow through the existing piping to a flow matching the existing pipe size.

If in this scenario, the piping size is closer to the correct size, you may select and install a new pump to handle higher pressure and increase flow through the existing piping system and components. But that's another article. Please let me know if you would be interested in how to resize a pump.

If your five gpm system had one-inch copper tubing, it is oversized. Excessive flow through a coil or heat exchanger may also reduce heat transfer. You can reduce flow with a balancing or ball valve.

If piping is oversized, offer your customers an additional coil or hydronic heater to service an area of the home that may not currently have adequate heating. This may evenly redistribute the load, increase comfort, and cost less than re-piping the entire system.

Additional Diagnostics

Pipe sizing diagnostics indicate the decline in the hydronic system's performance is not due to incorrect pipe sizing, the following hydronic system inspections and repairs may lead you to a solution. You may hear air in the water gurgling through the system. Open the system bleeder valve to remove air in the piping. Look for it near the high point in the system.NCI

When opened, this small valve will sputter and leak air and some water until the noise levels decrease and the gpm throughout the system increases indicating the air has been successfully removed.

Low system flow may be due to a hard-to-find closed valve in the system. Locate the valve and open it. Then check its impact on the system.

The strainer (a hydronic system's filter) may be restricted and need cleaning. Close the isolation valves, remove, clean, and replace the strainer to increase flow.

Min & Max Flow Rates for Copper Ring

Piping size/type	Minimum flow rate ¹ (gpm)	Maximum flow rate ² (gpm)
3/8" Copper	1.0	2.0
1/2" Copper	1.6	3.2
3/4" Copper	3.2	6.5
1" Copper	5.5	10.9
1.25" Copper	8.2	6.3
1.5" Copper	11.4	22.9
2" Copper	19.8	39.6
2.5" Copper	30.5	61.1
3" Copper	43.6	87.1

(1) Based on 2ft/sec (2) Based on 4ft/sec

Many residential hydronic systems use multi-speed pumps. Make sure the pump is set to the correct pump speed to deliver the needed gpm.

The system may have become dirty and filled with sludge. Open a discharge or fill valve and inspect the fluid. When needed, flush the system, clean and re-

place the fluid with freshwater, appropriate water treatment chemicals, and glycol, as needed.

While some wet heads may be overflowing with experience and wisdom, many of you may be newcomers to hydronic system service and diagnostics. May the basic principles offered here increase your confidence to the point where you may be willing to dip your toe in the water this winter. **C**

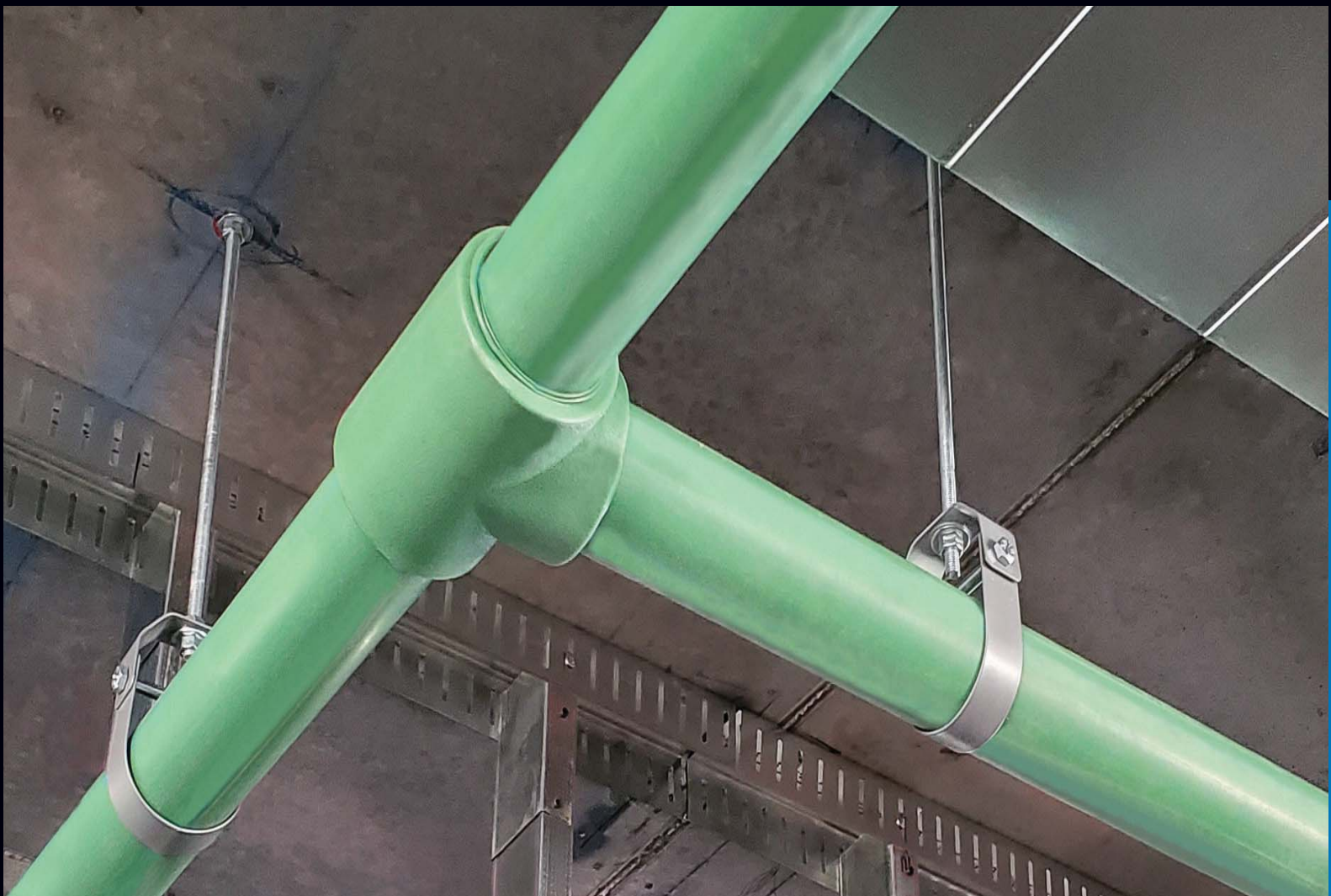
Rob "Doc" Falke serves the industry as president of National Comfort Institute, Inc., an HVAC-based training company and membership organization. If you're an HVAC professional interested in a free residential hydronic test and balance procedure, contact Doc at ncilink.com/ContactMe or call him at 800/633-7058. Go to NCI's website at nationalcomfortinstitute.com for free information, articles, and downloads.

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Moving
> Forward

by Patti Feldman
COMPUTER AUTHORITY



Solutions for Field Service, Customer Engagement and Time Tracking

Zuper (<https://zuper.co>) is an intelligent field service management and customer engagement platform for organizations that features basic and optional customizable modules to facilitate optimized management of the workforce and customer experience.

