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# Technology Improvements Happening Fast

**THIS ISSUE WASN'T PLANNED AS** a technology-themed edition, but that's how it turned out. Story after story focus on scientific advances and how they're playing a significant role in the buildings of the future.

First in this issue, we have the story about the latest IRC updates, which are often about the fact that we have tools and products at our disposal to increase or improve building specs. Those solutions very often involve new technologies that weren't available five years ago.

Next comes a story about a high-tech barn that feeds the cows itself. Well, that's an overstatement, but it's certainly less human-centric than our grandparents' barns were.

The article "Daylighting and Polycarbonate" is all about modern progress in plastics. It seems almost too good to be true. There's a plastic that lets in light but not heat, or at least not UV rays, and it's stronger than you'd think.

Quicken Steel's company profile is all about progress not only in creating better steel, but just as importantly, the industry is also creating better engineering, and suddenly we can now create very

large metal buildings that can be clear-span and insulated.

Even the New Products section of the magazine predicts the future. What is a graphene battery? Sounds like we need to work on a story about that, because we might all be using them soon.

This should all put the building trades in a position to shine. People are wondering how they're going to be able to afford their next house, or how they're going to escape today's rents and get into their first home. Some of these new technologies are destined to become solutions. The buildings we're going to raise in the coming decades might look like the buildings of our parents and grandparents, but they're going to be significantly better in most ways. They're going to go up faster and be more energy-efficient, all while being relatively affordable. Here's to our future.

Rocky Landsverk,  
managing editor  
[rocky@shieldwallmedia.com](mailto:rocky@shieldwallmedia.com)



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This dairy farm features day-lighting via Tuflex panels from Onduline North America.

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**Gary Reichert,**  
Publisher, Shield Wall Media

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# If You're Not Afraid to Get Your Hands Dirty...

Get Ready for Gratifying Opportunities with Good Pay!

BY LINDA SCHMID

**ETHAN COLLINS ENJOYED SCHOOL, AND** he was a history buff. Still, he didn't care for writing papers. He really wasn't into art either until he discovered that welding is fun! It's a really particular kind of creative process, one that few know. This artistic endeavor allows you to take two pieces of metal and bring them together to create one new piece ... it's almost magical! So while he had always known that college was an option, he set his sights on welding.

The summer after high school graduation he and his buddies moved to Tennessee to work at the "Home Center." In the fall, he started at the Kentucky Welding Institute.



His mother heard about mikeroweWORKS scholarships through her work with the EKCEP program helping people find their pathways, whether that means college, technical college, or a job.

Applying for scholarships was not Collins' cup of tea; remember this is the guy who didn't want to write papers in high school. Applying for the mikeroweWORKS scholarship proved to be worth it, however ... it paid for all of his tuition at the Institute! He only had to pay his living expenses.

The S.W.E.A.T. Pledge felt right to Collins; he says that in a way it has always been a part of his life.

"That's what I'd always been taught," Collins said. "Growing up I saw how hard everyone worked. I learned by example."

His welding instructors reinforced work ethic through their



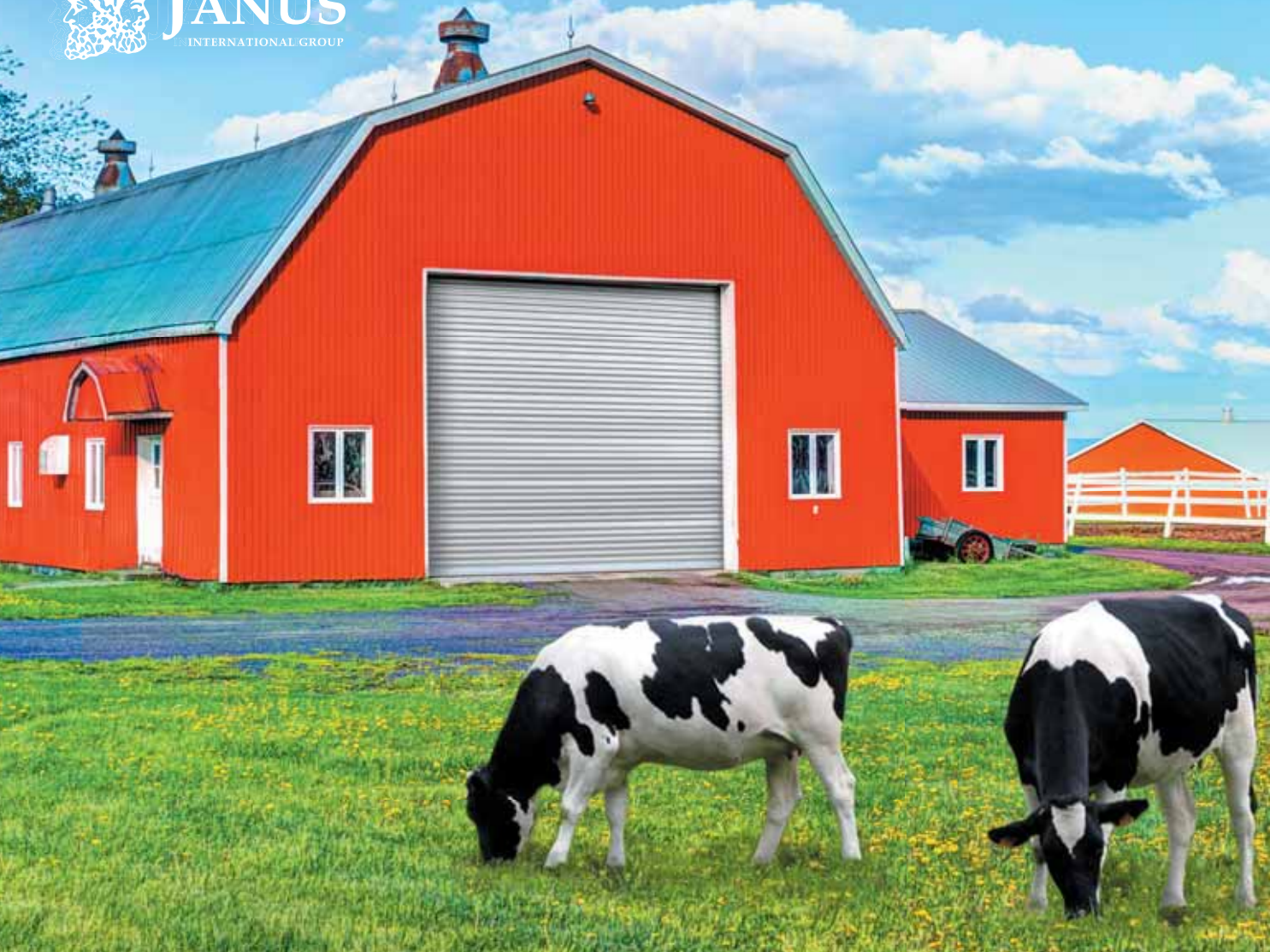
teaching methods. Students spent time out on job sites and they were required to do each job perfectly. They had to do it until they got it just right.

