

December 2016

Rural Builder

Magazine for Home Builders and Contractors



PRODUCT PROFILE:

Tools &
Equipment

P. 16

+PLUS:

A major tip for
prolonging life of
metal panel

P. 20

MOTIVATE

MILLENNIALS

TO SUCCEED

SECRETS TO HIRING AND
KEEPING YOUNGER WORKERS

P. 10

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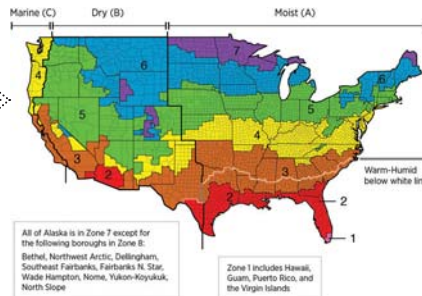
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Photo by Rachel Fishback, Greiner Buildings. Cover design by Nicole MacMartin.

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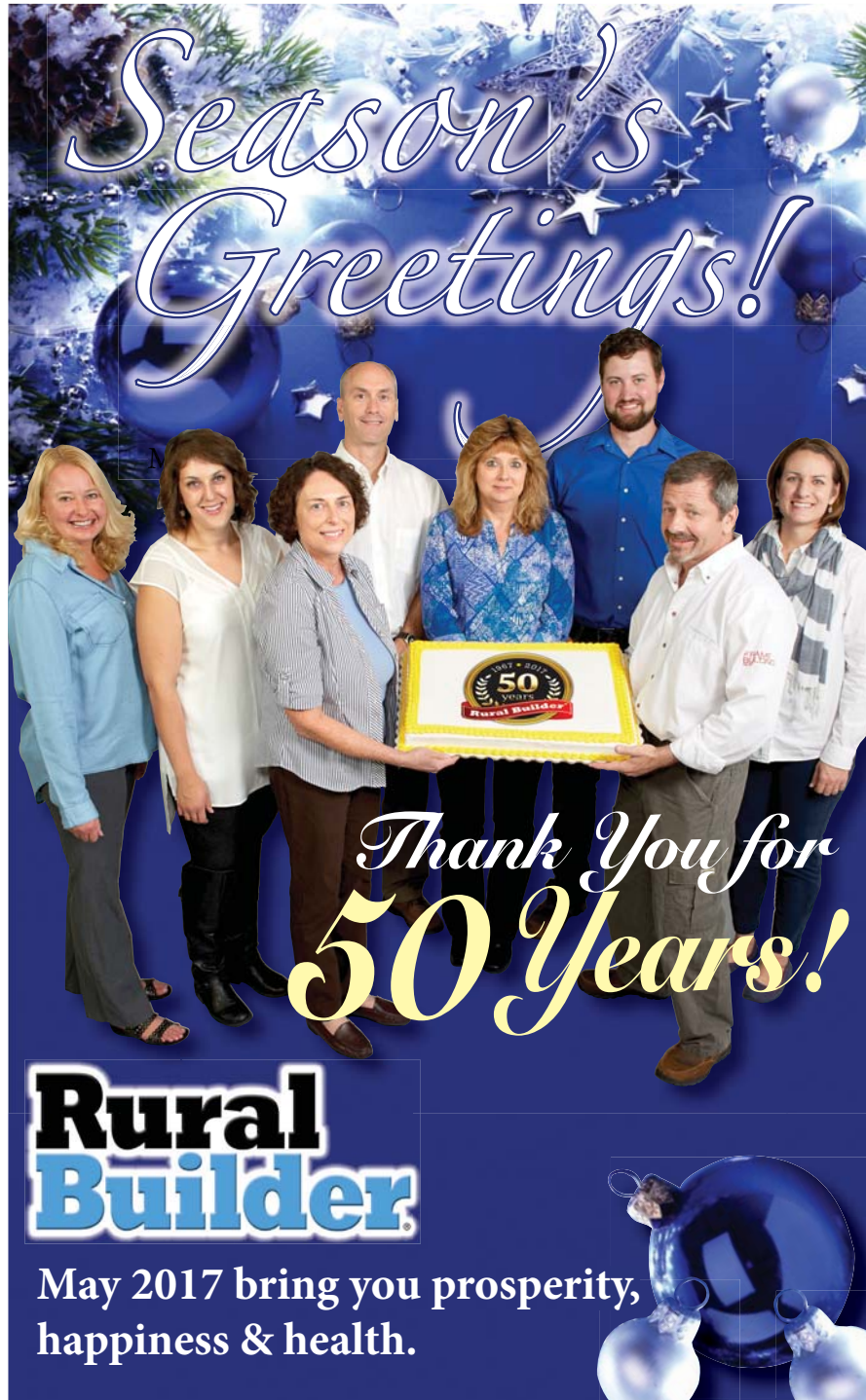
Check our website at
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BY SHARON THATCHER

Beginning of a New Chapter

RURAL BUILDER IS CELEBRATING an important birthday in 2017. What began as a simple publication called *Farm Building News* (not to be confused by the much later *Frame Building News*), the magazine turns 50 years old. The coming year promises to be an interesting one. With economic optimism in the air, let's celebrate the hope that 2017 will turn the page to an exciting new future for us all. **RB**

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MARKET PULSE

■ JOB GROWTH

Industry employment is up by 2.4 percent on a year-over-year basis, according to analysis of U.S. Bureau of Labor Statistics data by Associated Builders and Contractors (ABC). That is adding challenges on finding good workers.

"The implication is that demand for construction workers is positioned to remain high, which will translate into gradual reduction in industry unemployment and significant wage pressures," said ABC Chief Economist Anirban Basu. "Some of these wage pressures are already evident. Construction firms in the nation's hottest markets, including New York, Seattle and Miami, report that in certain occupational categories, compensation is rising at a 10 percent per annum pace or more. This appears to be particularly true for construction superintendents and managers."

■ MARKET GROWTH

"Next year is shaping up to be a good one for both residential and nonresidential construction segments," said Basu. "Of the two branches of the industry, nonresidential likely offers the larger upside. An infrastructure-led stimulus package would largely be oriented around nonresidential activities. Moreover, in certain markets, there is evidence that the apartment market is approaching saturation. Expected increases in interest rates next year would also tend to hit certain residential activities (i.e., single-family construction) more forcefully."

■ HOUSING STARTS

October housing starts (released Nov. 17)
United States:

- Northeast (+ 44.8%)
- Midwest (+ 44.1%)
- South (+ 17.9%)
- West (+ 23.2%)

Canada:

- Atlantic Provinces (- 33.9%)
- Quebec (- 92.4%)
- Ontario (+ 20%)
- Prairie Provinces (- 10.8%)
- British Columbia (- 44.9%)

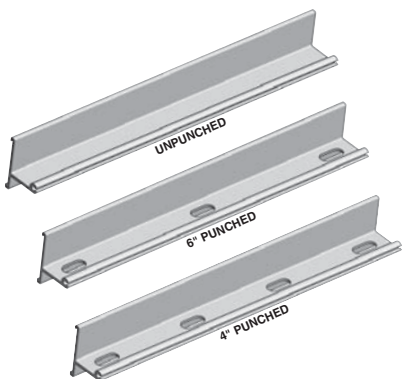
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Circle Reader Service #316

THE IMPORTANCE OF PRODUCT & INSTALL TRAINING

BY MARK MULLINS, FABRAL

Applications Engineer
Product Training Manager



In the metal industry, like every other industry, keeping up with new products and proper installation is vital to the growth and success of any business. As a training manager and engineer,

I see the importance of this every day.

There are many installers, sales and support staff who simply do not understand the products as well as maybe they should. It is vital to installers to understand all the parts and pieces of metal roofing and siding to ensure that projects are completed on time and with the best quality possible.

Let's face it, the products are not complicated, but there are basic principles and practices that must be understood in order for a proper and weather tight installation.

As a past installer, I also understand the importance of completing a project without the need to go back and fix or repair portions of a roof or wall that was not installed properly. It is very difficult to be successful if this happens very often.

This is key to being profitable and maintaining a positive reputation for repeat business. Many times future work is dependent on positive "word of mouth" and this only comes from previous customers having a positive experience with your company.

On the sales and support side, it is equally important to understand existing and new products. This will allow you to speak intelligently about the products and make recommendations for the proper products for any given project.

Many manufacturers of products offer training and assistance with getting you this type of knowledge. I urge you to take the time and take advantage of these programs.

I see the benefits of this training every day, and after completing one of these training sessions I am confident that you will too.

industry news

■ S-5!, MBCI DEVELOP WIND UPLIFT COURSE

"Improving Wind Uplift on Metal Roofs" is a new AIA continuing education course developed by S-5! and MBCI to help architects discover the art and science of wind control and wind uplift on metal roofs and metal structures.

Architects and firms requesting a presentation of the one-hour AIA Health, Safety and Welfare (HSW) Learning Unit course will learn about:

- Current wind uplift tests and how they are performed,
- Wind uplift ratings, wind zones and specific wind uplift requirements,
- Specific metal roof products, panel profiles and applications that perform best for wind uplift,
- Methods and accessories to improve wind uplift characteristics for metal roofs,
- Wind control value engineering techniques and reference to project-specific examples, and
- The proper selection and specification techniques of wind-rated roofs and accessories to meet uplift requirements.

The course can be scheduled as a live presentation through S-5! (s-5.com).

■ RESEARCH SHOWS RADIANT BARRIER MARKET GROWING

The radiant barrier market continues to grow, in part due to global warming, according to a third-party research firm. Persistence Market Research (PMR), based in New York City, recently published its report, "Radiant Barrier Market: Global Industry Analysis and Forecast 2016-2026".

In addition to a brief overview of how radiant barriers work, what materials are used and their various applications, the report states: "The global radiant barrier market is anticipated to be driven by many factors, out of which the main factor being global warming. The product is finding good acceptance as people use radiant barriers in their homes and buildings so that the heat is prevented from coming inside, making the place comparatively cooler. Radiant barriers are most effective in blocking summer radiant heat gain, thus saving air-cooling costs of the desired space.

Also, use of radiant barrier has been helpful for builders in getting accreditation for LEED.

The full report will be published in January and available for purchase through PMR.

■ BATTLE OVER OVERTIME CONTINUES

A battle continues over implementation of a sweeping overtime rule that was set to kick in on Dec. 1.