Basic modules include work order management, scheduling and dispatching, location services, estimating and invoicing, customer notifications, configurable business process workflows, and a mobile app for Android and iOS devices.

Scheduling and dispatch offers drag and drop scheduling, on any device, of an individual worker, crew, or team, using calendar and employee views. A dispatcher can configure one-time or recurring jobs.

Work order management capabilities provide drag-and-drop pre-defined components, including bar code scans, drop-downs, and photos; the ability for technicians to select from pre-configured responses that can be sent automatically (technicians can also free text responses); and the facility to configure SMS and email templates to reflect w/o status and milestones that can be sent automatically to customers.

Estimating can be performed on any device, with the opportunity to convert an estimate to a job with a single click. Estimates and invoices can be customized with a company logo.

Contractors can offer a contact-less experience to their customers to select a preferred technician, review the work, and provide a signature on work order completion.

A company can create business process workflows with no-code, customize taxonomy, create intelligent workflows, policies, and checklists to enforce governance and oversight on operations performed in the field or in the back office.

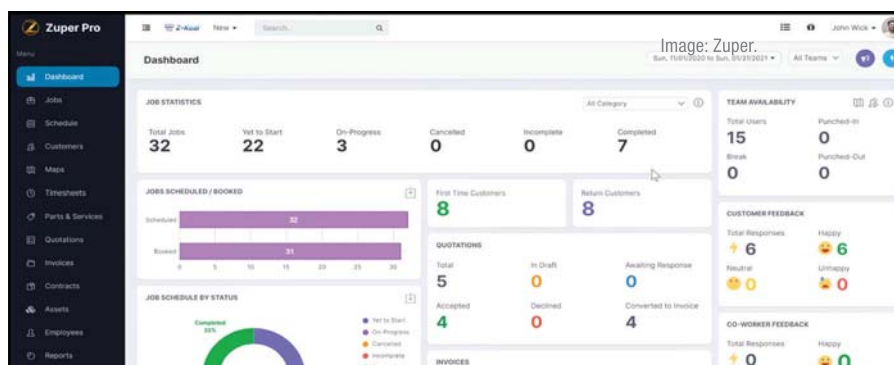
Location services provides GPS-based live real-time location tracking of field personnel by geographic zone of the work order or by employee.

The Zuper Pro app for Android and

iOS enables personnel in the field to get push notifications of job assignments and reminders automatically,

enables creating and maintaining a variety of service contracts and manage equipment and assets and offers the

Reviews for Zuper, an app that combines field service management with customer engagement, and Time Tracker, a cloud-based time-tracking solution.



The Zuper web application.

update job status and add notes and photos taken in the field, create new jobs onsite, manage the work schedule, and put in time-off requests.

The Reporting and Analytics module offers a customizable dashboard and 50+ reports for insights on KPIs such as w/o's, timesheets, payments (partial, complete, overdue), and customer feedback.

Premium modules include Smart Scheduling and Dispatch, Customer Engagement, Contract Management, and Remote Time Sheet Management.

With Smart Scheduling and Dispatch, an AI powered engine enables contractors to automatically schedule and dispatch work orders to the right technicians based on availability, location, customer preference, and other criteria.

Customer Engagement provides a website builder that can give customers a way to browse through the company's offered services; a booking widget that customers can use to book their own appointments; the means to offer gift cards to customers for specific services; and a discount management feature.

The Contract Management module

ability to track history of tasks and activities and collect data on assets on a mobile device.

Remote Time Sheet Management, for use by field technicians on their mobile apps, features facial biometrics and geofencing rules.

Zuper integrates with 40+ apps such as Stripe for payments in the field, QuickBooks for accounting, Zendesk for ticketing, Zoho for CRM, Slack for collaboration, Twilio for text messaging, Outlook and gmail for email SMTP integration.

Pricing: based on number of users, number of optional modules that are onboarded, per month.

Time Tracker by eBillity (www.ebillity.com, 800/851-0992) is a cloud-based time-tracking solution used for payroll and billing, from any device anywhere. The software, which includes free downloadable mobile time-tracking apps for iOS and Android devices (that allow users to track time offline and sync when you reconnect to the internet), geo-tracking, and geofencing, also features a color-coded schedule.

The online scheduler lets managers schedule one or many workers from one centralized location and assign shifts

by client or by project. Various filters allow viewing by day, week, or month. You can create custom color-coded shift categories and can see employee paid and unpaid time off. The On-The-Clock feature displays each team's location on a zoomable Google map, and you can view different statuses, such as clocked-in, on break, or day off. Users can allocate time entries to a project or client, activity task, billable type, or rate type, and mark entries as billable and to be invoiced.

Administrators can create overtime rules and notifications (hours turn red when the employee is in overtime) and approve timecards individually or by team, with the approvals screen showing pending, submitted, approved, or rejected. The administrator can set up codes for time-off requests (such as for sick leave, vacation day, holiday, or personal day) and block off any days or dates when leave cannot be requested.

A new feature added post-COVID allows the administrator to create pre-login screening questions for employees to answer in order to successfully log in (for example, do you have a temperature?), and also provides a way of sending announcements to one or all employees.

Time Tracker offers job costing insight reports (such as estimated versus actual labor) and integrates with numerous payroll, accounting, and other software solutions.

The upgraded Time Tracker + Billing account has all the features of the base application plus the ability to track expenses online and the option to invoice clients from any device. A secure client portal allows customers to login and view their invoices, make payments, and see receipts. The upgrade also offers additional reports and integration with payment gateways (e.g. Stripe).

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Patti Feldman writes articles and web content for trade magazines and manufacturers of building products. She can be reached at productpad@yahoo.com.

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by Matt Michel
MARKETING AUTHORITY



Bob Mader, RIP

This morning, the plumbing industry lost a great one. Bob Mader ascended with the angels. Rest in peace, Bob.

Bob worked for multiple “books” in the plumbing industry, as insiders refer to the magazines. Always, he worked on the editorial side, writing and editing the writing of others. He approached the industry with seriousness and a dry sense of humor.

Once, when he attended a Service Roundtable event in Las Vegas, we held a party on the top of the Stratosphere. In response to a dare, I agreed to jump from the Stratosphere, 1200 feet up. It was perfectly safe, providing I could get my weight below 250. I worked hard for months to shrink my posterior down to the weight limit. When the night came, with a few hundred of my closest friends jeering me on, I looked at the sun setting before me, with the wind whipping around me, the valley floor far below me, gulped, and plunged from the narrow platform. I’ve always been somewhat of an idiot.

The next morning, I awoke to a headline on CONTRACTOR Magazine’s website that stated, “Service Roundtable CEO, Matt Michel Jumps Off Building.”

It was accompanied by the best video anyone took of the entire event. Bob took it. While the rest of us were celebrating afterwards, he returned to his room to blog about the events of the

day. That was Bob. He was dedicated and profligate.

When I confronted him about the

niece who attended Notre Dame. While everyone knows about Notre Dame’s “Touchdown Jesus,” Bob made me

Bob approached the industry with seriousness and a dry sense of humor.