Collins works at Wells Brothers welding structural mezzanines, 18" pipe. He's done a little bit of everything and he loves it! He has



As a result of a collaboration with mikeroweWORKS Foundation ([www.mikeroweworks.org](http://www.mikeroweworks.org)), *Rural Builder* is featuring profiles of Work Ethic Scholarship recipients in each of its issues. Over 1,500 scholarships have been awarded to trade-school students who value hard work and taking personal responsibility. *Rural Builder* applauds these students and wants to acknowledge their choice to apply their talents to skilled trades. Thank you, mikeroweWORKS Foundation, for your continuing efforts to close the skills gap and "reconnect the average American with the value of a skilled workforce."





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always liked working with his hands and with this work there is always something different ... always a new challenge.

Welding is something that anyone can do, according to Collins. As long as you are willing to work hard and continue learning you can weld. He has worked with female welders and older welders, too. Sometimes, he says, a woman may have to put up with some stuff from some of the older guys who may think she is not as

## Welder Certification vs. Qualification

From the Kentucky Welding Institute Website

There is a lot of confusion on the difference between certification and qualification. According to the American Welding Society, certification is only awarded through a very specific channel and process. On the other hand, qualification is done largely by companies and contractors who qualify their employed welders to perform specific welding on the job.

Welding is done to a code, which is a written standard for welding. Examples of welding codes include AWS D1.1, ASME Section IX, and the API 1104. There are numerous others, but these are a few very popular codes used in the industry. You will not find a requirement for certification of welders in any of these code books, however, they all require the qualification of welders through a performance test.

Each company or contractor tests their welders in, as a way of verifying the skills of a welder on a specific set of parameters including weld process, electrode type, base metal type, base metal thickness, weld position, and others. After qualifying for a company which they tested but should not perform welds outside the parameters. For example, a welder who tested stick on carbon should not be permitted to weld tig on stainless. Qualification tests are written up as a WPS (Weld Procedure Specification) and the results of a welder's performance are captured on their WQTR (Welder Qualification Test Record). This is often referred to as "weld papers."

While certification is not required in any code book, it is an extremely powerful calling card for any welder. Summarizing the difference between qualification and certification is not exactly like comparing the minors to the majors. All companies are still required to qualify a welder for the specific welds on their project. However, the American Welding Society guards its certification of welders through strict guidelines only allowing CWIs associated with an ATF to award the coveted Certified Welder Card. This card is a powerful asset in helping float their resume or profile to the top of the call list when the HR department is (hiring). That is why the Kentucky Welding Institute is an Accredited Testing Facility for the American Welding Society.

is a place for them.

Having a thick skin is important, Collins advises, and being humble gets you a long way too.

"Don't ever let your head get too big because you are this great welder," he said. "There is always somebody who can do something just a little better than you can. And that's all right.

"There are plenty of opportunities, and you don't have to do underwater (hyperbaric) welding to make good money."

When asked what the industry can do to encourage people to go into welding, he joked that they could air-condition the job sites. "The elements are often what drive people away, but you can work in those conditions; it's more about how you handle it," he said.

People often think that welding is dirty, and it is, Collins said. However, he and his co-workers have found that they have become cleaner because of the job. When they go home they keep everything very clean. It makes them really appreciate being in their nice clean home ... a great way to finish a satisfyingly productive day. **RB**



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BY RANDY DAUDET  
SIMPSON STRONG-TIE  
OFFSITE/MASS TIMBER CONSTRUCTION DIRECTOR

# 2021 IRC Analysis

Part 2: Changes to Decks, Fasteners, Wall Bracing, Roof Framing



*In the last article (March 2023 issue), we described the primary structural and wood-related changes in the 2021 International Residential Code. This month we continue with changes in decks, fasteners, and more.*

## DECKS

For the 2018 and the 2021 IRC, an informal group known as the Deck Code Coalition had been working to develop detailed prescriptive requirements for the safe construction of decks. For the 2021 IRC, seven of their proposals were ultimately approved, making significant improvements to the deck section.

One change made general improvements and expanded the use of the tables throughout the section. It clarified that decks are designed for either the live load or the ground snow load, whichever

is greater. It revised the footing sizes in Table R507.3.1, allowing some smaller footing sizes for members with lower demand loads. The deck post height table was revised to make the post height based on tributary area of the post. Revised deck joist span tables, deck beam span tables, and deck ledger connection tables were added that cover 50, 60, and 70 psf snow loads in addition to 40 psf live loads. A new method of analyzing joist cantilevers resulted in a new deck joist span table with the maximum cantilever based on the adjacent joist span rather than the joist spacing.

Another change provides generic instruction for construction of guards so they can resist adequate lateral load. While not providing exact details, the new Section R507.10, Exterior Guards, will reinforce that guard loads have to “be transferred to the deck framing with a continuous load path to the deck joists.” The new



section states that where the guard post is connected to the side of a joist or beam, that joist or beam must be connected to adjacent joists to prevent rotation of the beam, and when the guard post is mounted on top of the decking, it must be “connected to the deck framing or blocking and installed in accordance with approved manufacturer’s instructions to transfer guard loads to the adjacent joists.” Previously, the Deck Code Coalition had attempted to put in actual prescriptive details for mounting of guard posts, but those had been disapproved, so they probably thought that this was the best they could do for now.

## DECK GUARD CONNECTIONS

A couple of the changes dealt with installation of deck beams. One specifies that deck beams made of two pieces of lumber must be fastened together. The intent is to prohibit the practice of notching both sides of the support post and installing one beam member on each side. The beam spans are based on both beams being fastened together. A related change clarified application of deck beams, limiting the cantilever to one-fourth of the actual beam span, rather than one-fourth of the allowable beam span.

Another major change revised the table for spans of deck beams. As was also done for other tables, higher snow loads were covered. Furthermore, the deck beam span lengths in the table are now based on the Effective Deck Joist Span Length, not the actual joist span. The Effective Deck Joist Span Length is the actual joist span multiplied by a joist span factor that is determined by the ratio of the joist cantilever length divided by the supported joist span. This is meant to address the fact that the deck beam

table is derived based on an assumed cantilever length of one-fourth of the joist span. When cantilevers shorter than that are used, the old table would be overly conservative, and the new factor accounts for that.

Finally, the treatment of deck board spans was revised. New columns were added to the joist spacing table for single spans of deck boards, and it was clarified that the entries for the existing columns were for multi-span boards.