The rule required that employers start paying overtime to workers earning salaries of less than \$47,476 a year, affecting approximately 4.2 million American workers.

Many states and business groups filed suit to halt the action, saying the new threshold was too much of an increase from the current threshold of \$23,660, last updated in 2004. They also claimed the government overstepped its authority in stipulating that the new threshold would automatically increase every three years.

A federal judge in Texas agreed, granting a motion for a nationwide injunction just days before the new rule was set to begin. U.S. District Judge Amos Mazzant sided with 21 states and a coalition of business groups, including the U.S. Chamber of Commerce.

The Obama Administration soon followed with a notice of appeal in the Fifth U.S. Circuit Court of Appeals in New Orleans against the injunction.

It is unclear at press time how the battle might play out as the Obama administration ends and the Trump administration is poised to take office.

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Circle Reader Service #393

BY RURAL BUILDER STAFF

TFC RECEIVES EUROPEAN PATENT FOR VRT TECHNOLOGY

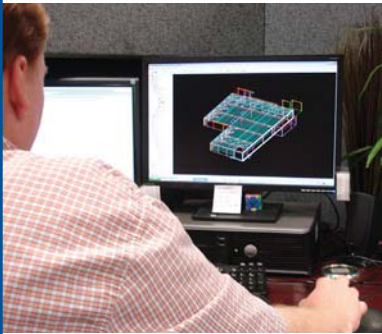
Triangle Fastener Corporation has received patent protection by the European Patent Office for its VRT technology. The patented VRT Technology significantly increases a screw's back-out resistance in lap applications, reducing the chance of leaks caused by the screw loosening from vibration, or expansion and contraction of the panel. They are available on Blazer self-drilling screws made of carbon steel and stainless steel with a variety of long-life head styles, including stainless cap, zinc cap and nylon molded.

The new European patent protection will be recognized in Austria, France, Germany, Ireland, Italy, Netherlands, Spain, UK, Belgium, Switzerland, Poland, Turkey, Czech Republic, Hungary and Luxembourg. This is in addition to the company's VRT patents in the USA, Taiwan, Australia, Mexico and Canada.

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Motivate millennials to succeed

Secrets to hiring and keeping younger workers

PEW RESEARCH REPORTS THAT ONE IN THREE MEMBERS OF THE CURRENT WORKFORCE ARE MILLENNIALS AND THAT NUMBER WILL CONTINUE TO GROW AS THE BABY BOOMER POPULATION RETIRES AND SHRINKS.

With 53.5 million millennials in the workforce—now estimated to be the largest single group of workers—the members of the 18 to 34 age group are not a joke. While there might be debates about the specific characteristics of the generation, businesses cannot afford to ignore this significant population.

“I’m ahead of them at 35, but I can relate to them,” says Matt Greiner, president and CEO of Greiner Buildings headquartered in Washington, Iowa. He is reluctant to generalize about entire groups of people because that can be offensive and even inaccurate. “The question is: do they want to work and how hard do they want to work? I think there’s times it can seem difficult to find enough people conditioned to work, which can be frustrating. I believe it is

possible, we just have to work extra hard as leaders because it is certainly challenging” says Greiner.

Greiner and other construction companies are grappling with a changing workforce and the challenges associated with hiring and retaining younger workers who might not feel the same loyalty to a workplace found among their fathers and grandfathers.

“This is hard work,” says Kevin Miller, president of Custom Structures, Inc. in Ashland, Illinois. “Everything is heavy. You’re off the ground. You’re out in the winter quite a bit. You work outside most of the time. It takes a special breed of any age group.” His company and Greiner’s have taken the lead by offering significant bonus/compensation programs to encourage and reward productivity and an exceptional work ethic.

CULTURAL CHANGES

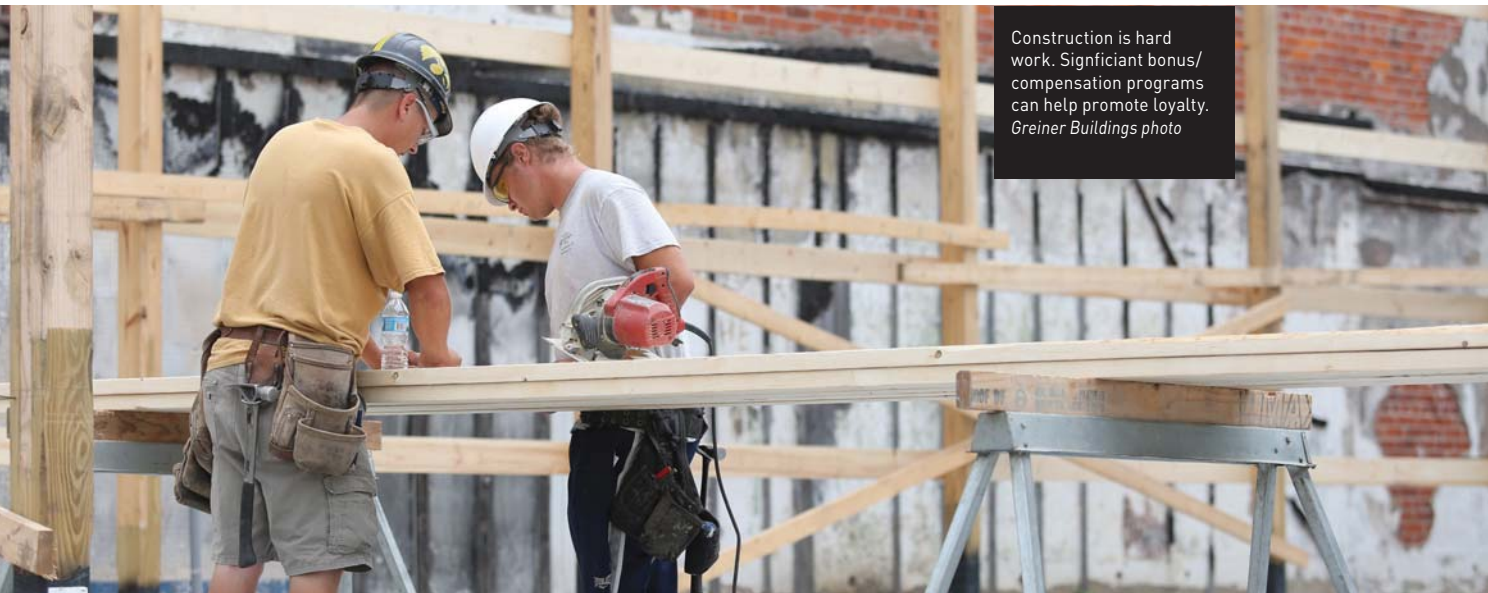
Experts are quick to point out that painting millennials with the same brush stroke is not an effective management technique and will actually hinder

results. “I find all people are individuals,” says Bruce Hodes, a business coach with CMI. “There are hardworking millennials and there are millennials who don’t want to work that hard. I think that a lot of those issues are issues with 20-30 year olds and not a ‘generation’ issue.”

Ron Piccolo, an award-winning management professor at the University of Central Florida, agrees with Hodes. “Every generation typically characterizes the next generation as lazy, entitled, and spoiled. That’s how it is and how it always has been!” But he agrees that millennials cannot be ignored because not only are they the emerging workforce, they will also be future customers, vendors and investors.

“In a nutshell, they are significant and we’d all do well to understand their work-style preferences, needs and motives,” Piccolo adds.

As a Midwest contractor, Miller says he looks to those workers with agricultural backgrounds to find employees who have grown up with manual labor, a good work ethic and a sense of respon-



Construction is hard work. Significant bonus/compensation programs can help promote loyalty. Greiner Buildings photo

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Circle Reader Service #345

BY KATHY JONAS

sibility. “If daddy made them work, it makes a big difference.”

Greiner thinks that the philosophy of “just do what I say and if you don’t like it, go somewhere else” has not worked for a long time. He prefers to treat people in such a way that they choose to push themselves in order to be a part of a successful team.

He tells the story of crew members who start at 6 a.m.—a brutal time of day for anyone. Rather than dictating that everyone arrive at 5:45 a.m. in order to be ready to work at 6, he said the culture resulted in a change in behavior. “They don’t want to let their team down,” he says.

Experimentation is something Greiner’s company believes in, and some methods may work and others may not.

Jim Terry, a crew developer and trainer with FBi Buildings in Remington, Indiana, gave some tips at the Frame Building Expo in Indianapolis. He said the key is trying

to find ways to “ignite” the younger generation, which he believes has tremendous ability and capacity to improve the industry. “I’ve got a lot of faith in millennials. A lot of people don’t agree.”

TRANSPARENCY: What you see is what your get

An Open Book Management (OBM) system is one that Greiner has been using at his company for the past three or four years. A part of a book called *The Great Game of Business* by Jack Stack, the philosophy is one of sharing financial information with employees so they can feel part of the final product. This includes talking to employees about every aspect of every job—what worked, what didn’t, what went well, whether it was over or under hours, and what needs improvement.

Published 20 years ago, this philosophy

is not new. Stack, then a young manager with Springfield Remanufacturing (SRC) in Springfield, Missouri, turned around a near-bankrupt division of International Harvester with a philosophy based on “keeping score, having fun, playing fair, providing choice, understanding the reality of numbers and having a voice.”