Bob Mader (left) interviews Navien’s Brian Fenske at AHR Expo 2018.

sensationalism of the headline, he laughed. He said, “I gotta do something to gets clicks.”

I often prodded Bob about his alma mater, Notre Dame. While he was low key about it, he was fiercely proud of the Irish and followed their fortunes on the gridiron with intensity. He took sarcastic joy when he learned that I had a

aware of the “First Down Moses” statue.

One year, Bob traveled with the Service Roundtable’s best practice group, the Service Nation Alliance to the ISH Show in Frankfurt, Germany. ISH is the largest plumbing, heating, and air conditioning trade show in the world, occupying around a dozen exhibition halls that are each, the size of the Javits

Center in New York.

We had been to ISH before, but Bob taught us how to work the show for maximum effect. He knew the right words to utter at the majestic booths of the ISH exhibitors. With Bob at our side, we were the foreign celebrities we always aspired to become and were treated to personally guided tours covering the future of plumbing innovations. Seriously, with Bob as our guide, we learned what would be introduced into the United States years in advance. The exhibitors at ISH, in contrast to domestic shows, tended to let you see what they were planning.

In his role at CONTRACTOR, and other publications, Bob was incredibly influential, but it never went to his head. He was always humble, committed to his craft, excellent in his work, and forever maintaining a dry, sardonic sense of humor.

After Mike Weil, at Contracting Business named me to the short list of the most influential people in the history of the air conditioning industry, Bob named me to the even shorter list of the most influential people in the history of the plumbing/hydronics industry. Apparently, I’m the only one on both lists. And, while both honors are much appreciated, I cannot claim that either is really deserved.

It brings to mind a scene from the mini-series, “Band of Brothers.” One of the actual soldiers portrayed in the film was asked by a grandson if he was a hero in the war. He responded, “No, but I served with heroes.”

Do I deserve to be on these lists? No, but the guys who created them were certainly some of the most influential people in our craft.

Bob Mader was more than a stellar editor, he was a genuinely awesome person and devoted husband to his bride, Kevyn. He will be mourned and missed by many. **C**

Matt Michel is President of Service Nation, which operates the Service Roundtable (the world’s largest organization for service contractors) and the Service Nation Alliance. In 2014, Bob Mader named Matt as one of the 18 Most Influential People in the Plumbing/Hydronics Industries.

Munch’s Supply Acquires Oklahoma-based C&L Supply

NEW LENOX, IL — Munch’s Supply (the “Company”), a leading Midwest-based heating, ventilation and air conditioning (“HVAC”) distributor has acquired the HVAC and Plumbing business from C&L Supply, Inc., including its seven branches servicing Oklahoma, Kansas, Missouri and Arkansas. The company will now be known as C&L Supply HVAC and Plumbing. This will expand the Company’s geographic footprint to 34 locations, adding to the 12 Munch’s Supply branches in Chicago, Northwest Indiana and Michigan, five Tommark branches in Michigan, seven O’Con-



nor Company branches in Oklahoma, Kansas, Nebraska, Iowa and Missouri and three Comfort Air Distributing locations in Colorado.

“The C&L Supply HVAC and Plumbing acquisition is part of Munch’s long-term strategy to aggressively expand our footprint in other regions through

strategic acquisitions,” said Munch’s CEO Bob Munch. “We are pleased to welcome C&L Supply HVAC and Plumbing’s customers and employees to the Munch’s family of companies.”

“We are proud to serve our customers under the expanded name ‘C&L Supply HVAC and Plumbing’ and will continue to offer Rheem heating and air conditioning equipment and multiple leading plumbing product brands,” said C&L Supply HVAC and Plumbing’s Vice President Mike Beckham.

Munch’s Supply has been operating in the Chicagoland area for the past 65 years. **C**

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by Ken Smerz
CEO OF ZELUS



Building for Our New Virtual World

Some are referring to 2020 as “The Lost Year”, but even with as much difficulty as it posed, the year is also becoming synonymous with rapid innovation and technological advancement and acceptance. In fact, it’s also earned a slightly more positive name: The Great Digital Acceleration.

Across all sectors, digital adoption accelerated at a pace unlike any other time in our history. Some industries packed three years of digital transformation into 12 months, where others accelerated their strategies by an average of six years. While much of this was out of an immediate necessity to accommodate customers and provide employees the tools to work remotely, it’s become clear that the transition to digital and virtual is here to stay.

How will that impact the construction industry going forward?

Shifting the way we experience the world

The construction industry has traditionally been one of the slowest to embrace technology. But last year, we were forced to think about how to enable our in-office teams to work remotely, reduce the number of people needed on job sites, and collaborate with all stakeholders involved in the project virtually. In a matter of months, tech adoption in construction hit a record high as teams turned to digital collaboration platforms and building information modeling (BIM) tools and processes to keep projects on track and teams safe.

Just as we were confronted with the opportunity to rethink the way we do things, so too was every other sector of business, and that, as a by-product, has brought another significant change to our industry: the type of construction projects that surfaced over the course of the previous 12 months.

With most employers and government agencies now virtual and customers accustomed to having the option of a digital experience, it has created a new and different supply and demand landscape in the con-

struction industry. There’s now a surplus of empty hotels, offices, schools and big-box retail centers, while simultaneously the need for distribu-

The remaking of an existing infrastructure

As e-commerce continues to explode, retailers like Target, Walmart and Am-

The construction industry has traditionally been one of the slowest to embrace technology. 2020 may have changed that.



tion centers, affordable housing and satellite medical facilities has spiked.

Even prior to the pandemic, there were a number of systemic changes underway, including a complete redesign of the retail experience and how we prefer to shop. e-commerce website traffic was already at a new high in January, averaging 16 billion global visits. After the pandemic hit, that number jumped to 22 billion in June. Similarly, it was estimated the U.S. government already owned approximately 45,000 underused or underutilized buildings, and now that number has increased as a result of the pandemic.

Now that we’ve been living with this pandemic for the better part of a year, it’s been long enough to be habit forming. What may have initially been temporary patches to solve immediate needs is now becoming permanent, and the construction industry will see an explosion of adaptive reuse projects over the coming years to accommodate the demand.

Amazon, to name a few, are setting up more distribution centers to house consumer goods. These brands, along with delivery services companies like UPS and FedEx, are also investing in hub and spoke network models with strategically placed hubs surrounded by local stations or satellites throughout the U.S. Rather than build new, they’re taking advantage of the excess inventory of empty big-box retail centers, movie theaters and other existing structures that offer large, open spaces.

The pandemic has simultaneously put more pressure on governments around the globe to solve for housing shortages, which has spurred many to look at how to use existing government-owned inventories as well as vacated hotels and office buildings for affordable housing and senior living facilities. In the U.S. alone, it’s estimated as many as 7.2 million new affordable housing units will be needed to meet the current demand.

As adaptive reuse projects become

more prevalent, so too will the relevance and importance of BIM in the industry.