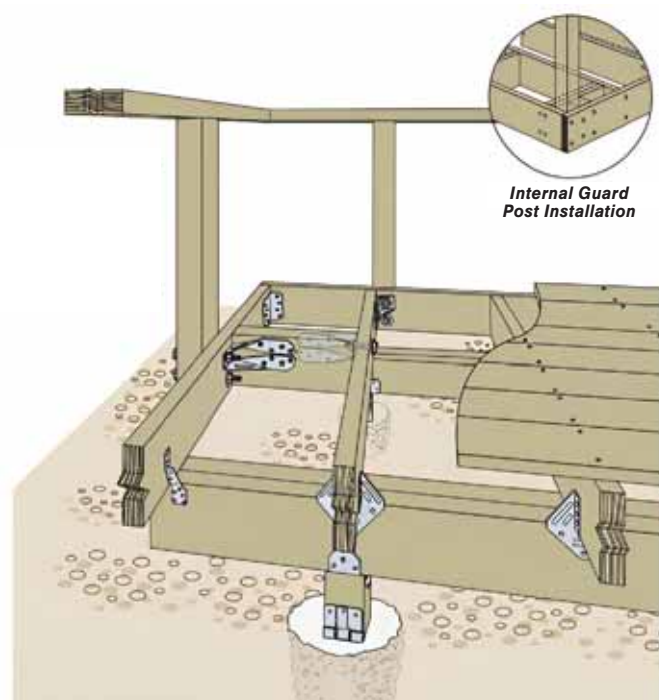
## FASTENERS

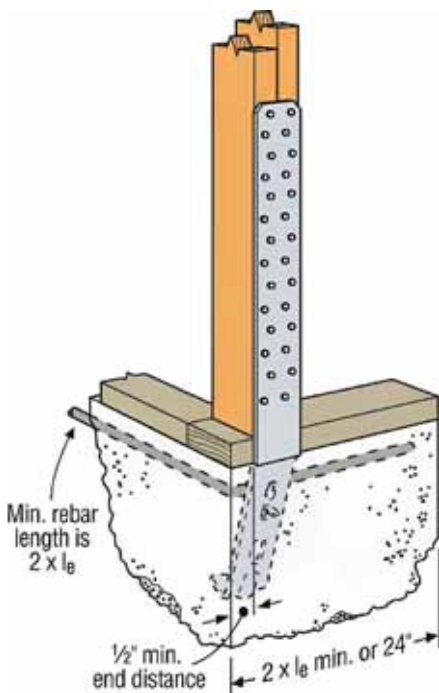
There were several changes to IRC Tables R602.3(1) and R602.3(2) that affect wood-frame fastening. In Table R602.3(1), two new lines were added for fastening of blocking between rafters or trusses not at the top plate, one for toe nails and one for end nails. The fastening of sheathing to framing was split into two rows, one for subfloor and wall sheathing, and another row for roof sheathing. Roof sheathing fastening spacing was changed from 12" to 6" on center at intermediate supports for 8d common and RSRS-01 nails. The 12" nail spacing for 10d common or 8d deformed shank nails was maintained. This is due to the new higher roof components and cladding loads in ASCE 7-16. New language was added in footnote A that specifies “nails used for framing and sheathing connections are carbon steel,” and that “Connections using nails and staples of other materials, such as stainless steel, shall be designed by accepted engineering practice or approved under Section R104.11.” This is to address the recently documented fact that stainless steel fasteners withdraw from wood easier than carbon steel fasteners, so the assumed values used to derive this table would not apply to stainless steel fasteners. Lastly, a new Note g was added to Table R602.3(2), the Alternate Attachments table that prescribes the use of staples and alternate sizes of nails. It states that “Alternate fastening is only permitted for roof sheathing where the ultimate design wind speed is less than or equal to 110 mph, and where fasteners are installed 3" on center at all supports.”

## WALL BRACING

Although there were fewer than usual, there were still several changes made to the IRC Wall Bracing section. One significant change was to Section R602.10.1.2. It was retitled from “Offsets along a braced wall line” to “Location of braced wall lines and permitted offsets.” The 2018 IRC allowed the braced wall line to be offset not more than 4" from the exterior walls without limitation. A building designer would be able to offset all their braced wall lines 4" toward the interior of the structure, therefore reducing the required length of bracing, while still meeting the letter of the IRC. The 2021 wording will prohibit such an extent of offsetting, requiring that “Each braced wall line shall be located such that no more than two-thirds of the required braced wall panel length is located to one side of the braced wall line.”

Another change dealt with placement of braced wall panels at





the ends of braced wall lines. In Seismic Design Categories D0, D1, and D2, braced wall panels have to be located at the end of braced wall lines, except that Methods WSP, BV-WSP, and continuous sheathing methods can begin up to 10" from the end of the braced wall line provided a 24"-wide panel is installed at the building corner, and the panel closest to the end of the braced wall line has a 1,800 lb. hold-down device installed. A new exception was added to also allow a Method PFH or ABW to be installed up to 10" from the end of the braced wall line, since these methods will also have holdowns with at least 1,800 lb.

In Table R602.10.3(3), which lists bracing lengths based on Seismic Design Category, bracing methods PFH, PFG, and ABW were added to the column heading with method WSP, in the same place they are listed when used to resist wind loads.

As mentioned in the previous IRC article, there were several changes meant to reinforce the limitations on use of wall bracing in high seismic areas. Tables R602.10.3(3), R602.10.3(4), and R602.10.6.5 were modified to remove illustrations for three-

story houses in SDC D2, and add a footnote that "One- and two-family dwellings in Seismic Design Category D2 exceeding two stories shall be designed in accordance with accepted engineering practice." Similarly, in Section R602.10.6.5, the statement that "Townhouses in Seismic Design Categories D0, D1, and D2 with stone or masonry veneer exceeding the first-story height shall be designed in accordance with accepted engineering practice" was moved to the beginning of the section, and the statement that "One- and two-family dwellings in Seismic Design Category D exceeding two stories and having stone or masonry veneer shall be designed in accordance with accepted engineering practice" was added.

Also in Section R602.10.6.5 related to houses with brick veneer, the section was rewritten to clarify the three conditions that might be encountered — veneer on first floor only, veneer exceeding first-story height, and limited veneer exceeding first-story height. The changes appear to be editorial only.

In Figure R602.10.6.2, which describes construction of bracing method PFH, a note that the strap-type hold-down in PFH must be installed with manufacturer's edge distance was added. This is necessary to ensure that the allowable load of the strap-type hold-down can be achieved. Both Simpson Strong-Tie and MiTek recommend that their strap-type hold-downs be installed with a minimum of 1/2" end distance.

Another change was the removal of a limitation that no more than four CS-PF portal frames could be used on a single wall line. The last wall bracing change was to Section R602.10.10.1, which deals with bracing of cripple walls in Seismic Design Categories D0 and D1, and townhouses in SDC C. It adds requirements to clarify that only bracing methods WSP and CS-WSP are permitted in these higher seismic areas.

## WALLS/SOFFITS

There are a couple of structural changes

to note in Chapter 7. One was to Tables R703.15.1 (Cladding Fastening) and R703.15.2 (Furring Fastening). It states that the thickness of wood structural panel sheathing can count toward the minimum fastener penetration depth when the panels have the same minimum specific gravity as that required for the studs. A second change added a new section, R704, on soffits. The new section adds requirements for construction of soffits where design wind pressure exceeds 30 psf. This addresses an area that has been identified in recent storms as a weak link in the building envelope. While soffits might not seem structural, their failure in wind events allows wind and water into the attic, at best ruining the ceiling and insulation.