MONEY TALKS: Compensation/ Bonus Programs

Custom Structures, an independent contractor and a dealer for Wick Buildings, began offering employees profit sharing many years ago. In business for 24 years, it also began offering crew members a percentage of the profits for each individual job. The company makes clear how much the employee will get if the job gets done in 200 hours or 180 hours, for example. While this amounts to an extra \$6 or \$7 an hour and is a huge expense

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Social media and millennials

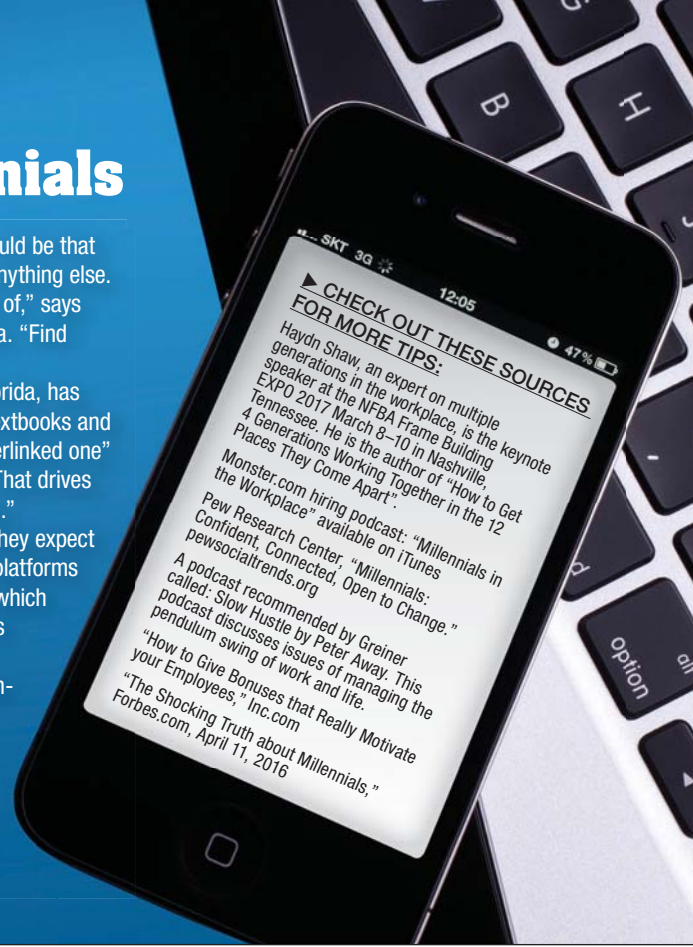
If there's one thing that differentiates millennials from other groups it could be that this generation was born into a technological world. They can't remember anything else.

"These millennials know how to communicate in ways I can only dream of," says Jim Terry, a crew developer and trainer for FBI Builidngs, Remington, Indiana. "Find ways to customize your communications to ignite them."

Ron Piccolo, a professor of management at The University of Central Florida, has been interviewed in *Forbes* magazine, *Monster.com*, *CIO.com* and several textbooks and journals about the emerging workforce. He asserts that our world is a "hyperlinked one" meaning anything we want, any piece of information, is just a click away. "That drives expectations for how business is done in every industry—even construction."

Millennials have access to information unlike any other generation and they expect instant results, according to Piccolo. Their habits of sharing information on platforms such as Facebook, Twitter and Instagram gives them immediate feedback, which they expect in their workplace, too. The time to give feedback on a project is "now" not six months from now, according to Piccolo.

Matt Greiner, president of Greiner Buildings, says some of his crew members post photos of projects they've completed on Facebook or Twitter because they're proud of the cool building they've worked on. "That's a positive thing for them and our company," he adds. But he also knows that productivity is affected if everyone is on their phone all day long. Hopefully their work culture makes rules about social media usage irrelevant and unnecessary.



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BY KATHY JONAS

for the company, Miller says it pays off in terms of equipment time on the job site, for example. He says it also reinforces doing work correctly the first time because sloppy work done quickly just to meet the goal is not compensated.

The incentive program at Greiner differs in that it is offered per quarter. At quarterly meetings, each project is discussed and they go over the hours, the bonus earnings and discuss who got what amount that quarter. "It's a pretty significant amount of money," Greiner notes, but quickly adds that it has been working in terms of productivity. "It makes employees feel like they are a part of a bigger thing."

While some compensation programs are criticized for emphasizing time rather than quality, customer satisfaction or safety, Greiner says they have found those measurements difficult to evaluate and

maintain. "Eventually the only thing that leads to more profit is coming in with as many hours below target as possible," he says, adding that those other factors have to be happening for the end result to occur.

This program, offered at Greiner for more than 10 years, reinforces positive behaviors such as increased leadership qualities among foremen, teamwork, an attention to details as well as speed, and an awareness of the importance of customer service. "It has worked very well and I cannot really imagine operating without it," says Greiner.

TIME OFF: Reboot the System

One of the criticisms lobbed at millennials is their desire for flexible hours and time off. Also thought to be extremely independent, these workers want to have more work/family balance than previous generations thought possible. Piccolo,

while encouraging flexibility in hours when possible, understands the difficulty in the highly-competitive construction industry with constant demands from clients and thin margins. "Perhaps there are other ways for employees to experience autonomy or self-direction, such as new job assignments, or some choice on the days where work is done or scheduled," he says.

Terry of FBi Buildings suggests getting millennials involved with setting up their work schedule and find out the benefits that mean the most to them. In that way, they'll find more value in the organization.

Shawn Redlinger, of Greiner, says they have found it important to allow crews time off to reset and take time with family. He acknowledges that coming to work in the dark, going home in the dark, and working day in and day out

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Circle Reader Service #463

doing manual labor can be a grind and takes a toll on relationships. "Wives are working as well and often have to pick up the slack when the husband is not home," Redlinger says. While many millennials have experienced divorce statistics firsthand with their baby boomer parents, they do not want that for themselves or their children. "We want to get back to a good, healthy family life," Greiner says. "That is good for business, although it might be a pain at times."

ATTENDING TRADE SHOWS

The value of crew members attending a trade show was mentioned across the board as an important way to help employees see the industry from a different perspective as well as giving crew members a chance to get out of the daily schedule. Take David Keim, a 27-year-old foreman at Quality Structures in Haven,

Kansas. He attended the Frame Building Expo in Louisville a few years ago and says he had a great time visiting the different booths and meeting new people. "It was fun," Keim says. "I enjoyed seeing all the different things people are doing."

While companies can't take all employees every year, taking a few each year provides a way to promote networking and a way to get crew members off the job site for a working vacation, according to Redlinger, who adds that these trips are motivational for those who attend.

THE MORE THINGS CHANGE....

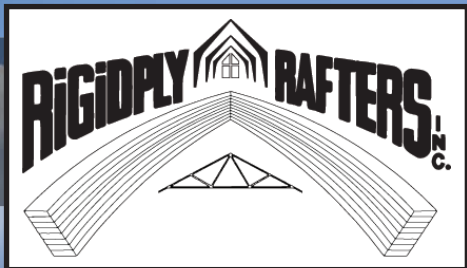
While millennials crave mentoring, they do not want to be lectured or given advice. "They want to be their own people. They want to make their own decisions," said Terry of FBI.

So the question remains: how best

to motivate?

"Motivation and morale go hand in hand. Motivation is that inner drive that makes an individual strive for one thing rather than another." That quote came from an article in *Farm Building News* in November 1981, entitled "Today people want more than jobs."

While the world and the industry have changed tremendously in the past 26 years, figuring out how to manage an efficient workplace seems to be a challenge that has remained constant, regardless of the generation discussed. "I believe this issue is one of the largest that we as post-frame companies face today," Greiner says. "I don't really see it getting any easier any time soon. Hopefully some of the things the National Frame Building Association and its partners are doing will address the issue and bring about solutions." **RB**



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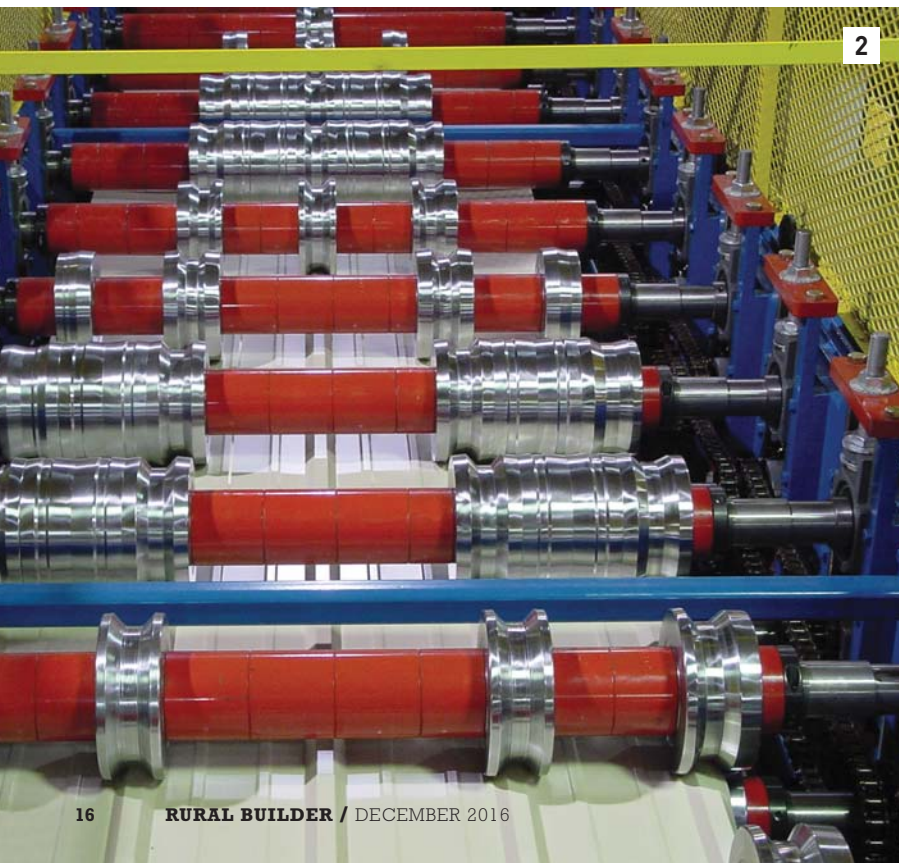
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2

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product profile

BY RURAL BUILDER STAFF

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6. HERSHEY'S METAL MEISTER / CIRCLE 110

Hershey's Metal Meister presents the Variobend USA folding machine; a unique hybrid of European and American design and manufacturing that gives you the advantages of both. Assembled from the ground up with an ever-increasing percentage of components being made in central Illinois eliminates waiting for foreign parts and service. A unique 280L work envelope, extremely heavy-duty construction, and lightning-fast servo drive technology clearly makes the Variobend an unrivaled leader in productivity.