Adopting and adapting to technology

It’s no secret we haven’t been leaders in adopting innovation and advanced tech for a variety of reasons. But today, a number of drivers are making technology an undeniable part of our future to not only accommodate a new way of work, but also improve efficiencies and solve for some of the challenges in our industry.

Combined with the national trade labor shortage, the need to do things virtually is forcing us to look at our processes to identify what can be eliminated or done remotely. An example of this is offsite prefabrication, which gives us the ability to build components of a building partially offsite, deliver them to the site and click them into the existing structure or new structure. This radically improves the building efficiency, reduces risk exposure to those on the job site and can improve the quality of the built components because they’re being fabricated in a controlled environment versus on the job site.

There’s also been a trend toward owners getting more involved. To the point where many are requiring contractors to produce digital 3-dimensional models of their existing or new structures so they can understand how best to utilize their assets, plan for emergencies, or simply have a historical reference for the future.

Whether for adaptive reuse or building new, the process of using technology to improve efficiencies has only accelerated. Now that we’ve experienced the value technology brings to the equation, we can bet there’s no returning to the “old way” of doing things. The digitization of our industry is here to stay.

Ken Smerz is the CEO of ZELUS, a digital as-built service provider. The company delivers Virtual Design Construction (Building Information Modeling) services as well as 2d/3d digital documentation using the most advanced, latest technology.

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Roman Plumbing Helps FL Restaurant Comply with FEMA



The newly remodeled Widow's Den, a Key West-style outdoor bar on the bottom floor of the Widow Fletcher's Restaurant in New Port Richey, Florida.

► **Continued from page 1**

West-style outdoor bar on the bottom floor. Adding restrooms and an updated bar area were some of the major renovations included in the restaurant's recent remodeling project.

To accommodate up to 600 seats (300 upstairs and 300 downstairs), the restaurant's facilities have their work cut out for them. The Widow Fletcher's riverfront location resulted in a unique remodeling scenario. The project involved collaboration with not only the city, but also engineers and architects, to overcome a major obstacle: The building is eight feet below the floodplain.

"FEMA [Federal Emergency Management Agency] dictates where your floodplain is, and it doesn't necessarily mean your building floods all the time, if ever," explains Widow Fletcher's owner Mark Spier.

But according to Florida's building department, when a building is even one inch below flood plain, the plumbing must be equipped with backflow, and impervious to outside elements.

"A big outside element, of course, is floodwater," says Spier. "If bay water gets into the local sewer system, it will create havoc throughout the city's lift stations and sanitary system."

Plumber Frank Roman of Roman Plumbing says: "If you have a storm surge, the restaurant's lower level will flood. Therefore conventional plumbing wouldn't work, because you would be introducing the bay water into the city's sanitary system."

With conventional plumbing not being an option, Spier and Roman had to find a cost-effective plumbing solution that would pump the wastewater, coming from the newly added plumbing fixtures, eight feet vertically to the existing upstairs plumbing lines.

Solution

As the managing owner of the construction process, Spier had the responsibility to research and decide which product would be best suited for the Widow's Den's application. Working



The Sanicom 1 unit installed to discharge the gray water from three hand-sinks and three tub-dishwashing sinks in the bar area. The unit's 1-inch discharge pipe (top left) runs eight feet vertically and connects to an existing wastewater line.

with an engineer and Roman Plumbing, the project team considered a couple of different solutions. "Initially, we looked at possibly installing a large lift station to handle all the plumbing fixtures, but it was really cost-prohibitive," says Spier.

Nor were village officials thrilled by the idea. After several discussions with the plumbing company and local plumbing supply house Hydrologic Distribution Company, the project team decided to move forward with Saniflo's above-floor plumbing solution.

Hydrologic Distribution had previously sold Saniflo products. But, according to Spier, what really sealed the deal was when he shared the plumbing plan with Saniflo's technical team.

"We had to go to the building department and show the inspectors and jurisdiction authority what we were planning to do, and why it would follow their criteria," explains Spier. "Saniflo came back and told us exactly what we needed to make sure that the plumbing plan was engineered cor-

rectly and that the setup would work correctly."

Based on the recommendation from the supply house and product recommendations from Saniflo, Spier felt comfortable installing three Sanibest Pro grinder systems for the male and female restrooms, plus a Sanicom 1 drain pump to handle three hand-



A urinal and toilet are connected to a Sanibest Pro in the men's restroom.

sinks and three tub dishwashing sinks for the bar.

The Sanibest Pro's one-horsepower pump can discharge effluent up to 25 feet vertically and up to 150 feet horizontally. The Sanibest Pro will discharge not only black water from a toilet but also gray water from a sink and a tub/shower.

Designed for both commercial and residential applications, the Sanicom 1 can discharge gray water away from a variety of fixtures up to 25 feet vertically and/or 250 feet horizontally. Small enough to fit inside a kitchen cabinet, the unit was designed to meet the toughest applications, including water temperatures up to 194°F.

The set up:

- Three Sanibest Pro grinder units were installed to discharge the wastewater from three toilets and a urinal. The two toilets in the women's restroom are each connected to a Sanibest Pro unit.
- A urinal and toilet are connected

to a Sanibest Pro in the men's restroom.

- A 1-inch PVC discharge pipe is connected to each Sanibest Pro and runs 8 feet vertically to connect to the building's existing sewage pipe.
- The Sanicom 1 unit was installed to discharge the gray water from three hand-sinks and three tub-dishwashing sinks in the bar area. The unit's 1-inch discharge pipe runs eight feet vertically and connects to an existing wastewater line.
- The discharge line ultimately connects to the city's sewage system.


According to Roman, this was the first installation of its kind in Florida for his plumbing company. "It was also a first for the building inspector. However, the installation was very simple, and it went smoothly," says Roman, adding: "It involved basic plumbing. It's a cost-effective and simple pump system that forces everything up and into the sanitary system."

Results

As with any construction or remodeling project, the cost is a key consideration. "I felt very comfortable with the cost-versus-benefit comparison," says Spier. He adds approvingly that installing the three grinders and the drain pump took less than two days.

"It's still a new installation, so we have yet to determine long-term performance," he continues. "That said, I have the highest expectations for Saniflo and the associated equipment."

Roman agrees with Spier and sees himself using the system for a bathroom add-on when a customer prefers to avoid breaking through the concrete to install conventional plumbing.

"In my own house, I have a space in the garage where I could use the system to add a bathroom, so that would be an excellent opportunity to use the Sanibest Pro again." 

ASA Joins Appeal on Showerhead Flow Limit

ITASCA, IL — The American Supply Association recently joined the Alliance for Water Efficiency in its appeal to the United States Department of Energy related to allowable flow-rate changes for multi-head showers, and the subsequent negative affects it will have on business operations for ASA members, as well as overall negative water-efficiency consequences that will result.

AWE, dedicated to the efficient and sustainable use of water that advocates for water-efficient products and programs filed two appeals to protect federal efficiency standards for showerheads, clothes washers and dryers. The appeals were filed in the U.S. Court of Appeals for the Seventh Circuit.