## ROOF FRAMING

For the second year in a row, the roof framing section was significantly rewritten. One change dealt with construction of the rafter peak and ridge straps when they are used to replace collar ties. Part of the change clarified that when the rafters are connected directly opposite one another with a gusset plate, collar ties or ridge straps are not required. The second part clarified the installation of the ridge strap to state that they must be "nailed to the top edge of each rafter with a minimum of three 10d common (3" x 0.148") nails with the closest nail no closer than 2 3/8" from the end of the rafter." This matches up with Simpson Strong-Tie's recommendations for placement of nails at ends of wood members.

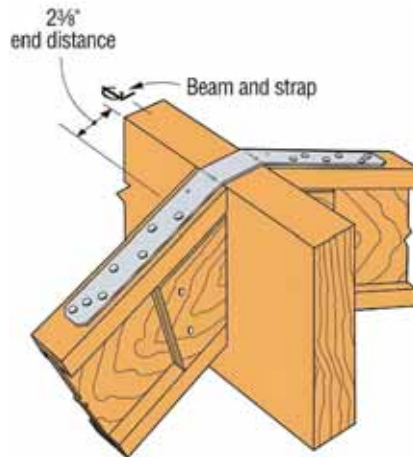
## LSTA RIDGE STRAP

A couple of changes were made to the requirements for resisting rafter thrust, where weight on the rafter system causes them to push out on the tops of the exterior walls. One change to Section R802.5.2 clarifies the three cases for resisting rafter thrust: ceiling joists in the lower third of the rafter height and used to directly resist thrust; ceiling joists installed above the lower third of the rafter height that are not



permitted to be used to resist rafter thrust; and ceiling joists that are not parallel to rafters. In each case, either the ends of the rafters are tied together with a continuous tie, or a ridge beam must be provided. In addition, the construction of laps or joints in ceiling joists used to provide the continuous tie was clarified. Table R802.5.2 gives the fastening of ceiling joists to rafters in order to transfer the rafter thrust into the joist. This table was revised to slightly reduce the number of nails required for the ceiling joist to rafter connection.

A final roof framing-related change was to the section requiring rafter bearing, R802.6. The change clarifies when bearing is required for the top ends of rafters by adding the sentence “Where the roof pitch is greater than or equal to 3:12 (25% slope), and ceiling joists or rafter ties are



connected to rafters to provide a continuous tension tie in accordance with Section R802.5.2, vertical bearing of the top of the rafter against the ridge board shall satisfy this bearing requirement.” This means

that, in a normal rafter/ceiling joist/ridge board configuration, 1 1/2” bearing for vertical forces is not required, as the rafter is just pushing horizontally against the ridge board. However, if there were rafters with no ceiling joists or other horizontal tie at the bottom, there would be a requirement for vertical bearing at the ridge beam, because the ridge beam is providing vertical support for the rafter.

For more information on stick-frame roofing, check out Simpson Strong-Tie’s online course “Code Requirements for Conventionally Framed Roofs”. **RB**



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# From Manual to High-Tech

## Building and Planning Considerations When Upgrading to an Automated Barn

**THE JEFFANA HOLSTEIN FAMILY FARM** is run by Jeff and Diana Henschel, who purchased the farm in the '90s and raised their children there, and Bucky Henschel, their son. Initially they had 60 cows and no help, so Jeff was doing the milking and Diana helped with the fieldwork. It was a family affair so the kids would be out in the barn riding up and down on bikes and playing with toys.

Megan Henschel, Bucky's wife, says that the farm continued in a similar vein until

about five years ago when they decided to automate. It's a big change and Megan has this advice for those considering automating their farms: Plan, plan, plan.

When the Henschels were in their planning stage, they visited farm after farm, touring, asking their owners what they liked and disliked about their automation and layouts and making notes of what they thought they might like for their own place.

They decided that the most important

considerations for them were: air flow, cow comfort, and having what they call a "back area" for cows that are sick or new to robotic milking. The back area can be a clean space where they could easily access and monitor these cows without having to walk through the main barn and track manure into the space.

They achieved these goals on the farm. Automation, in the form of the robots and SCR collars, provides data about particular cows for injections, and inspections





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## Building Agriculture in America

when they show signs of illness. Then it does the “fetching” of those cows by herding them through gates that open and close, ushering them into the back area.

Both healthy ventilation and cow comfort are addressed, in part, by 28 fans that turn on and off automatically according to the temperature. There are 18 cupolas and curtains that block energy



Lely Robots.

transfer based on the temperature. At about 80-85 degrees, the curtains automatically close and all the fans come on. When the fans are on, the best air flow is down the center where the feed alleys are usually located, but in the Jeffana Barn, they placed them around the outside of the barn so the center is reserved for the cows to have a cool space.

The Henschels decided on robotic milking rather than a parlor system, permitting cows to be milked at will. They roam the barn as they please, lay down if they want to, eat when they are hungry, and when they are ready to give milk, they go to a robot and the robot latches onto the teats. The good thing about the robotic system that they installed, a set of six Lely robots, is that if one teat is done, that one is released but the milking continues. Cows can even be milked while the milkman is doing his testing and moving milk to the truck for transport. The milkers use the buffer tank at that time.

Twice a day the lines are cleaned — automatically.

The two alley scrapers activate every two hours to help keep the barn clean, pushing the manure into storage, where at a specified level it is automatically piped to the pit on the other side of the



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road.

The systems need power to run, of course, so they have a backup generator that kicks in if the power fails. Another generator handles the fans, and there is a generator for the calf house, too. All of these generators need a place to reside as well.

The farm can now handle more cows (400!) and fewer people. The 120-tie stall barn, the size of a football field, has been repurposed for calf pens and a maternity ward.

The best part of the automation is the flexibility it offers to farmers. If they are doing field work, they do not have to stop what they are doing to milk cows, according to Megan. They can finish their work before the rain sets in without jeopardizing the cows. They can go to dinner and not have to rush home to be there for the milking. She is clear that the Jeffana group still do visual inspections, check in on the cows, and make sure everything is going well, but they are no longer tied to an unforgiving timetable.

While many efficiencies and improvements have been instituted into this farm, some things stay the same: Visit the barn when there are calves to feed and you will find kids playing in the aisles...just like the good old days. **RB**



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# Steel Horse Barn

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**THE GOAL FOR THIS REMODEL** job was to upgrade the appearance of this old horse barn without a prohibitive amount of cost. Vinyl Structures used Woodgrain and Rock PermaGuard metal panels, and it turned out looking great and within budget. **RB**





**THE DETAILS:**

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**Building Size:** 30'x40'

**Roof Pitch:** 8/12

**Roof Panels:** Leakguard Roofing System

**Wall Panels:** Permaguard Signature  
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# Daylighting With Polycarbonate

Why and How You Should Learn About This Super-Plastic

**DAYLIGHTING OR SKYLIGHTING IS BECOMING** increasingly popular, in part because the materials and products that enable it keep improving.