7. ROLL FORMER CORPORATION / CIRCLE 111

Roll Former Corporation now offers the Ag Panel Perforator for ventilation needed on your 3/4 inch x 5-rib wide ag panels. It comes complete with four sets of perf dies for this 38-inch wide popular panel. It can also perforate "flat stock" so you can post-process the rest of your ventilated trim products. It can handle 26-29 gauge ag panels or 24 gauge max flat stock.



new products



CLAMP-ON BUCKET MOUNT SNOW PUSHERS

Worksaver Inc. offers the new bucket mount 36-Series Snow Pushers, designed to quickly connect to a wide choice of buckets on tractor loaders. These clamp-on snow pushers attach in minutes as they slide over and under the bucket's cutting edge and are secured in place with two chains and turnbuckle assemblies. The bucket mount is made with 3 x 3 x 1/4 inch tubing, with the lower tube extending 16 inches under the bucket and the upper tube extending 12 inches into the bucket.

The clamp-on 36-Series Snow Pushers are available in widths of 8 or 10 feet and are offered with 1.5 x 8 inch reversible ultra-rubber cutting edge. The rubber edge allows for use on asphalt as well as other surface types like decorative driveways, cobblestone or pavers. The pusher side plates of 36 x 36 x 5/16 inch material help to retain snow as it's pushed forward, without leaving a windrow.

For more information circle 115.



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One major tip for prolonging the life of metal panel

BEWARE OF IMPACT TOOLS!

NO OTHER TOOLS STRIKE FEAR IN THE HEARTS OF METAL PANEL AND FASTENER MANUFACTURERS ALIKE THAN IMPACT DRIVERS AND IMPACT DRILLS; YET, NO OTHER SCREW-DRIVING TOOLS EQUALLY DELIGHT INSTALLERS.

And therein lays a monumental problem. Impact drivers and drills are just too powerful for the panel that the small-but-mighty screw is designed to hold and protect, and yet they are so appealingly handy, inexpensive and powerful.

The issue of over-driving screws with impact tools is nothing new. In 2013, it was becoming such a problem that the Metal Construction Association (MCA) released a technical paper warning installers against the use of them for the installation of metal panel. *Rural Builder* published the information soon after, and the MCA continued its drumbeat against the practice. Still, the problem persists. Why?

Peter Graves, vice president of engineering and technical services at Sealrite Building Fasteners, says it's easy to figure out: the information just isn't getting to the right people. The technical papers and magazine articles are being read by people sitting at desks; "it doesn't make it to the installers who are actually in the field using the screw guns," Graves said. "They have not been instructed how to install a screw [into metal panel] properly, so they just drive them into the panel, into



Screws that were driven too tightly into metal panel with impact tools is clearly evident in this photo.

the substrate, and then hit it a couple of more times 'because if tight's good, tighter must be better'."

David Webster, manager of marketing at Leland Industries, said too many builders are focused on how fast they can get a job done and not enough on how a particular tool might be negatively impacting the final result. "From what I have observed, the builder is looking at speed: get onto and off the job, get your money and move on. I don't believe the average builder gives the tools much thought."

And it's easy to understand why: The damage inflicted most likely won't be visible for months or years to come. A good builder can turn rogue without even knowing it.

WHAT DAMAGE DOES IT CAUSE?

The damage is to the highly developed paints and coatings that panel and fastener manufacturers have been developing for decades to help metal roofs and sidings stay affixed and looking great, and that consumers crave in increasing numbers. If

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torqued too tightly, the paints and coatings are compromised, creating dimples and cracks where water collects and allows rust to develop and weaken fasteners.

“Driving relatively small diameter fasteners with a hammering and turning action of an impact driver can put undue stress on the fastener (a twisting motion),” Webster said. In the case of post frame, he noted, “driving into a hard piece of lumber or knot may fracture (or crack) the screw without the installer knowing what has occurred.”

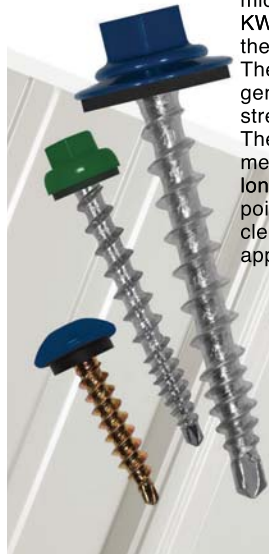
That hammering can cause additional damage to the wood substrate. “Driving the screw into the wood with an impact driver may break up the fibers of the wood...and may damage the integrity of the wood substrate.”

What has already been broken or compromised is now subject to moisture—the mortal enemy of metal. “What corrodes the steel is moisture,” Graves explained. “The coatings are applied to prevent the moisture from reaching the screw. Impact drivers run at 2800 revolutions per minute and once they start to feel pressure, they start impacting in a rotational fashion at 3200 impacts per minute. That creates little microscopic cracks in the coating that you can’t see with the naked eye. It cracks the coating and the plating below and allows the moisture to infiltrate to the steel and start the deterioration process. Then rust starts eating up from underneath, surrounds it, the powder coating starts to swell and eventually you’ve got a rusted-off screw...”

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Later on, a windstorm comes along, pops the screw and the installer wonders why the screw failed. Or, the panel rusts prematurely on the customer’s beautiful house.

“Red rust on a white panel is not what the owner wants to see and it does not help the contractor’s reputation,” said Webster.

THE RIGHT TOOLS FOR THE RIGHT PROJECTS

Impact tools are not likely to go away, and they shouldn’t have to. You just have to learn to use them when and where you need them, and leave them alone when

The technical details

Peter Graves, with Sealrite Building Fasteners, explains the science behind the problem of impact tools for installing metal, noting that the torque needed to set a screw into yellow pine is just 35-50 inch-pounds. An impact driver generates 1400 inch-pounds (or 116 foot-pounds). By comparison, a lug nut on a car is specified at 75-110 foot-pounds of torque. "When you're putting a 1/4 inch or 5/8 inch screw in a metal building with something you could put the lug nuts on your car with, it's overkill trying to install it with something that powerful," Graves said.

An impact drill rotates at 2800 rpm, which is 46.67 revolutions per second (2800 rpm / 60 seconds per minute = 46.67 revolutions per second). At that speed, a screw with eight threads per inch is advancing at a rate of 5.8 inches per second (46.67 revolutions per second / 8 tpi = 5.8 inches per second). "If the screw is 1-1/2 inches long, after the drill point penetrates the panel and engages in the substrate below, it will install in less than 1/3 of a second," Graves said, adding, "That means they have less than 1/3 of a second to let off the trigger. It is expecting a lot from an installer to maintain that sort of reaction time all day, every day. Obviously there are factors that can slow this, but field observations show installers run the screw until the washer compresses on the panel, then give it another pull on the trigger to tighten them a little more, often resulting in overtightening or stripping out the wood substrate."



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you need far less torque. Metal panel is one of those places.

The consequences may not be immediately visible, yet Webster said the money saved now by getting on and off the job site and on to the next one fast can be wiped out in an instant. "Maybe down the line there's headaches for the contractor with a reputation to uphold. Possible damaged panels, broken screws, paint or powder coating scratched or marred during installation," he said, resulting in the dreaded callback. Inexperienced crews with marginal training may not understand the value of performing the work in a manner that will please the customer and the contractor, so training is a must. "Once the young installer discovers impact drivers, it may be too late for proper instruction to change his habits," said Webster.

Both Graves and Webster favor specialty screw guns with depth setting nosepieces or torque adjustable nosepieces that prevent over-driving and scratching.

There is nothing currently on the market that fills this gap in the line of impact tools. In fact, that would be a bit counterproductive since impact tools are intentionally made for high-torque impact.

There is a screw supplier now claiming to have a screw that cannot be damaged by the use of impact tools, but Webster is skeptical. "I don't believe it is possible to back up that claim," he said.

So, with no less-than-impactful impact tool currently in existence, metal and fastener companies try to protect their own reputations by advocating for the less powerful screw gun, and lots of notices that go unnoticed.

Screw suppliers routinely warn against using impact drivers for metal, and some may void warranties if a damage claim arises. "Sending representatives to inspect problem jobs is expensive and time consuming and the industry that we all depend on should not be subjected to a black eye because of the actions of the installer or a less-than-reputable contractor," Webster noted.

Sealtite also provides ample notice, warning against the use of impact tools for metal installation. "We do have that sort of verbiage all throughout our catalog for proper installation: "the use of impact drivers are not recommended for powder-coated or any wet-painted fastener." I know we have that printed at least 20 times in our catalog, big articles warning don't use impact drivers, colored diagrams showing a better way to go, and counter-top cutouts. We distribute those. It's not just us, it's industry wide [fastener companies are] out there saying the same thing, but I don't think it gets to the installers. Until the contractors forbid the use of impact drivers on their job site I don't know that the problem will go away." **RB**

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Know your tools

There are three types of tools that are typically used to drive screws to attach metal roofing or sidewall panels on structures. Only one is industry-preferred. All three types of tools are comparable in price. Leland Industries provides this list of advantages of disadvantages of each.

1. Specialty Screw guns: The industry-preferred tool for installing metal panel. These are conventional 110 volt corded tools often requiring extension cords to reach from the power source to the work site. They typically feature a torque-controlled, depth-setting feature or a simple nosepiece designed to release the screw as it seats itself to a predetermined depth (in essence, flush with the panel), with no overdrive to dimple the panel, and to eliminate screws not seating flush with the panel. They are designed to drive small diameter screws into steel or wood structures (Note: post-frame screws are usually driven with a tool operating between 1,200 and 1,800 RPM). This is the original screwdriver design for driving light-duty fasteners. Introduced in about 1964, it is still the preferred tool by many. **Advantage:** once the depth has been set, anyone can operate the tool and obtain perfectly-seated fasteners each time. **Disadvantage:** extension cords are often required.

2. Cordless Drill Drivers/Battery Powered Drills: the user can insert a drive socket into the chuck used to hold the drill bit and then employ the tool to drive small diameter screws. **Advantage:** Portability, no power cord, no need to be near a power source. **Disadvantage:** The operator has to release the trigger switch at just the right time to prevent over-driving and damaging the panels or, under-driving and having to go back to fully seat the fastener flush to the work surface. Skilled operators claim to be able to seat the fastener correctly every time with no depth-setting device, but with no depth-setting device, in the hands of a new employee, this can cause damage to the panels. Painted panels may be scratched and dented or screws may be left standing proud of the panel surface

3. Impact Drivers: The most recent development in tools to drive small diameter fasteners. They were originally designed for use with hex head fasteners or to facilitate driving steel nuts onto machine screws using a hit and turn motion. With each revolution the driver bit pulses or is shocked (hit) many times as the tool turns at speeds that may be higher than the 1,200-1,800 RPM recommended for driving post-frame wood screws (metal panel to wood structure). **Advantage:** Impact drivers are high torque, high-speed tools. This type of tool is commonly used by mechanics when loosening or installing small fasteners like lug nuts. Multiple impacts and high torque for removing small diameter parts that may have been in rusted place for years is also very useful. **Disadvantages:** Use of these tools, especially in inexperienced hands can cause damaged panels, broken screws, and paint or powder coating can be scratched or marred during installation.