The suit challenges two new DOE rules: one changes the definition of a showerhead and the other creates a new class of clothes washers and dryers with no water- or energy-saving requirements. “We wanted to appeal these rules, and we are especially concerned about the impact of the showerhead rule,” said Mary Ann Dickinson, president and CEO of the Alliance for Water Efficiency. “The showerhead rule alone would waste billions of gallons of water and significantly raise consumers’ water bills. It would also severely compromise water supply availability for many water utilities, especially in the arid West.”

Under previous DOE rules, showerheads could not be sold in the United States if they released more than 2.5 gallons of water per minute. DOE’s new rule changes that regulation so each nozzle on the showerhead could meet that 2.5-gpm standard. That means, showerheads with multiple nozzles bypass the standard, expelling far more water and consuming more energy—required to heat the water—than previously allowed.



ASA Director of Codes and Standards Jim Kendzel, in signing on to AWE’s appeal, notes that since at least 2011, DOE has been clear that showerhead manufacturers and distributors may only sell showerheads in the U.S. with a maximum flow rate of 2.5 gpm, regardless of how many nozzles the showerhead may have. In addition, the AWE appeal supports the official ASA position on this issue approved by the ASA Plumbing Division Executive Council on Sept. 22, 2020.

Kendzel adds that DOE’s redefinition of “showerhead” will put ASA members at a significant competitive disadvantage. “Foreign manufacturers are and have been free to manufacture and distribute showerheads outside the U.S. that exceed the Energy Policy and Con-


servation Act standards,” he wrote. “ASA and its members are concerned about foreign products ready for sale and distribution in the U.S. that take advantage of DOE’s ‘showerhead’ redefinition, but would not have been compliant under the previous rule.”

Kendzel cautions the new DOE rule will further impact ASA member distributors and manufacturers in other ways. “To the extent the consumers want the high-flow showerheads that DOE now permits, manufacturers will face market pressure to make those products,” he said. **C**


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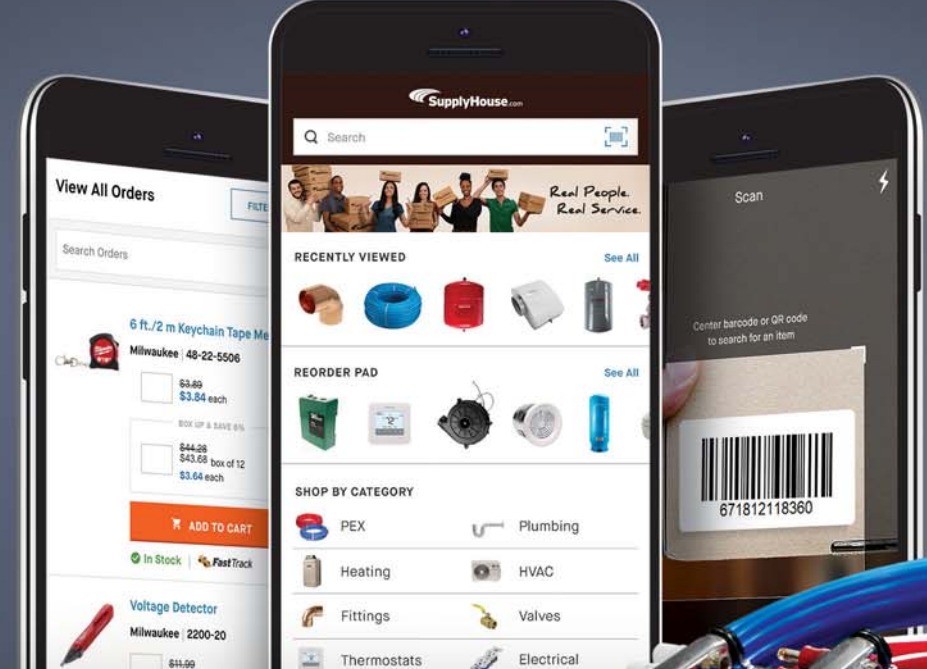
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Incoming MCAA President Kilijian: Focus on Resources

► **Continued from page 36**

dated with 2021 information on how the association is helping member businesses through the pandemic. For the full interview, please visit www.contractormag.com.

This month, at the Mechanical Contractors Association of America's virtual education conference, the organization will name Armand Kilijian as its president for 2021-2022.

Kilijian is the president of San Francisco-based O'Brien Mechanical, a family-owned, full-service plumbing/piping/HVAC contractor working in the Greater San Francisco Bay Area.

His thirst for professional knowledge brought him to the Northern California MCA, where he held many leadership positions—including the offices of president, vice president and treasurer. At-

tending his first MCAA convention inspired him to serve his fellow contractors on a national level. He went on to chair

have friends or family in construction. I did know that I wanted to be part of a company that was local to the San Fran-

Use the wealth of resources available to MCAA members.

the Plumbing Contractors of America, and has been a member of MCAA's Education, Construction Technology, and Management Methods Committees. He was elected to the MCAA board of directors in 2012.

Contractor: How did you know you wanted to be part of this industry? How did you get your start?

Armand Kilijian: It's all by chance. I didn't drop into the family business or

cisco Bay Area and in which I could make a difference.

After working at Johnson Controls, I had a good feeling about the industry. Through a colleague's introduction, I was lucky enough to interview with and partner into O'Brien Mechanical. I've been here for more than 20 years and have enjoyed the journey immensely.

CTR: As we continue to deal with the COVID-19 pandemic, what programs/services/advice are members looking to MCAA for?

AK: Members look to MCAA for information to get their businesses through the pandemic, from assistance understanding the evolving legislative and safety landscape to help with recovery of loss of labor productivity. At the same time, MCAA continues to deliver the top-quality education our members have come to expect through events like our Safety Directors' and Technology conferences, our MSCA classes and our many webinars.

We also introduced some new things—including the first MCAA Virtual Education Conference, a Preparatory Institute for Project Management for those with little or no PM experience, and virtual versions of our National Education Initiative seminars.

CTR: Are commercial contractors affected by the need to offer "no contact" sales calls during the pandemic?

AK: Commercial contractors have certainly had to adapt their businesses for the pandemic. In many cases, that means quickly replacing legacy systems with alternatives that are more conducive to a virtual work environment and one of those areas has certainly been sales calls. Most are now done via videoconference.

In construction, we're seeing more use of 360-degree video with tools such as OpenSpace and StructionSite that simplify the process of gathering and sharing this data. On the service side, tools like XOi let service technicians capture

and share information using their cell phones' cameras.

CTR: What types of commercial training have become popular since the start of the pandemic?

AK: A variety of training is available, but most (if not all) is done virtually. As much as COVID-19 has caused our businesses to evolve, a building is still a building. We need training on how to properly install equipment in addition to the bigger picture and strategic issues.

MCAA has partnered with our Manufacturer Supplier Council members and is now offering a new resource: a section of our website dedicated to the training resources provided by our manufacturer members.

CTR: Does MCAA have any thoughts on when mechanical contractors can get back to regular (in-person) practices?