At the core of an effective daylighting construction is a product called polycarbonate, which is an extremely strong plastic that naturally blocks UV rays. Builders who frequently work on greenhouses and similar structures are used to working with polycarbonate, but for many contractors, there is upside if they can learn to work with it to expand their business into greenhouses or more effectively create a barn, among other ideas where “free” and natural light have a place.

Kenneth Schlabach, owner of DayStar’s Natural Lighting System, said these systems “bring in light efficiently and transmits it effectively with minimal loss. The system can illuminate interiors evenly and persistently without hot spots in buildings of any size.”

We asked several manufacturers to help builders and contractors learn about polycarbonate so they can create better daylighting opportunities.

## THE BASICS OF POLYCARBONATE

So where to start? Research comes first. A polycarbonate company is a great place to start as they have experts on staff.

Buddy Pullen, Regional Sales Manager for AmeriLux Interna-



**Barns, especially those for horses, are prime candidates for daylighting because of the benefits of natural light.** PHOTO COURTESY OF AMERILUX.



**AmeriLux panels at work as a greenhouse.**

tional, advises that builders who aren’t familiar with polycarbonate “consider all aspects to decide on the right products. There are many grades or versions of polycarbonate, so make sure you are getting the right product for the project, meaning don’t pay for features that your project may not require and vice versa. Don’t skimp on cost when your project calls for those extra features like thickness, UV protection, anti-condensation coatings, and clarity”

Andrew Mullen, president of Direct Metals, Inc., said builders should look into the specification and installation practices *before* ordering. In particular, look at framing requirements and on-center purlin spacing requirements. “The 0.8 mm thick panels typically span 2’ on center purlins; 1.5 mm and 2.0 mm panels can span 4’ and 5’ on center purlin spacing.”

One thing you’ll learn early in your research stage is that this material borders on amazing. A description of its properties almost sounds made-up. “You are choosing a strong material, up to 20x stronger than fiberglass and with UV protection,” said Lucía Villegas, Marketing Director, Onduline North America. She said their company’s panels, for instance, “can withstand extreme temperatures (from -40°F to 270°F), are highly resistant to extreme weather like hail and wind, and retain opacity over time. Using



polycarbonate skylighting will lower your electric bills as well as creating a calm environment for everyone working inside the building.”

Schlabach said their panels come in three common sizes — 2'x2', 2'X4', and 4'x4' — and that the largest panel is the top seller because bigger is better when it comes to transferring light. “Given it does not cost much more to purchase a 4' x 4', it usually makes the most sense,” he said, adding that the products come in regular slope and ridge-mounted versions.

**UNDERSTAND THE LIFESPAN**

Polycarbonate panels do not last forever; at some point they will turn yellow and need to be replaced. So factor that into your pricing considerations. One expert told us to expect to replace it every 10 years, and then be happy if it lasts 15 or 20 years, which is very possible. Another person said in their experience, 20 years is not only possible, but typical. The point is, at some point and depending on conditions, it will start to turn yellow. Be prepared to amortize your expense over 15 or 20 years, not 40 or 50.

**USING POLYCARBONATE IN WORKPLACES**

All representatives we spoke to about polycarbonate talked

about natural light and its ability to make a project either more practical or economical, or both. It is particularly effective in work spaces. “Having natural light while at work improves your (and where necessary your animal’s) mood and welfare,” Villegas said. She added that at work, “when exposed to natural lighting, you reduce stress hormones, enhancing productivity. When adding a skylight to your building, you need to choose a reliable and strong material like polycarbonate.”

“A well-lit factory thrives,” said Mark Weaver, Technical Manager for Palram. “A warehouse that’s bright and full of light makes it easier to pick, pull, package, and ship.

“Corrugated polycarbonate panels create a more comfortable, worker-friendly environment for enhanced productivity. They are perfect for skylights, ridge lighting, and vertical sidelights, all of which can decrease energy costs by reducing the need for daytime electric lighting.”

**POLYCARBONATE HORSEPOWER**

Barns are also a target for daylighting, especially when they’re home to horses. “Agricultural buildings and livestock shelters seem more in-tune with Mother Nature when you let all the sun’s goodness shine through,” Weaver said. “The benefits of natural

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**DayStar Natural Lighting Skylight Systems at work on a metal roof. Owner Kenneth Schlabach explained that these products have four parts: The dome at the top, roof curbs (the raised-metal frames that penetrate the roof), the light shaft, and the ceiling lens (on the ceiling, inside).**

daylight for human and animal productivity are well documented.”

Pullen added that it’s not limited to clear colors, so you can create “free” lighting, and make your livestock happy, but it can also simply look good. “Daylighting buildings offer several benefits such as increased productivity in some livestock applications to reduced energy bills for lighting up building,” Pullen said. “Polycarbonate is also available in a range of colors so you can customize the amount of light coming in, and the level of diffusion and visibility inside the structure.”

## EXPANDING AND CONTRACTING

What are the first few things that a builder who is new to polycarbonate is going to learn? Probably foremost is the fact that polycarbonate expands and contracts, so you need to factor that into your installation.

“All polycarbonate products naturally expand and contract with changes in temperature, so all panels must be fastened to allow for expansion and contraction,” Villegas said. “A very important step is to always pre-drill prior to fastening.”

That directly impacts your fastener choices. She said, for instance, the diameter of the hole should be 5/16” when using their fastener. When using other fasteners, the hole must be 1/8” to 3/16” larger than the diameter of the shaft of the fastener.

“Fasteners should not be overtightened and it’s highly recommended to use fasteners with EPDM washers,” Villegas said. “In a roofing application, panels should be fastened on the crowns

and every other corrugation. In a siding/wall application, panels should be fastened in the valleys of every other corrugation.”

Pullen said proper installation and fasteners will extend the life of the product. “There is always concern around the longevity of polycarbonate, especially when it is part of metal building envelope,” he said. “To get the most out of the polycarbonate, it is important to follow installation guidelines including pre-drilling of fastener holes to allow for expansion and contraction. Another good way to extend the life is to install on vertical walls instead of weaving into a roof system. This gets the panels out of direct UV exposure and protects them from impact damages such as debris falling on the roof.”

Weaver concurred that a very common challenge when installing corrugated polycarbonate sheets is “not allowing for thermal expansion. Thermoplastics thermally expand and contract

more than the metal panels they are being matched to, and this inherent physical property needs to be taken into consideration.”

Therefore, he said, “It is imperative to predrill oversized holes in the polycarbonate panel at all fastening points. The oversizing of the holes allows the space between the shank of the fastener and polycarbonate to accommodate the panel’s thermal expansion characteristics.”

Mullen concurred. “It is typical that unexperienced installers try to install these panels with the typical installation procedures that you would use for a metal panel,” he said. “Polycarbonate requires an oversized predrill of the panel at all fastener locations,

## Resources

THANK YOU TO THESE COMPANIES FOR CONTRIBUTING TO THIS ARTICLE

- AmeriLux International (Buddy Pullen)
- DayStar (Kenneth Schlabach)
- Direct Metals. Inc. (Andrew Mullen)
- Onduline North America (Lucia Villegas)
- Palram (Mark Weaver)





*AmeriLux panels alternatively stripped into a metal roof.*

and particular attention to compatibility should be paid to any sealants selected for use with these panels.”