Shown: Simpson Strong-Tie Quik Drive auto-feed screw driving system and PROHX14 attachment on a Makita drill.

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Haydn Shaw, Keynote Speaker



Wednesday, March 8, 10:30 am

Don't miss Haydn Shaw, a noted expert on leadership, change, multiple generations in the workforce, and ways to turn around negative employees and work environments. He'll take you from hilarity to deep reflection, combining rich content with use-tomorrow tools that focus on how best to reach millennials.

Second Annual Silent Auction

The Silent Auction returns, after its highly successful inauguration in 2016. This year's auction moves to the show floor and promises to be even larger, with highly desirable items that are sure to invite energetic bidding wars! Proceeds benefit the Greater Nashville Habitat for Humanity and NFBA's safety education program. Be on the lookout for more information as the Expo nears.



General Information

Hotel

Gaylord Opryland Resort and Convention Center
2800 Opryland Drive
Nashville, TN 37214
Phone: 615.889.1000

Reservations: 877.382.7299; for more information on hotel reservations, visit www.nfba.org.

Rate: \$194 single/double, \$18 daily resort fee plus applicable taxes

Reservation Deadline: February 6, 2017

Don't wait until the deadline—reserve your hotel room now. Reservations received after the cutoff date will be filled on the basis of space and rate availability. Additional information on air and ground transportation, parking, and local attractions is available at www.nfba.org.

Guest Registration

Spouses, non-industry-related guests, and children under age 17 who are registered as guests will be admitted only to the trade-show floor; they will not be admitted to educational sessions. See Box D on the registration form.

Accredited Post-Frame Builder (APFB) Program



The APFB program recognizes NFBA member companies that demonstrate their commitment to continuing education, safety, and business integrity in the post-frame industry. Accredited builders are recognized in national industry publications and website directories. Building owners take a builder's industry-related accreditation into consideration when choosing a builder. NFBA Accredited Post-Frame Builders may market their APFB status in their bid material. In a 2012 NFBA membership survey, 86% of accredited member respondents agreed that the APFB program has provided their organization with new business opportunities. The Frame Building Expo offers the best opportunity of the year for your company to earn NFBA post-frame builder accreditation credits toward an APFB designation. For more information, visit www.nfba.org/accreditation.

About NFBA

For more than 45 years, the National Frame Building Association (NFBA) has represented the interests of builders, manufacturers, suppliers, distributors, and code and design professionals serving the U.S. post-frame construction industry. NFBA's mission is to advance the industry by supporting members in their efforts to develop their businesses and expand the post-frame market. The association is the nation's primary source of post-frame building resources, education, research and development, news, and marketing. NFBA hosts the annual Frame Building Expo, the nation's largest networking event for post-frame construction professionals. Learn more at www.nfba.org.

Thanks to Our 2017 Frame Building Expo Sponsors

Platinum



Gold



Bronze



Christians in Construction Supporters



Schedule: Breakout Sessions by Track

The **Business and Marketing** track is for business owners, presidents, CEOs, operations managers, safety and compliance managers, code officials, and industry professionals interested in education on leadership, business operations, and business development strategy. The track is also for salespeople and marketers, website designers, administrators, and managers interested in learning new strategies, techniques, and tips and increasing their overall sales and marketing knowledge relevant to the post-frame industry.

The **Construction Training** track is for builders and crew members, trainers, site supervisors, and trade students.

The **Technical and Product Knowledge** track is for builders and crew members, site supervisors, designers, architects, engineers, suppliers, building-material dealers, trade students, code officials, and industry professionals interested in learning the latest technical information on building practices and applications.

The **Hands-On Training** track is for attendees wishing to gain in-depth knowledge and practical training on selected topics.

The **Expo LIVE!** sessions are for attendees seeking tips and insights directly from product experts in a brief time frame.

Time	Business and Marketing	Construction Training	Technical and Product Knowledge	Hands-On Training	Expo LIVE!
Wednesday, March 8					
8–9 am	Business Transformation <i>Blake Atkins</i>	Obligation to Operate All Aspects of the Business as a “Reasonably Responsible Employer” <i>Gary Auman</i>	Residential Post Frame and the International Residential Building Code <i>Tim Royer, PE</i>		
9:15–10:15 am	Staff Retention in Construction Employment <i>Charlie Kimmel</i>	How to Get Your Projects and Business into the Media and Publications <i>Sharon Thatcher, Gary Reichert</i>	Overview of the 2015 <i>Post-Frame Building Design Manual</i> <i>Harvey Manbeck, PhD PE</i>		
1–5 pm				Fall Protection <i>Capital Safety</i>	
1:15–1:30 pm					Mortarless Stone Veneer <i>Boral</i>
1:45–2 pm					Topic TBA <i>Leland Industries</i>
2:30–2 :45 pm					Folding Machines <i>Hershey's Metal Meister, LLC</i>
3–3:15 pm					Processes for Enhanced Metal Panel Performance <i>McElroy Metal</i>

Time	Business and Marketing	Construction Training	Technical and Product Knowledge	Hands-On Training	Expo LIVE!
Thursday, March 9					
8–9 am	Cash Is King: How to Royally Improve Your Cash Flow <i>K. P. Persaud</i>	Long-Span Trusses: Permanent Bracing and Risk Management <i>Kirk Grundahl, PE</i>	Proper End Lapping of Aluminum Panels and Long Runs of Steel <i>Mark Mullins</i>		
9:15–10:15 am	How Frame Builders Can Avoid Lawsuits and Save Thousands in Taxes <i>Larry Oxenham</i>	OSHA Standards Affecting the Post-Frame Industry <i>Gary Auman</i>	Does My Building Need a Ventilation System? <i>Joe Zulovich, PhD PE</i>		
10:30–11:30 am	Successful Business Expansion <i>Scott Douglas</i>	Job-Site Safety: Personal Protective Equipment and Technology Basics <i>Mark Werbeckes, Woody Nieman</i>	Use of Phase Change Materials in Post-Frame Construction <i>Daniel Hindman, PhD PE; Dwayne Borkholder</i>		
1:30–5:30 pm				Fall Protection <i>Capital Safety</i>	
1:45–2 pm					Topic TBA <i>Leland Industries</i>
2–3 pm					Shear-X for Building Strength <i>Garwood Manufacturing</i>
2:30–2:45 pm					Folding Machines <i>Hershey's Metal Meister, LLC</i>
3–3:15 pm					Processes for Enhanced Metal Panel Performance <i>McElroy Metal</i>
3:15–3:30 pm					Mortarless Stone Veneer <i>Boral</i>
Friday, March 10					
8–9 am	Creating High-Performance Work Cultures, Part 1 <i>Bruce Hodes</i>	Efficiency, Workmanship, and Safety in Post-Frame Construction, Part 1 <i>Tom Greiner</i>	Use of Snow-Retention Devices: Science or Science Fiction? Phacts or Phobias? Part 1 <i>Rob Haddock, Tim Martin</i>		
9:45–10:45 am	Creating High-Performance Work Cultures, Part 2 <i>Bruce Hodes</i>	Efficiency, Workmanship, and Safety in Post-Frame Construction, Part 2 <i>Tom Greiner</i>	Use of Snow-Retention Devices: Science or Science Fiction? Phacts or Phobias? Part 2 <i>Rob Haddock, Tim Martin</i>		

Schedule

Tuesday, March 7

Noon–5 pm

Registration

Wednesday, March 8

7 am–5 pm

Registration

7–8 am

Coffee

8–9 am

Breakout Sessions

BUSINESS AND MARKETING

Business Transformation

Blake Atkins

After becoming company president of Marco Industries in 2014, Blake Atkins asked himself, “How do I build on our company’s success as a high-quality product supplier; while simultaneously increasing sales and growing the company in the dynamic and highly competitive metal building industry?” Atkins will help managers and leaders considering business transformation to define their value proposition, develop a business strategy, identify and quantify customers’ viewpoints, learn how to motivate and develop people, and understand the leader’s role in company transformation and change management.

CONSTRUCTION TRAINING

Obligation to Operate All Aspects of the Business as a “Reasonably Responsible Employer”

Gary Auman

The concept of the reasonably responsible employer is a thread that runs through every Occupational Safety and Health Administration citation. Learn about your responsibility as an employer: what you should be doing to ensure that your employees are working safely; whether the safety program you have in place is complete, applies to all foreseeable and unforeseeable hazards on the work site, and is understood by your employees; and what precautions are necessary to ensure compliance.

“This was my first NFBA Expo, and I was impressed. The rooms were easy to find, and the speakers were easy to understand. I found all of them very informative and picked up some great tips and ideas. I also found some great products on the showroom floor that I hope we can incorporate into our company.”

TECHNICAL AND PRODUCT KNOWLEDGE

Residential Post Frame and the International Residential Building Code

Tim Royer, PE

Post-frame construction is a versatile building style with many uses, including the home. Most residential buildings built in the United States must comply with the International Residential Building Code (IRC) or some version of that code. Because this code is prescriptive (telling you how to build your house), it doesn’t contain all aspects involving post-frame construction. The presentation will review the requirements of the IRC and its implications for the design and construction of post-frame houses and consider two case studies of post-frame houses.

9–9:15 am

Break

9:15–10:15 am

Breakout Sessions

BUSINESS AND MARKETING

Staff Retention in Construction Employment

Charlie Kimmel

The Kimmel & Associates staff has learned how companies retain key employees and what the top candidates are looking for in an organization. This presentation shares survey results on the top 10 reasons employees leave a company and provides solutions on how to increase retention rates innovatively, effectively, and at a low cost.

CONSTRUCTION TRAINING

How to Get Your Projects and Business into the Media and Publications

Sharon Thatcher and Gary Reichert

Getting your business recognized and respected is a major key to success. Make the process simpler and more effective by learning what the pros really look for in pictures and verbal descriptions. Ideas for increasing your local and national media exposure will be explored.