AK: There is a lot of uncertainty in the world and in each of our markets. None of us can predict what the future holds. It may not look like it did before COVID-19. We're fortunate that our workers are considered essential, so while there are fewer of them on a job at a time, the work has continued. Likewise, our office work has been able to continue remotely and in person wherever possible.

Construction companies as an industry adapt to whatever issues or problems might occur in the field. The pandemic is just another one of those hurdles. Looking back over the past year, through the assistance of great industry associations such as MCAA, I think we have come out stronger and have established a new regular or normal in our industry.

CTR: If you only had one message to give to your fellow contractors, what would it be?

AK: Take the time to better yourself and your company in any way possible. Use the wealth of resources available to MCAA members as well as your peer resources throughout the year. Even one change will make a difference. **C**

Kelly Faloon is a contributing writer to Contractor, Contracting Business and HPAC Engineering magazines, and principal of Faloon Editorial Services. The former editor of Plumbing & Mechanical magazine, she has more than 20 years' experience in the plumbing and heating industry and B2B publishing.



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Ants and Mitigating Project Risks

► **Continued from page 14**

markups added to it. Purchasing the material and scheduling the delivery can also be automated, still from the same data set, and still from the result of a preceding step in the chain like the VDC model or estimate.

Processes like these are not the future, they are what you should expect of your teams now. This is the kind of connectivity between team members that provides feedback loops, and like a pheromone trail between the different roles of ants, Emergent Intelligence invisibly guides your team towards the healthiest outcomes on your projects.

How do you begin installing this kind of behavior on your team? The best way to institute these principles and any underlying solutions is to pick the right technology partner. Most construction technology companies

address a single aspect of construction like CAD, Estimating, Project Management, ERP, layout equipment, or mo-

Processes like these are not the future, they are what you should expect of your teams now.

bile apps and they solve one problem in the chain effectively, but hardly any have the breadth or industry DNA to address the workflows and quick decisions that data doesn't solve on its own, which is providing context to the data and making it intuitive to act on—enabling your workforce to operate together as a single meta-organism,

instead of role players that do the tasks in front of them until the job is over. One of the key observations of Emergence at work in ant colonies is that the constant feedback loops (pheromones) drive a steady stream of micro-decisions that seem intuitive (food is to the left). For project teams with the same kind of feedback loops (contextual, actionable project dataflows) they are similarly empowered to make sustaining micro-decisions so the project thrives and stays on course. The alternative is decision points that occur less frequently, carry much heavier consequences, and often they are too late to right the ship if it is off course.

Look for construction technology firms that have themselves emerged as an industry leader because they understand these challenges and continue to invest heavily in software solutions

that thoughtfully consider how the people and roles of a mechanical contractor actually work together. With the right technology in your hands (like ants responding to pheromones) Emergent Intelligence will kick in and focus your people's energy on actions that ensure the project and the company thrive and become an efficient and resilient mechanical construction cooperative. **G**

Dave Keane is a mechanical construction industry veteran with over 18 years of experience in leadership roles at mechanical and process piping contractors. For the past 8 years, he has brought his passion for operational excellence in prefabrication, estimating, project management, and construction financials to help Trimble MEP clients achieve field-office synergy and transform their business operations.

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IBSx: 2021 Housing & Economic Outlook

► **Continued from page 8**
the early 80s buying boom.

Housing Market

Beson then surrendered the microphone to Nothaft, who zeroed in on the housing market.

One year ago home sales were doing very well. In the six months prior to the pandemic new home sales were up 12 percent YoY. The pandemic crushed activity in the spring of 2020, but it bounced back through the summer and into the fall. For the full calendar year, 2020 turned out to be the best year for new home sales since 2007—above 2019 levels.

Demand is mainly in areas of population growth. Total growth over last year in the US was 1.15 million—but a more important factor is relocation. States with the largest population growth in 2020 were TX, FL, AZ and NC, which is where the demand for new construction will be.

The CoreLogic Home Price Index through the month of December shows home prices up 9.2 percent in the national index. Demand is up, inventory is limited, and prices are rising. For 2021, robust appreciation rates should be seen in the first few months, with a gradual tapering off. For calendar year 2021, Nothaft and his team predict an average growth in home prices of 6.9 percent. (Local markets, of course, may do better or worse.)

Why the decline? Interest rates will climb (eventually), while inventory will rise towards the end of the year.

Price growth is good for building home equity wealth, and now the Home Equity Wealth Rate in the US is highest it has ever been. The average amount of home equity wealth gain over the last year was about \$5,300, largely

due to home prices (again, this varies by region).

The US Average Home Equity per borrower is at \$194,000, allowing homeowners the flexibility to borrow against their home's value for remodeling or additions, both of which have been popular during the pandemic. There was a 3.7 percent rise in improvement spending in 2020.

Meanwhile, the rental market is seeing a shift from high density (high rise apartment buildings) to single-family rental homes, a dramatic shift driven by the pandemic. People don't want to be downtown in a densely populated area close to the office. Instead, they want to be out in the suburbs working from home. But will this trend continue?

Growth Amidst Headwinds

Robert Dietz then ran the anchor leg of the session. He began with five key points:

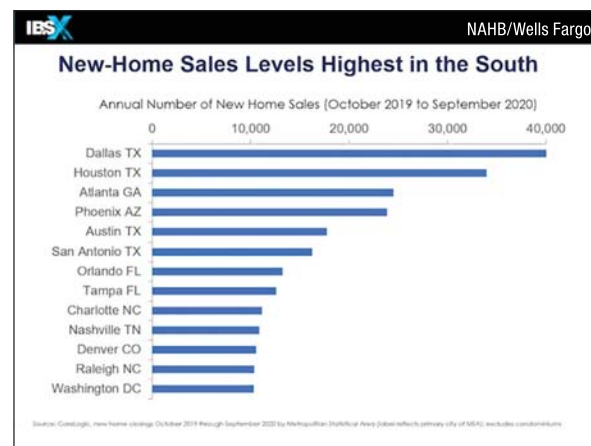
- The virus crisis will continue, at least through the end of February
 - 50 percent vaccination rate will probably be achieved by the end of April (possibly May); 75 percent rate should be achieved by the end of October
 - There will be accelerating growth throughout 2021 (with corresponding increases in interest rates)
 - Single-family construction and remodeling construction will see gains for 2021, but lower than in 2020
 - Housing affordability risks erosion in 2021 due to climbing rates and rising costs
- Dietz and the NAHB see a rise in GDP of 3.6 percent in 2021, with possibly and "upside surprise" due to pent up demand.

He pointed out that during the crisis, policymakers in Washington had done a relatively good job on both monetary and fiscal policy. Relative, that is, to such other developed Western economies such as France and the U.K. Their effort had managed to prevent what might have been a much more serious economic decline.

Again, rates will increase, but overall remain low for the next four years. But even a slight rise may cause a problem in affordability, particularly at the lower end of the market. There has been, in fact, a decline in affordability ever since the end of the Great Recession. Only about 58 percent of new and existing home sales are actually affordable for the typical US household.