Similarly, some installations struggle with leakage because the installer wasn’t sure how to handle the new-to-them material. “It is very important to follow all details of the manufacturer’s installation instructions,” Weaver said. “All too often, installers treat the polycarbonate panels the same as they would corrugated metal panels. While the installation methods are similar, there are intricacies to installing polycarbonate panels which must be adhered to in order to ensure a leak-free installation.”

### ADDITIONAL POINTS TO REMEMBER

**Storage and Stacking.** When storing polycarbonate panels in the yard or on a job site, it is important to stack shorter panels on top of longer panels and ensure they are on a flat surface that is equal to or longer than the longest panel. It is recommended that the panels be stored in a cool, dry area out of direct sunlight. (When the panels are stacked together, each panel layer acts as a magnifying glass under the sun’s rays with nowhere for the solar heat buildup to escape, which can then warp the panel.)

“When storing the panels, they need to be stored out of the sun, preferably vertically and indoors – don’t store outside and uncovered,” Villegas said. She added that cutting the Onduline is easy. “You can do it with a pair of snips or heavy-duty scissors. If you wish to cut multiple panels at the same time, you can do it using a circular saw with a plywood blade reversed, or a fine-toothed handsaw.”

**Cleaning.** If the panels got dirty during storage, it’s easier to clean them before installation rather than after. Pullen suggested warm soapy water and a soft cloth or sponge.

**Do Not Walk.** Never walk directly on a polycarbonate panel, even if they are fastened. Use scaffolds, ladders, or crawl boards. Don’t leave the panels unattended and unsecured on a structure; they could blow off.

**Match Profiles.** If you are installing with metal panels, make sure the profile of the polycarbonate panel is an exact match to the profile of the metal panel. If the gaps between the major ribs

and/or the minor ribs are too large, your installation will not be successful. Some manufacturers can match your panel exactly to ensure a smooth installation.

**Watch the Coating.** When installing, understand if you’re working with a coated product; if so, you may need to face the panel a certain way. Other panels have UV protection throughout the entire thickness of the panel. It is also recommended to install with a roof pitch equal to or greater than 1:12 and make sure you know the load ratings for the chosen panel with the configuration of the structure.

**Fastening Patterns.** Each polycarbonate panel profile usually has a unique recommended fastening pattern either for best results, or to meet more stringent building codes, such as the Florida Building Code. .

**Profiles.** “Remember to think about the profile of the polycarbonate skylight panel; it needs to match the profile of the metal panels for a simple and easy installation,” Villegas said. **RB**

## Installation Advice

Andrew Mullen, president of Direct Metals Inc., which offers a variety of corrugated translucent polycarbonate panels of their own, shared some valuable advice about panel installation.

“Most polycarbonate panels can be cut or sawed by manual or power tools,” he advised. “A bench/table circular saw using a 128-tooth blade is preferred, but portable circular saws can be used in a pinch for on-site cuts. Avoid intersecting cuts — if one must be made, drill a hole at the intersection point and then saw to that point. Be sure to wear work gloves and protective eyewear while cutting, and use the gloves to clean up rough edges once cool.”

He continued, “As polycarbonate panels expand and contract at a higher rate than metal panels do, it is necessary to predrill all fastener connections with pilot holes larger than the fastener diameter. Manufacturers suggest oversizing the hole by 1/16” to 1/8”.

“The panel manufacturer or distributor may require specific fasteners to be used,” Mullen cautioned, “so be sure to check prior to the installation of any warranted panel. Panel predrilling is best done at a 90-degree angle with a drill bit designed for metal with a drill speed of 1000 rpm.”

Mullen further advised, “Do not overtighten fasteners — this will cause the rubber washers to fully compress. It is best to use electric screw guns with torque-sensing devices and not impact drivers. Always drive the fastener perpendicular to the surface of the panels until seated. If the washer deforms, the fastener is too tight.”

If the fastener is too tight, the panels, again, won’t be able to move as they expand and contract with temperature changes, which will cause dimpling, cracking, buckling and — ultimately — unhappy customers.

Buddy Pullen of AmeriLux recommended holes be predrilled 3/16” larger than the screw shanks. He cautioned, “If you don’t predrill or predrill a large enough hole, you’ll get micro-cracks that grow into spider cracks around the fastener. This is the case for all polycarbonate panels.”

“There are some winged fasteners available on the market that predrill and tap into wood substrates, lessening the labor needed for a proper install; however, these fasteners work well on thinner 0.8mm panels but not as well on 1.5mm and 2.0mm panels,” he advised. “Due to the oversized holes, it is suggested that fasteners with 3/4”— or in some cases 1 1/8”—diameter sealing washers be used to ensure a watertight seal.



# Working with the Department of Transportation

## Job Opportunities And Considerations

**THE DEPARTMENT OF TRANSPORTATION COULD** be a good source of job opportunities, based on all of the structures they require for salt and sand storage. The Rural Builder staff decided to check it out. We contacted the U.S. DOT and discovered that these projects are handled at the state level.

At the state level, each DOT handles these projects differently, but with a lot of similarities. We will be sharing what some of them have for storage structures, what they are looking for, and how to proceed. Here are examples from a few states.

### **VERMONT AGENCY OF TRANSPORTATION STORAGE BUILDINGS**

Vermont's newly built salt sheds are typically 40' x 84' with a concrete foundation and concrete walls that top out at 14' with upper wood frame walls. The roof is a wood truss system with galvanized metal roofing. Older sheds from the 1970s were concrete with galvanized Quonset hut style metal roofs.

Shed sizes can vary from 40' x 64' to 99' x 84'. Over the past five years, 20' x 84' lean-to structures have been attached to salt sheds for equipment storage, protecting them from Vermont winters.

Brad McAvoy and Timothy French of the Vermont Agency of Transportation Facilities Bureau say that if a building can meet

the structural requirements and snow load capacity specified, they are open to evaluating alternative designs.

As their older sheds age, scaling is occurring on the concrete walls, which can potentially compromise the structural integrity of the building. Therefore, the agency is especially open to more durable and long-lasting options.

Due to harsh weather conditions, various strategies have been employed to permit construction. Crushed stone has been used under the footings due to wet or improperly compacted ground, thereby providing a solid foundation. Blankets and heated structures have been used to cocoon concrete slabs for curing.

Visit this website to get all the information you need to become an approved vendor: [vtrans.vermont.gov/contract-admin/bids-requests](http://vtrans.vermont.gov/contract-admin/bids-requests).

When a new building is needed, a consultant is hired to survey the site and design the building to specifications within the parameters of building codes. Then the bidding process is instigated. The bid documents are posted on these websites:

- [www.bgs.state.vt.us/pca/bids/bids.php](http://www.bgs.state.vt.us/pca/bids/bids.php)
- [bgs.vermont.gov/purchasing/bids](http://bgs.vermont.gov/purchasing/bids)

The plans, specifications, and time-sensitive proposal details will all be included.