—Joe Finding, D. C. Curry Lumber & Pole Building Co.

“It was a great show packed with great seminars and vendors ... something for everyone!”

—Leon Leinbach, Keystone Construction, LLC

TECHNICAL AND PRODUCT KNOWLEDGE

Overview of the *Post-Frame Building Design Manual*

Harvey Manbeck, PhD PE

Get an in-depth review of the contents and key structural design provisions of the second edition of the *Post-Frame Building Design Manual (PFBDM)*. The second edition, published in March 2015, includes many significant updates to the first edition. The session begins with an overview of the manual's contents and then discusses the design provisions, with commentary and examples throughout. It will also discuss the second edition's incorporation of both allowable strength design and load resistance factor design methodologies. The key *PFBDM* provisions and design aids for shallow post and pier foundation design, diaphragm design of post-frame structural systems, and wood sidewall post design will also be covered.

10:15–10:30 am

Break

10:30 am–12:15 pm

General Session with Keynote Presentation

Framing the Future of Your Workforce: Leading the Four Generations Through Change and Knowing the 12 Places They Come Apart

Haydn Shaw



Haydn Shaw, a noted expert on leadership, change, multiple generations in the workforce, and turning around negative employees and work environments, will take you from hilarity to deep reflection, combining rich content with use-tomorrow tools focusing on how best to reach millennials.

12:30–5:30 pm

Trade Show Open

Concessions are available on the trade-show floor.

1–5 pm

HANDS-ON TRAINING

Fall Protection

Capital Safety

This informative course focuses on the best practices in fall protection for employees working at height. Learn about relevant legislation and the components of a fall protection system—body support, anchorages, guard rails, connectors, and a rescue plan. Upon successful completion of the course, attendees will receive a certificate stating that they have met or exceeded the requirements of the Occupational Safety and Health Administration, American National Standards Institute, and CSA (formerly Canadian Standards Association) for an authorized person. *(This course is also offered on Thursday, 1:30–5:30 pm.)*

1:15–1:30 pm

EXPO LIVE!

Mortarless Stone Veneer

Boral

Boral Versetta Stone is a mortarless stone veneer with a unique design that allows carpenters and contractors to recreate the beauty of traditional stone masonry using screws or nails. Versetta Stone offers the detail of traditional stone masonry with a modern installation, providing quality, speed, and selection. *(This session is also offered on Thursday, 3:15–3:30 pm.)*

1:45–2 pm

EXPO LIVE!

Topic TBA

Leland Industries

This session is also offered on Thursday, 1:45–2 pm.

2:30–2:45 pm

EXPO LIVE!

Folding Machines

Hershey's Metal Meister, LLC

See a demonstration of USA Variobend folding machines and their whisper-quiet, lightning-fast second-generation Servo Drive Technology, which offers unrivaled productivity while consuming less energy. *(This session is also offered on Thursday, 2:30–2:45 pm.)*

3–3:15 pm

EXPO LIVE!

Processes for Enhanced Metal Panel Performance

McElroy Metal

McElroy Metal's Warm-Forming and Edge-Coating processes on metal wall and roofing panels improve field performance. Warm-Forming prevents microfracturing of the substrate and paint coating and blocks moisture from creating rust on the raw steel. Edge-Coating applies a clear-coat rust inhibitor to the cut edge of panels, reducing the risk of corrosion. *(This session is also offered on Thursday, 3–3:15 pm.)*

5–5:30 pm

Prize Drawing in Exhibit Hall

8 pm–Midnight

Plyco Reception

PLYCO

Enjoy entertainment, food, and beverages, compliments of the Plyco Corporation, a leading supplier of products to the post-frame, metal-clad building, and commercial construction industries.

Thursday, March 9

7 am–5 pm

Registration

7–8 am

Coffee

8–9 am

Breakout Sessions

BUSINESS AND MARKETING

Cash Is King: How to Royally Improve Your Cash Flow

K. P. Persaud

Making a respectable profit is always important, but having access to cash is even more important. If you need cash to spend but your checking account is empty, making a profit will not help. Learn how to manage your cash flow. Get tips on balancing payables against receivables, turning your inventory, getting aggressive on payment terms, using your customers' money, making wiser investments on equipment, and properly handling debt load.

CONSTRUCTION TRAINING

Long-Span Trusses: Permanent Bracing and Risk Management

Kirk Grundahl, PE

Kirk Grundahl reviews the purpose of permanent bracing, discusses some collaborative projects that help clarify the issues involved, outlines extra procedures necessary for installing trusses 60 feet or greater in length, and provides tips for the safe and efficient handling and installing of long-span trusses. He also covers the Building Components Safety Information (BCSI)-B3 Summary Sheet on permanent restraint and bracing of chords and web members, which serves as a valuable risk management tool.

TECHNICAL AND PRODUCT KNOWLEDGE

Proper End Lapping of Aluminum Panels and Long Runs of Steel

Mark Mullins

Learn about the proper method for end lapping exposed fastener panels to prevent overslotting at fastener locations. When panels slot larger than the seal provided by the washer, water infiltration is allowed. We will discuss the cause of this slotting and how to calculate the expansion and contraction of the panels. The presentation will also discuss the proper sizing and installation of panels to prevent overslotting, with a focus on end laps.

9–9:15 am

Break

9:15–10:15 am

Breakout Sessions

BUSINESS AND MARKETING

How Frame Builders Can Avoid Lawsuits and Save Thousands in Taxes

Larry Oxenham

Learn the strategies the nation's top law firms use to save their clients millions of dollars each year. This presentation provides solutions to three major problems: lawsuits, taxes, and probate. Learn about ways to make yourself unattractive to a plaintiff attorney (and thus avoid a lawsuit), five tax reduction strategies often missed by professionals and their advisors, and tools you can use to pass assets to your heirs tax free.

CONSTRUCTION TRAINING

OSHA Standards Affecting the Post-Frame Industry

Gary Auman

Everyone wants to operate in a safe workplace that is compliant with the standards of the Occupational Safety and Health Administration. This session provides valuable insights into standards that will affect the way you design your company's safety program and address the hazards that may confront your employees.

TECHNICAL AND PRODUCT KNOWLEDGE

Does My Building Need a Ventilation System?

Joe Zulovich, PhD PE

As more post-frame projects in the small commercial market are being completed, designers and builders need to understand the use of ventilation for moisture control. Building construction details and envelope insulation with vapor retarders, along with the heating, ventilating, and air conditioning system, work together to provide the desired inside conditions while protecting the building integrity. A method for estimating the ventilation rate needed to control moisture and provide for good indoor air quality for a building will be presented, along with information on simple ventilation systems and ventilation system designs.

10:15–10:30 am

Break

10:30–11:30 am

Breakout Sessions

BUSINESS AND MARKETING

Successful Business Expansion

Scott Douglas

This presentation addresses some key considerations for business expansion: expanding the width (geographic footprint) of the business, expanding the depth (range of operation) of the business, and managing the dynamics of business expansion related to both finances and employees. A question-and-answer period will end the session.

CONSTRUCTION TRAINING

Job-Site Safety: Personal Protective Equipment and Technology Basics

Mark Werbeckes and Woody Nieman

Learn about the proper personal protective equipment needed on every post-frame building job site, and gain insight into the importance of communication and technology in locating and eliminating hazards and preventing accidents on the job site. Whatever your level of experience, this session will offer ideas you can use on your job sites to help keep your crew and your customer safe and make your jobs more profitable.

TECHNICAL AND PRODUCT KNOWLEDGE

Use of Phase Change Materials in Post-Frame Construction

Daniel Hindman, PhD PE, and Dwayne Borkholder

Phase change materials (PCMs) are a new insulation product that can provide advantages in the thermal envelope for post-frame buildings. Unlike traditional insulation products that have relatively constant thermal properties, PCMs can be designed to melt or solidify, causing changes in thermal properties and making them appropriate for various heating and cooling situations. The presentation covers the building physics of PCMs, available products, and examples of PCM use in post-frame buildings.

11:30–11:45 am

Break

11:45 am–1:15 pm

NFBA Awards Luncheon

Everyone is invited to this session recognizing recipients of the NFBA Building of the Year Awards, the Crew Foreman of the Year Award, the *Rural Builder* Hall of Fame Award, and the Bernon G. Perkins Post-Frame Industry Award. NFBA will also recognize companies who have demonstrated their commitment to a safe workforce by participating in the Gail Miller Recognition Program for Excellence in Safety. (An additional fee and advance registration are required. See Box E on the registration form.)

1:30–5:30 pm

Trade Show Open

Concessions are available on the trade-show floor.

HANDS-ON TRAINING

Fall Protection

Capital Safety

See the description of the session on Wednesday, 1–5 pm.

1:45–2 pm

EXPO LIVE!

Topic TBA

Leland Industries

This session is also offered on Wednesday, 1:45–2 pm.

2–3 pm

EXPO LIVE!

Shear-X for Building Strength

Garwood Manufacturing Co.

This exciting new building technology provides superior strength against seismic and lateral wind loads and allows the use of continuous ridge vents in blocked diaphragms.

2:30–2:45 pm

EXPO LIVE!

Folding Machines

Hershey's Metal Meister, LLC

See the description of the session on Wednesday, 2:30–2:45 pm.

3–3:15 pm

EXPO LIVE!

Processes for Enhanced Metal Panel Performance

McElroy Metal

See the description of the session on Wednesday, 3–3:15 pm.

3:15–3:30 pm

EXPO LIVE!

Mortarless Stone Veneer

Boral

See the description of the session on Wednesday, 1:15–1:30 pm.

4:15–5:15 pm

Screw-Driving Competition in Exhibit Hall



Sign up for this action-packed event at the Atlas Bolt & Screw Co. booth for a chance to win some great prizes and *fasten* your standing as the fastest in the land

5:15–5:30 pm

Prize Drawing in Exhibit Hall

5:30–7 pm

Christians in Construction Reception

This reception is supported by Borkholder Buildings and Supply, Central States Manufacturing, FBI Buildings, McElroy Metal, Ohio Timberland Products, Perma-Column Inc., Quality Structures Inc., and Timber Tech Engineering Inc. (Advance registration is required. See Box E on the registration form.)