The top issue on the construction side of the market is supply; lumber prices are on a roller-coaster ride. From mid-April 2020 to mid-September 2020 prices increased 170 percent. Mid-January saw a slide, but prices are once again up. Currently, the high price of lumber is adding \$10,000 to \$20,000 to the price of a newly-built home.

There are also concerns about environmental, tax



and labor policies under the new Biden administration. Rising regulatory burdens eventually get passed along to buyers in the form of higher prices.

And, as it does with so many of the skilled trades, the labor shortage continues. The market remains very tight. The residential construction market has been a bright spot in the current economy with 30,000 more workers now than a year ago.

The NAHB/Wells Fargo Housing Market Index hit an all-time high level of 90 in the fall of 2020. It has since declined to 83 in the last two months, which is still very strong. There should be more gains to come in single-family construction. The index is based on a survey of homebuilders, and two items stand out: 80 percent of builders see a higher demand for home offices; housing demand (in general) is moving to lower-cost, lower-density markets.

The NAHB forecast predicts growth, but slower growth rates than 2020. Permit data from the Building Geography Index shows big growth in the suburbs. Multifamily construction will stabilize headed into 2022. And there should be a 4 percent growth rate for the remodeling market in 2021.

The residential construction industry is now larger than it was a year ago, while the nonresidential market has shrunk, and will probably continue to shrink unless large infrastructure investments move forward.

"A real flip of the 2008 narrative," Dietz said, and then opened the floor for questions. **C**

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Gen Z Open to Careers in the Skilled Trades

► Continued from page 3

than half of Gen Z teens now considering it. In addition, 52 percent believe they can achieve professional success with education attained in three years or less, and just one-fourth believe a four-year college degree is the only route to a good job.

And while 62 percent want to forge their own educational path, many high school students feel uninformed about the options available, with 63 percent of teens wishing their high school provided more information about the variety of postsecondary schooling opportunities available.

The statistics were gathered over the past 12 months in three national surveys conducted by ECMC Group and VICE Media. The surveys were conducted in February 2020, May 2020 and January 2021 to uncover how high school students are thinking about and planning for their future education and careers amidst an ever-changing environment marked by virtual classrooms and economic upheaval.

“High school students and their families have faced a great deal of change in their lives over the past year, which is translating into uncertainty as they look to their career paths,” said Jeremy Wheaton, president and CEO of ECMC Group, a nonprofit focused on helping students succeed. “While this shift in mindset isn’t surprising, it is up to us as leaders and mentors to educate learners about their future opportunities, which includes raising awareness about the variety of postsecondary learning options that are available.”

For those who have been following the discussion, it will not come as a shock that this demographic is extremely concerned about the cost of higher education. In fact, the number one thing teens would change about college is the price tag. Their second top concern is making sure the path they take di-

rectly connects them to a future career. Specifically, the top three things Gen Z teens are most concerned about:

- 50 percent—graduating with a high amount of debt
- 44 percent—not getting a job after they graduate
- 40 percent—not being prepared for a job after school ends

Additional findings include:

Gen Z teens want skills and quick paths to careers

- 61 percent believe a skill-based education (e.g., trade skills, nursing, STEM, etc.) makes sense in today’s world
- 45 percent agree that a program they can complete in a shorter period of time (within two years) makes sense
- Nearly 25 percent are more likely to attend a career and technical education school due to their experience with COVID-19

Gen Z teens want government and employers to play a role

- 50 percent believe the government should provide additional money to pay off student loans
- 39 percent believe the government should subsidize/pay off debt
- 39 percent believe the government should subsidize/pay for college
- 38 percent believe companies should provide formal education
- 37 percent believe companies should provide money to pay off student loans

COVID-19 has had a direct impact on their future education plans

- 53 percent are worried about their future
- 40 percent do not feel adequately prepared for

the next grade


- 29 percent said the pandemic’s financial impact makes it less likely they will attend a four-year college
- 24 percent said the financial impact will make them less likely to pursue any education beyond high school

“While the insights we uncovered illustrate a high level of indecision, they also demonstrate that today’s teens are using a critical eye when it comes to analyzing their options and charting their future course,” said Wheaton. “We must take this opportunity to hear their concerns and provide pathways that will meet their educational needs now and into the future.”

The surveys are part of a new Question The Quo campaign, developed by ECMC Group to empower students to learn about the various higher education options available and to take the career path that’s right for them.

Methodology

ECMC Group, in partnership with VICE Media, conducted three national Question The Quo surveys. The first survey of 1,177 high school students was conducted Feb. 25-March 2, 2020; the second survey of 1,025 high school students was conducted May 14-20, 2020; the third survey of 1,001 high school students was conducted January 4-19, 2021.

ECMC Group is a nonprofit corporation focused on helping students succeed by creating, providing and investing in innovative educational opportunities. To learn more, visit www.ecmcgroup.org. 

Housing Affordability Holds Steady; Challenges Loom


Record-low mortgage rates offset record-high home prices to keep housing affordability steady in the fourth quarter of 2020, according to the National Association of Home Builders (NAHB)/Wells Fargo Housing Opportunity Index (HOI) released today. Though affordability rates held firm, regulatory and supply-side challenges threaten to aggravate affordability problems in the year ahead.

In all, 58.3 percent of new and existing homes sold between the beginning of October and end of December were affordable to families earning an adjusted U.S. median income of \$72,900. This is unchanged from the 58.3 homes sold in the third quarter of 2020 that were affordable to median-income earners and the lowest reading since the fourth quarter of 2018.

“While historically low mortgage rates are helping on the affordability front, there was a significant jump in year-over-year home pricing from

2020 to 2019, as inventory remained lean due to supply chain issues and the COVID-19 pandemic,” said NAHB Chairman Chuck Fowke, a custom home builder from Tampa, Fla. “Moreover, lumber prices remain extremely high and builders anticipate that regulatory costs are likely to rise, which will put even more upward pressure on home prices.”

“Looking forward, interest rates are likely to rise as the pace of vaccines increase and economic activity climbs back to more normal levels,” said NAHB Chief Economist Robert Dietz. “One trend that will help counterbalance growing affordability concerns is the suburban shift in home sales and construction to smaller markets. An increase in telecommuting is providing more ‘market power’ to prospective buyers, allowing them to live in lower cost, lower density markets.”

Please visit naib.org/hoi for tables, historic data and details. 

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WWETT+ Event Offers Conferences, Marketplace

► **Continued from page 3**

water management, drain cleaning, mobile services, pumping, chemical treatment and more.

While the virtual event was a stand-alone, it was also intended to “wet” the appetite of attendees for a live event which will be held in-person June 29 through July 2 in Indianapolis, IN. Registration is still open for what is recognized around the industry as “The premier event for municipalities, plumbers, portable sanitation professionals, septic contractors, sewer contractors and wastewater professionals.”