When repairs are needed, the contractors who have been awarded retainers, done on a year-to-year basis, will complete the work. If they cannot provide the service, the work is put out to bid in the same manner as a new building bid.

Contractors are encouraged to ask questions about building projects before bidding. One of the greatest challenges the AOT experiences with these projects is processing change orders after the project has begun, due to the contractor missing or overlooking something.

**MINNESOTA DOT STORAGE BUILDINGS**

The Minnesota Department of Transportation has a variety of buildings, from wood framed shelters to buildings constructed with steel joists and steel columns. The buildings are approaching their end of lifecycle due to the corrosive nature of the salt being stored. Issues have included wood rotting and steel rusting due to lack of galvanizing. Pat Jeffrey, MnDOT’s structural group lead, says that now they find that those buildings are cost-prohibitive, and they deal mainly with open web truss structures with fabric covers or pre-engineered sheds with fabric exteriors.

The buildings were projected to have 20-25 years of longevity, but with costs going up, the DOT is doing more preventative maintenance to extend longevity. They are also always on the look-out for different, easier-to-construct, more cost-effective ways to build these salt sheds.

Building sizes vary; smaller buildings hold 750 tons of salt, while larger buildings in metro areas are built to hold 10,000 tons. They are typically three-sided structures, orienting the open side to face south or east to avoid exposure to the prevailing winds.

Required specifications will have various height and width requirements including minimum heights at the side walls so that when tandem trucks are backed in, they don’t hit the frame. A minimum height is required at the center of the building for salt trucks also.

Another spec, the snow load, is determined by the location within the state. For example, 50 lb. ground snow loads may be needed in the south and perhaps 60 lb. ground snow loads in the north.

Special considerations for these buildings can include a liner under the asphalt to protect salt from leaching into groundwater.



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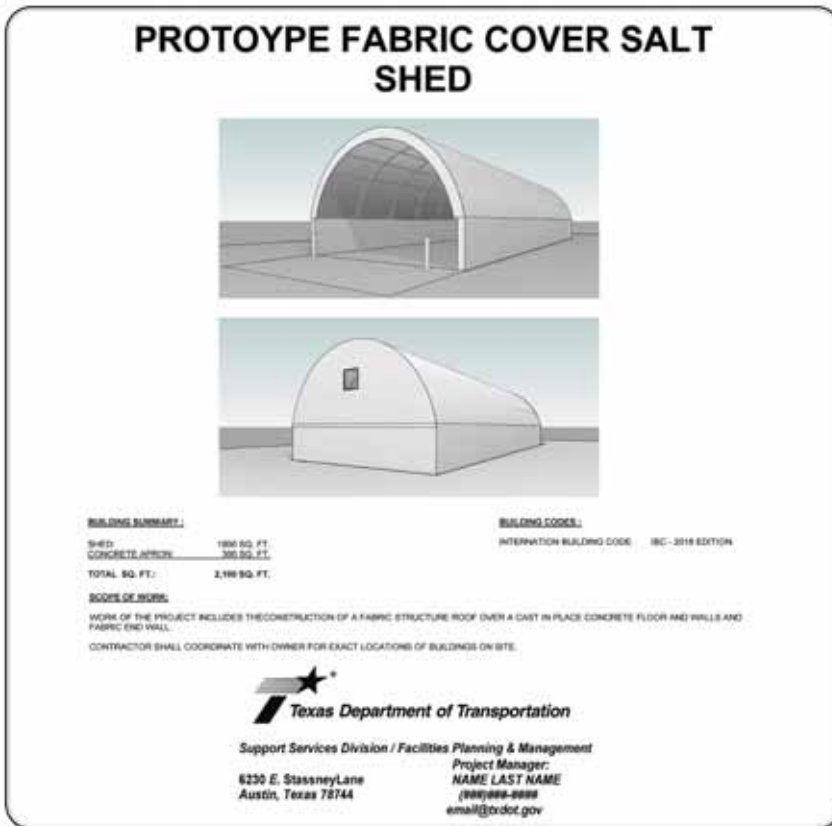
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Texas DOT Fabric Shed Prototype Drawings

Typically they are built with spread footings based on information from a geo-technical report.

Becoming an approved vendor is pretty simple; the DOT wants a variety of builders to bid. Contact [vincent.jeffrey@state.mn.us](mailto:vincent.jeffrey@state.mn.us). The conversation will be about establishing whether you can meet their specifications. It can take from two days to three weeks, depending on what is going on. Once approved, you can find projects to bid on this website: [www.mmd.admin.state.mn.us/solicitations.htm](http://www.mmd.admin.state.mn.us/solicitations.htm)

The state of Minnesota requires prevailing wages for carpenters and other job titles. The Department of Labor and Industry will review the general contractors’ architectural plans to ensure they meet code.

**NEVADA DOT STORAGE BUILDINGS**

Extruded aluminum primary structural members wrapped in a membrane with a PVF outer layer over a fabric scrim is the common structure used by the Nevada DOT, according to Ross Baker, Assistant Chief Maintenance & Asset Management Engineer. They have also built cast-in-place concrete buildings with aluminum roofing panels over galvanized steel roof structures and they are planning to build a couple more at various locations. As time goes on, the plan is to cover more of their sand

and salt stockpiles, and they are open to other types of construction; whatever design and material works best at the location.

Sizes depend upon the amount of salt, sand, or both to be stored at a given location; some sheds will store several hundred tons and others several thousand tons.

The loads the structures must withstand are dictated by building code and local code revisions. In Nevada, most local code revisions are structural in nature due to “special wind regions” and “special snow regions.”

Stockpile canopies require anti-corrosive specifications. Even in the dry Nevada air, the salt stored is highly harmful to unprotected steel.

Salt storage is located wherever maintenance crews need them, so the geology, topology, local climate, type of site — manned or un-manned — are all factors that must be factored in when deciding on the type of structure and footing required.

Builders need to be pre-qualified. A “design-bid-build” method is used. Professional design consultants create architectural/engineering plans, which are submitted to the proper authorities to obtain the necessary permits.

Then the project is advertised for bid from licensed contractors. Access project plans, specs, and permits at [dot.nv.gov](http://dot.nv.gov) in order to bid.

**TEXAS DOT STORAGE BUILDINGS**

Tanya Brown of the Texas DOT said that generally they build Brine Making Sheds (where salt is added to water for spreading on roads), Fabric Covered Salt Sheds, Wood Salt Sheds, and Concrete/Metal Sheds with concrete walls and metal roofs.

Brine Making Sheds, and some Salt Sheds, are typically concrete walled with wood framing for upper walls, trusses, and roof with metal exterior. The fabric-covered salt sheds require the creation of a fabric covered roof over cast-in-place concrete walls with one fabric-covered end wall.

These buildings may be on various sites, from right-of-ways to state properties.

There is no “approved builders list.” When bidding on a job, the contractor must base their bid on the specifications in the bid solicitation. After winning the bid and when the contractor is providing their submittals to TxDOT, the contractor could submit a like-kind or equivalent material for approval as a substitute to the usual salt shed building types.