Friday, March 10

7:30–11:30 am

Registration

7:30–8:30 am

Coffee

8–9 am

Breakout Sessions

BUSINESS AND MARKETING

Creating High-Performance Work Cultures, Part 1

Bruce Hodes

It is possible to expand and develop powerful organizations in challenging times, but the effort requires determination and techniques that work. Create a performance-oriented company culture, and you will not only succeed but truly make a difference in the lives of your customers and employees. This interactive workshop introduces tools and techniques for creating outstanding business results. Part 1 of a two-part session.

CONSTRUCTION TRAINING

Efficiency, Workmanship, and Safety in Post-Frame Construction, Part 1

Tom Greiner

Post-frame construction companies seek to erect buildings efficiently but without sacrificing the quality of the workmanship or the safety of the crew. Greiner will draw on his company's field test of scissor lifts to outline methods for accomplishing that goal within the boundaries of Occupational Safety and Health Administration regulations. He will also cover the variety of products and equipment available. Part 1 of a two-part session.

TECHNICAL AND PRODUCT KNOWLEDGE

Use of Snow-Retention Devices: Science or Science Fiction? Phacts or Phobias? Part 1

Rob Haddock and Tim Martin

This session offers a step-by-step, commonsense approach to understanding how snow acts on roofs, debunking misconceptions. Logical concepts and easy-to-follow instructions will promote better understanding of the control of snow and ice on rooftops with manufactured products. Haddock has traveled the globe researching northern roof design, snow effects, and snow-retention systems and written a number of technical articles and industry-standards documents on the subject. Using his 10 years observing proper and improper application of snow-retention devices, Martin will discuss examples of common mistakes and best practices. Part 1 of a two-part session.

8:30 am–12:30 pm

Trade Show Open

9–9:45 am

Break

9:30–10:30 am

Shearing Competition in Exhibit Hall



Do you have the accuracy and speed to become the shearing champ and take home the trophy—an actual shear? A second shear will be awarded in a drawing from the names of those who sign up in advance and compete. Sign up *on or before February 8, 2017*, by e-mailing Tom Calvin at tcalvin@nfba.org.

9:45–10:45 am

Breakout Sessions

BUSINESS AND MARKETING

Creating High-Performance Work Cultures, Part 2

Bruce Hodes

See the descriptions of the 8–9 am Breakout Sessions on Friday. Part 2 of a two-part session.

CONSTRUCTION TRAINING

Efficiency, Workmanship, and Safety in Post-Frame Construction, Part 2

Tom Greiner

See the descriptions of the 8–9 am Breakout Sessions on Friday. Part 2 of a two-part session.

TECHNICAL AND PRODUCT KNOWLEDGE

Use of Snow-Retention Devices: Science or Science Fiction? Phacts or Phobias? Part 2

Rob Haddock and Tim Martin

See the descriptions of the 8–9 am Breakout Sessions on Friday. Part 2 of a two-part session.

11 am–Noon

Nail-Pounding Competition in Exhibit Hall



Register at the Maze Nails booth to hammer your way into the record books!

Noon–12:30 pm

Grand-Prize Drawing in Exhibit Hall

Don't miss your chance to win two complimentary full registrations to the 2018 Expo, along with one complimentary hotel room for up to 3 nights at the 2018 headquarters hotel and a \$250 cash prize, courtesy of NFBA. In addition, our exhibitors will be raffling off many other excellent prizes..

“I thought the Frame Building Expo was very well put together and well attended. I thoroughly enjoyed the trade show and the evening entertainment. A big thanks to the management and staff for all their hard work!”

—Rich Paul, Paul Harvey Rolling Mills, LLC



2017 Frame Building Expo
 March 8-10, 2017 | Gaylord Opryland Convention Center
 Nashville, TN

FOR DATA USE ONLY
 Cust # _____ Mtg Ord # _____
 Date _____ | _____

Please print clearly. Use a separate form for each registrant. Duplicate as necessary.

Complete name _____ First name for badge _____
 Title _____ Company _____ Company city/state _____
 Mailing address (home work) _____
 City _____ State _____ Zip code _____
 Home phone _____ Work phone _____ E-mail address (required*) _____
*Confirmation of your registration will be sent only via e-mail to the e-mail address you provide here.
 Emergency contact _____ Daytime phone (____) _____ Evening phone (____) _____

This is my first Expo. (FTA) I have special needs. Please contact me. (SA) I will need vegetarian meals. (SDV) I do not wish to be listed in the printed registration list. (DIS)

Not a member? Join NFBA and receive up to 60% off Expo registration and 50% off NFBA dues. Visit nfba.org to **join and register**, or call 800.557.6957. Some exclusions apply.

Builder Community A

Builders, students, design professionals, specifiers, and others engaged in the manufacturing, marketing, or construction of post-frame or wood-column buildings must register under "Builder Community." Registration includes admission to educational sessions and the trade show. An additional fee is required to attend optional ticketed events and workshops.

Full Conference Registration
 (includes educational sessions and trade show)

	On or before 2/8/17	After 2/8/17
Member	<input type="checkbox"/> \$75	<input type="checkbox"/> \$115
Nonmember	<input type="checkbox"/> \$195	<input type="checkbox"/> \$280
Student (ID required)	<input type="checkbox"/> Free	<input type="checkbox"/> Free

1-Day Conference Registration
 (includes educational sessions and trade show for 1 day only—choice of Wed., Thurs., or Fri.)

	On or before 2/8/17	After 2/8/17
Member	<input type="checkbox"/> \$30	<input type="checkbox"/> \$60
Nonmember	<input type="checkbox"/> \$80	<input type="checkbox"/> \$140
Student (ID required)	<input type="checkbox"/> Free	<input type="checkbox"/> Free

Check the day you will attend. Wednesday Thursday Friday

Subtotal A \$ _____

Non-Exhibiting Supplier/Dealer Community C

Non-exhibiting suppliers or dealers engaged in the manufacturing or sale of materials, equipment, machinery, or services to the post-frame construction industry must register under "Non-Exhibiting Supplier/Dealer Community." Registration includes admission to educational sessions and the trade show. An additional fee is required to attend optional ticketed events and workshops.

	On or before 2/8/17	After 2/8/17
Member	<input type="checkbox"/> \$300	<input type="checkbox"/> \$400
Nonmember	<input type="checkbox"/> \$780	<input type="checkbox"/> \$910

Subtotal C \$ _____

Spouse/Guest Registration D

*Spouses, non-industry-related guests, and children under age 17 are free to attend the trade show **only** and will not be admitted into educational sessions. An additional fee is required to attend optional ticketed events. List the name(s) of guest(s) below.*

Name(s) _____

Exhibitor Community B

Registration includes access to educational sessions. An additional fee is required to attend optional ticketed events and workshops. All member exhibiting companies receive two complimentary full conference registrations for booth personnel and should select the Booth Personnel registration option. Additional booth personnel should register at the Member Full Conference or 1-Day rate. Nonmember exhibiting companies do not receive complimentary registrations and should select from the nonmember options.

Booth Personnel: Complimentary Full Conference Registration
 (NFBA members only; limit 2 per exhibiting company)

Full Conference Registration

	On or before 2/8/17	After 2/8/17
Member	<input type="checkbox"/> \$75	<input type="checkbox"/> \$115
Nonmember	<input type="checkbox"/> \$195	<input type="checkbox"/> \$280

1-Day Conference Registration

	On or before 2/8/17	After 2/8/17
Member	<input type="checkbox"/> \$30	<input type="checkbox"/> \$60
Nonmember	<input type="checkbox"/> \$80	<input type="checkbox"/> \$140

Check the day you will attend. Wednesday Thursday Friday

Subtotal B \$ _____

Optional Ticketed Events (Expo Registration Required) E

Awards Luncheon (LUNCH), Thursday, March 9, 11:45 am–1:15 pm
 Member tickets at \$65/ea = \$ ____ Nonmember tickets at \$75/ea = \$ ____

Christians in Construction Reception (REC), Thursday, March 9, 5:30–7 pm
 (Free) # of tickets ____

Subtotal E \$ _____

Attendee Information F

Primary Business Activity (Check one.)	What is your role? (Check one.)
<input type="checkbox"/> Post-Frame Builder	<input type="checkbox"/> Manufacturer/Supplier
<input type="checkbox"/> Metal Frame Builder	<input type="checkbox"/> Architect/Engineer
<input type="checkbox"/> General Contractor	<input type="checkbox"/> Code Official
<input type="checkbox"/> Lumberyard/Distributor	<input type="checkbox"/> Student
	<input type="checkbox"/> Owner/President/St. Mgr.
	<input type="checkbox"/> Crew Leader
	<input type="checkbox"/> Sales/Marketing
	<input type="checkbox"/> Crew Member
	<input type="checkbox"/> Technical
	<input type="checkbox"/> Other

Total Amount Due G

(A or B or C) + E = \$ _____

4 Ways to Register

Online*: www.nfba.org **Fax*:** 847.375.6495 **Phone*:** 800.557.6957
Mail: NFBA Conference, Attention: Registration Dept., PO Box 3781, Oak Brook, IL 60522

*Credit card payment only

Cancellation policy: All cancellations must be received in writing. A \$40 processing fee applies to all cancellations. No refunds will be made for cancellations postmarked after February 22, 2017, or for cancellations of 1-day meeting registrations. All refunds will be processed after the Expo.

Payment

Check (enclosed) • Make check payable to NFBA. • Checks not in U.S. funds will be returned. • A charge of \$25 will apply to checks returned for insufficient funds.
 MasterCard **VISA** **Discover** **American Express** • If rebilling of a credit card charge is necessary, a \$25 processing fee will be charged.

Account number _____ Exp. date _____
 Signature _____ Cardholder's name (please print) _____

I authorize NFBA to charge the above-listed credit card amounts deemed by NFBA to be accurate and appropriate. **If payment does not accompany this form, your registration will not be processed.**

2017 FRAME BUILDING EXPO

FRAMING THE FUTURE

REGISTER BY FEBRUARY 8, 2017, FOR DISCOUNTED RATES!