In addition to video product demonstrations and virtual exhibits, the WWETT+ even included conference sessions on a wide variety of topics as well as networking opportunities. Some topics included, *Identifying a Normal User: What Onsite Systems Expect to Treat*; *Jetting Nozzle Logic – A Common Sense Ap-*

proach to Choosing the Right Nozzles; and *Leveraging an Asset Management System to Benefit Your Business*. For attendees who might be pressed for time, WWETT Show Shorts, special 20-minute sessions were offered with such topics as *How to Have Tough Conversations* and *Bodies Don't Lie - Body Language Basics*.

COVID Panel Discussion

WWETT+ kicked off with a panel session, *COVID-19 Past, Present & Future*. The session was moderated by Sheila Joy, the Executive Director of the National Association of Sewer Service Companies (NASSCO). Panel members included representatives from the National Association of Wastewater Technicians (NAWT), the Portable Sanitation Association International (PSAI) and the National Onsite Wastewater Recycling Association (NOWRA).

The discussion started by harking

back to the earliest days of the pandemic, “When they cancelled the NCAA tournament and baseball’s spring training,” Joy said. Panelists discussed the protective measures they had put in place (PPE, social distancing etc.), and how it could sometimes be difficult to remain vigilant as the months wore on.

One panelist described how their company had made it all the way to Christmas without any employees or employee families getting infected, and then three members of their executive team tested positive all at once; a wake-up call that led to refocusing efforts at sanitation, disinfection and other protective measures.

Also in the early days of the pandemic, NASSCO and other associations worked hard to get wastewater and sanitation workers labeled as “essential” by the EPA, highlighting the im-

portance of advocacy and strong ties to both state and federal governments.

For many panelists, one of the most difficult parts of the pandemic was negotiating the various business stimulus programs available. For one panelist, it seemed as if his banker, his CPA and his lawyer were giving him different answers with every passing day. Luckily, he was able to depend on a good team of financial professionals and get back to work in the field. Right now his business is on a firm enough footing that he feels comfortable refusing the second round of PPP loans.

Other topics from the discussion included mental health issues in the contracting and construction trades, as well as the value of crisis planning, and how to implement a crisis plan no matter what size your business.

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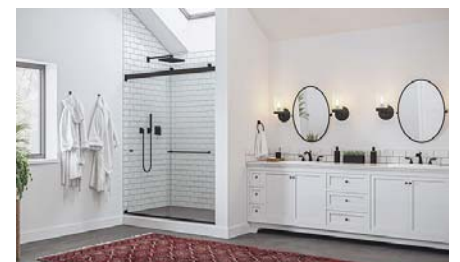
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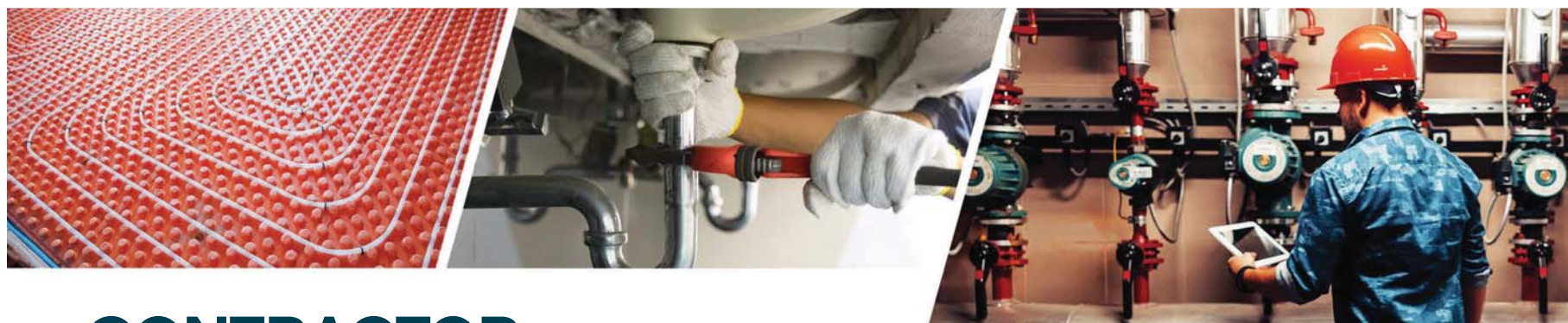
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by Steve Spaulding
EDITOR-IN-CHIEF



Good-bye, Bob

I wish I was writing this editorial about the plumbing problems in Texas. Or maybe about some of the latest virtual events I've covered. But there are those months when you struggle to find something to write about—and then there are months when there's only one thing you can write about.

If you've already read Matt Michel's touching tribute in this issue you know Bob Mader, former Editorial Director for *CONTRACTOR Magazine*, just recently, unexpectedly, passed away. I still don't have all the details, but I do know he left us far, far too soon.

I met Bob when I started work on *CONTRACTOR* as a Production Editor back in 1996—which means I've known Bob half my life, and almost the entirety of my professional career. He was Managing Editor at the time and had already been working for the magazine since 1984.

Later on our mutual boss, Bob Miodonski, went off to work for the competition and Bob Mader took the top job. It was an uncertain time in the publishing world

with the rise of digital media and questions about what kind of resources to devote to the print side of the operation. There was

board. He could look at a page right out of the printer and say, "Hm, looks like the font is a little bit off," and sure enough,

Bob Mader, former Editorial Director for *CONTRACTOR Magazine*, just recently, unexpectedly, passed away.

a long stretch there where it felt like it was just Bob, myself, and the art director turning out the magazine month after month.

As a mentor, Bob set very high standards for the work, then got out of the way and let you do the work however you thought best. He led, as the best leaders do, by example.

And what an example! As a writer, editor and journalist he was the consummate professional; always asking the smart, incisive questions, hunting down facts, always laboring for clarity and concision in his prose. He would do interviews with the phone in the crook of his neck while typing the responses directly onto his key-

we'd go back, check, and it would be a point or two off. There were a thousand little things like that he'd surprise me with—that just showed he was working on this whole other level.

Bob believed in the value of the skilled trades. He felt the plumbing and heating industry was the vanguard of public health and the glue that held cities together. He was an early proponent of energy- and water-efficient systems. He was early to grasp the significance of prefabrication, of the Smart Buildings/Smart Cities movement, the importance of IoT and Big Data and what they would mean for the future. Bob was always ahead of the curve.

And he was a warm, funny, kind human being. Everybody was always glad to see Bob (and he knew everybody). You could see it when he was walking the floor at AHR or any of the big shows. It sometimes seemed like he couldn't make it ten feet without someone coming up to shake his hand and share a laugh.

Heck, I was always glad to see Bob, practically every day I came to work. When I got the top job here at *CONTRACTOR* I was suddenly insanely busy, but I always figured someday he would swing by the office or I'd get out to the suburbs and we'd have a chance to sit down and talk about what it was like to be the guy in charge—the one who decides what goes on the cover, what the editorial is going to be about that month. We bumped into one another at shows a few times, but for whatever reason we never got to just sit down, have a beer together and talk about it. I guess I always thought there would be more time.

I regret it terribly. Good-bye Bob. You were great, and you'll be greatly missed. **C**

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