Exhibitors *(as of September 15, 2016)*

AB Martin	East Coast Fasteners	Martin Building Products	Richland Laminated Columns
AJ Manufacturing Inc.	Energy Panel Structures	Maze Nails Co.	Ridge Craft
Akzo Nobel	Everlast Roofing Inc.	McElroy Metal Inc.	Rigidply Rafters
Alpine Distribution	Extrutech Plastics	Menards Inc.	Roper Whitney
Amarr Garage Doors	Fabral	Metal Rollforming Systems	S-5!
American Building Components	Fasco America	Metal Roofing Alliance	Safe-Way Garage Door
Ameripak Inc.	Fasteners Direct, LLC	Metalfforming Inc.	Schweiss Doors
ASC Machine Tools Inc.	FILC USA, LLC	Metro Roof Products	Scott Systems
Atlas Bolt & Screw Co.	Free State Lumber Company	Mill Steel Co.	Sealtite Building Fasteners
Axalta Coating Systems	Garwood Manufacturing Co. (Eventco)	MSW Canadian Plastics	Semmler Systems Inc.
Bay Insulation Systems	Glick Metals, LLC	MWI Components	SFS intec Inc.
Becker Specialty Corp.	Graber Post Buildings	New Process Steel Corp.	Shear-X
Best Products	H & H Metal Products	NOFP Inc.	Silvercraft, LLC
Bestline Building Products	Henkel Corp.	Northstar Metal	Spectrum Brands HHI
Boral	Hershey's Metal Meister; LLC	Novagard Solutions	Steel Dynamics Inc.
Borkholder Buildings and Supply	Hörmann, LLC	Ohio Timberland Products	Stiletto Tools
The Bradbury Group	I Beam Sliding Doors	Onduline North America	Swenson Shear
The Brut Post Grabber	Isaiah Industries Inc.	Paint Valley Parts	Thermal Building Concepts
Burrow's Post Frame Supply	Janus International Corp.	Palram Americas	3GM Steel
Cannonball:HNP, LLC	Kenwood Painted Metals Inc.	Paramount Metals	Timber Tech Engineering Inc.
Capital Forest Products	Kloeckner Metals	Perma-Column Inc.	Triangle Fastener Corp.
Central States Manufacturing	KP Building Products	Plasti-Sleeve/Homework Design	Tri-State Lumber Co.
Champion Steel Buildings	Lakeside Construction Fasteners	Plyco Corp.	TruSeam Metal Solutions
C.H.I. Overhead Doors	Leland Industries	Post Protector Inc.	Trussmate
Cidan Machinery Inc.	Lester Building Systems, LLC	PostFrame Manager Software	United Steel Supply
Comblift	Levi's Building Components	PowerLift Hydraulic Doors	Valley Lumber
Construction Maestro/Symun Systems	Liberty Steel	PPG Industries	Valspar Corp.
Direct Metals Inc.	Mac Metal Sales Inc.	Precoat Metals	Western Products of Indiana
Dynamic Fasteners	Marco Industries	Progressive Metals Inc	Wick Buildings
		Radiant Outfitters	

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Moisture problems and solutions

Because addressing present or potential moisture problems in a building is so critical, *Rural Builder* has teamed up with Joseph M. Zulovich, Ph.D., P.E., in a series of five articles that looks at the primary causes and cures of moisture problems and solutions. Part 4 addresses how to protect the exterior building envelope.

Protecting the exterior building envelope [Part 4]

Indoor moisture sources can be the cause of many types of building moisture problems. Two solutions need to be addressed with respect to indoor moisture—1) protecting the exterior building envelope and 2) removing excess moisture with ventilation. Part 4 of this series focuses on the first: protecting the building's exterior envelope.

Where a building is located impacts how to properly protect exterior walls and insulated ceiling assemblies from moisture problems. Different climate zones have been established for the United States as shown in **Figure 1**. The specific design and construction details vary depending upon where your building is located. The publication entitled “Guide to Determining Climate Regions by County” lists the climate region for each county in the U.S.

The appropriate design and construction details depend upon where the building is located and the following three strategies to protect the building components:

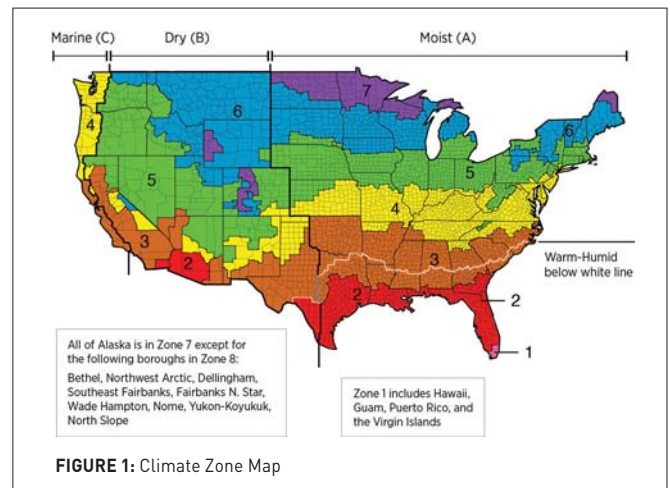
- **Vapor migration** – installing a vapor retarder in a proper location
- **Indoor air infiltration** – preventing inside air from leaking into exterior walls and/or insulated ceilings
- **Outside air penetration** – preventing outside air from leaking into exterior building components

VAPOR MIGRATION

Moisture that is permitted to migrate at a sufficiently high rate through an insulated building component will often condense inside the insulated building assembly. This condensed moisture will result in a variety of moisture problems. A vapor retarder minimizes the moisture migration rate through an insulated wall or ceiling.

Moisture will migrate through an insulated building component from a high-vapor pressure to a low-vapor pressure. However the climate where the building is located will dictate whether the inside air has a higher-vapor pressure or a lower-vapor pressure.

In climates where the inside is usually warmer than outside, the inside vapor pressure is normally higher than outside.



Conversely, climates where the inside is usually cooler than outside, the outside vapor pressure is normally higher than inside.

Buildings located in Climate Zones 5, 6 and 7 should have a vapor barrier, with a perm rating less than 2, located near the inside of an insulated assembly. No more than one-third of the total insulation value of the assembly should be located on the “warm side” of the vapor retarder.

Buildings located in warmer climates should use a vapor retarder with a perm rating of greater than 2. It can be located on either the inside or outside of the insulation.

A more detailed discussion on vapor retarders is located throughout “Moisture Control Guidance for Building Design, Construction and Maintenance” which can be found on the web from the U.S. Environmental Protection Agency.

INDOOR AIR INFILTRATION

The exterior building envelope needs to be protected from indoor air infiltrating exterior insulated walls and insulated ceiling assemblies. Buildings located in Climate Zones 4, 5, 6 and 7 are ones which definitely need to minimize inside air infiltration. Typically, the air inside is relatively warm compared to the outside air, especially during cold weather periods.

BY JOSEPH M. ZULOVICH, PH.D., P.E

The dew point temperature is often defined as the temperature at which moisture will condense from air onto a surface exposed to the air. During cold weather, the inside dew point temperature is normally higher than the outside air temperature even though inside relative humidity levels are acceptable. This is the foundation for indoor air infiltration-based moisture problems.

When warm, moist inside air infiltrates into an insulated exterior wall, the infiltrated air will usually come in contact with a surface or material inside the cavity that is cooler than the dew point temperature of the inside air. Moisture will condense out of the infiltrated air and cause a variety of moisture problems. Exterior insulated walls can be protected from indoor air infiltration-based moisture problems by addressing the following construction details:

- Seal all electrical boxes located on exterior walls. Air can easily infiltrate through unsealed electrical boxes into many types of insulation, resulting in moisture problems inside exterior wall cavities.
- Seal all holes in the top plate of exterior walls. Sealing the top plate reduces any inside air that can leak into an exterior wall cavity because air will not enter into a wall cavity if it cannot escape from the cavity.
- Seal the inside exterior wall surface to the top and bottom plates or use spray foam insulation to create an air barrier at the inside insulation

surface. Convection currents can develop when inside air enters into an exterior wall cavity, cools and then exits from the bottom of the same exterior wall cavity. When warm inside air cools inside an exterior wall cavity, moisture problems will typically result.

Insulated ceiling assemblies can be a source of moisture problems in attic spaces. Warm air will naturally infiltrate through any hole or crack. When inside air enters the cold air in the attic, moisture carried by the inside air will typically condense out the infiltrated inside air and cause moisture problems. Adequate attic ventilation is generally not capable of removing the amount of moisture moved into the attic in these cases, but air infiltration can be minimized by addressing the following construction details:

- Seal all attic accesses to minimize any air leakage from the inside into the attic.
- Seal all holes in the top plate of all interior walls. If air cannot escape from an interior wall cavity, air will not leak from the inside into the attic via interior walls.
- Seal all electrical fixtures and any recessed light fixtures located in the ceiling. Unsealed recessed ceiling light fixtures will result in a significant amount of air to leak from inside a building into the attic space.

OUTSIDE AIR PENETRATION

Outside air penetration needs to be minimized for buildings located in all Climate Zones. For buildings located in cold climates, cold air that can penetrate into an exterior building assembly can cause a cold surface to develop on the inside surface. Moisture problems will occur on the cooled inside surfaces when these surfaces are at or below the dew point temperature inside the building.

For buildings located in warm climates and are air conditioned, moisture problems can develop inside insulated assemblies when warm, moist outside air penetrates the assembly. A convection current will carry moisture in the warm outside air and the moisture will condense on the outside surface of the cooled inside building assembly surface. Any air conditioned building that has moisture condense on the outside of a window during hot, humid weather will most likely have moisture problems in insulated exterior building assemblies if outside air can penetrate into the cavity. This air infiltration can be minimized by addressing the following details:

- Seal between windows/exterior doors and rough structural frame prior to installation of exterior flashing
- Ensure an exterior air barrier is installed and is continuous
- Install attic baffles or air chutes to minimize air that enters attic space from penetrating under ceiling insulation. **RB**



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► FOR ADDITIONAL INFORMATION:

The publication "Guide to Determining Climate Regions by County" can be found at http://www1.eere.energy.gov/buildings/publications/pdfs/building_america/ba_climateguide_7_1.pdf from USDOE.

A more detailed discussion on vapor retarders is located in "Moisture Control Guidance for Building Design, Construction and Maintenance" found at <https://www.epa.gov/sites/production/files/2014-08/documents/moisture-control.pdf> from USEPA.

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