Projects up for bid are advertised in three locations:

- [www.txsmartbuy.com/esbd](http://www.txsmartbuy.com/esbd)



- [www.txdot.gov/business.html](http://www.txdot.gov/business.html)
- [www.txdot.gov/business/plans-online-bid-lettings.html](http://www.txdot.gov/business/plans-online-bid-lettings.html)

The proposal documents can be downloaded from any one of these sites. They should be submitted along with supporting documents no later than noon on the advertised letting date. If they are received after noon CST, they are automatically rejected.

**MARYLAND DOT STATE HIGHWAY ADMINISTRATION (MDOT SHA) STORAGE BUILDINGS**

According to Greg Keenan, Deputy Director of Facility Management, the Maryland DOT State Highway Administration (MDOT SHA) uses both barns and domes to store road salt. Barns are timber construction with a truss roof structure and metal or shingled roofing. Domes have prefabricated wood panels erected on concrete rings of varying height and shingled roofs. The dome's concrete ring can vary from 1'- 8' high. MDOT SHA is also pursuing the use of tension fabric storage buildings with concrete side walls and aluminum framing.

Storage barns get as large as 112' x 96'; domes average 100'

diameter rings. The ring height determines storage capacity. Salt structure barns can hold up to 10,000 tons of salt. Domes can range from 1,000 tons to 6,700 tons.

Prior to construction, soil boring and subsurface investigation is conducted as well as surveys for storm water management and proximity to sensitive resources.

Contractors are not pre-qualified by MDOT SHA. A Bidder's List for each specific solicitation can be found under the following link: [www.bidx.com/maryland/main](http://www.bidx.com/maryland/main). If you are bidding on a project with a value of \$100,000 or more, you must submit bid security of 5% of the total bid. If you win the bid, you must provide a Performance and Payment Bond for 100% of the bid amount.

Information on how to bid on various MDOT SHA projects can be found in the "Contractors Information Center" on MDOT SHA's website: [roads.maryland.gov/pages/home.aspx](http://roads.maryland.gov/pages/home.aspx).

If the state (or states) you work in is not covered here, check out the state Department of Transportation website and discover what opportunities may be waiting for your bid. **RB**

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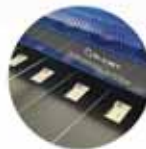
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*This article was published in the May/June 1975 issue. The July/August issue included corrections to the definitions. Now, for the first time, we are presenting the whole article with the corrections intact.*

**FOR 50+ YEARS RURAL BUILDER** has been providing the news, trends and resources builders need. Prior to the January 1974 edition, "Farm Building News," as it was called, was in newspaper form. However, those old papers are not to be found in our Shield Wall library. We would love to see some of them... it's our lost heritage! If you have one/some of them please drop a line to me: rocky@shieldwallmedia.com. I'll publish a brief news story about you, your organization, and your projects in return!

## Handy Glossary of Terms

# Know Your Ventilation

BY M. F. BRUGGERT AND R. E. GRAVES,  
UNIVERSITY OF WISCONSIN-EXTENSION

### VENTILATION OF FARM BUILDINGS

**IS** a pretty complicated business these days. Farm builders who are involved in the design of buildings and the installation of ventilation equipment should be familiar with the technical terms used by designers and engineers.

Here's a chance to brush up on basic ventilation terms with a glossary prepared by M. F. Bruggert and R. E. Graves, University of Wisconsin-Extension.

**Heat** is a form of energy transmitted from one body to another because of temperature difference. The "flow" of heat is from the warmer body to the cooler body.

**BTU** is the unit of heat most commonly used. It is the amount of heat required to raise one pound of water one degree Fahrenheit.

**Temperature** refers to the ability of a body to give up or absorb heat. Arbitrary scales have been developed and used to indicate temperature. The two most common are the degree Fahrenheit and the degree Centigrade scales.

**Conduction** is heat transmission through solid materials separating warm and cold areas. For example, a wall separating the living room of a house from the cold outside will conduct heat to the outside wall surface.

**Convection** is a heat transfer process due to fluid movement. Cold air is heavier than warm air. When air is heated, it expands and rises, thus carrying away heat from the source. Convection depends on some medium, usually air or water, to convey heat from warmer to colder areas.

**Radiation** is a heat transfer from one body to another without heating the air between them. The sun is an example of radiation heat transfer.

**Coefficient of Thermal Capacity** is the amount of heat added to or taken from a substance of unit weight to change its temperature one degree. The units are BTUs per pound-degree Fahrenheit. Thermal capacity of water is one BTU pound-degree Fahrenheit, air is 0.24 BTUs / cu. ft. (air), and water vapor is 0.45 BTUs per pound degree Fahrenheit.

**Latent Heat** refers to the heat exchanged when a material changes its state of molecular aggregation without a change in temperature. When ice melts, it absorbs – without a change in temperature – heat at the rate of 144 BTU/lb. If water is vaporized at 212°F, 970 BTU/lb. are absorbed without change in temperature. A reversal in the change-of-state process reverses the heat flow. When water freezes or water vapor condenses, heat is released.

**Latent Heat of Fusion** refers to the heat involved in a change between a solid and liquid state.

**Latent Heat of Vaporization** refers to the heat involved in a change between a liquid and vapor state. The latent heat of vaporization of water varies with the temperature. The common value used in designing animal ventilation systems is 1044 BTUs per pound of water.

**Sensible Heat** is the heat not tied up as Latent Heat of Fusion or Vaporization. Sensible Heat causes a temperature change of the material and is the heat felt from a warm object, e.g., fire. The amount



of Sensible Heat tied up in the material due to increase in temperature is calculated from the following equation:  $Q = M \times S \times (T1 - T2)$

Q = Heat exchanged; M = Mass of material; S = Thermo Capacity of material; T1, T2 = Beginning and final temperatures of material. An example of a sensible heat source is the furnace in a calf barn or milk house.

**Mechanical Equivalence of Heat Terms**-1 BTU = 778 ft./lbs.; 1 HP HR = 2545 BTUs; 1 KWHR = 3413 BTUs; 1 ton refrigeration = 12,000 BTUs/hour.

**Thermal Conductivity** – K is a heat transfer property of a 1 inch thickness of a material, expressed as heat (BTU) per hour that passes through a piece of material 1 inch thick and 1 foot square when the temperature difference between the



two sides is 1°F.

**Thermal Conductance** – C is a heat transfer property of a total thickness of

a material; expressed as heat (BTU) per hour that passes through a piece of material of given thickness and 1 foot square when the temperature difference between the two sides is 1°F. (C is for given thickness, K is for 1-inch thickness.)

**U-Value**, an overall coefficient of heat transmission for a wall, ceiling or floor section; expressed as heat (BTU) per hour that passes through a complete section 1 ft. sq. when the temperature difference between the two sides is 1°F.

**R-Value** is the ability of a material to resist the flow of heat, insulation value; expressed per inch of thickness or for total thickness. R-values for various components through a wall section may be added to determine the total R-value of the material. For the same wall section,  $R = 1/U$ . **RB**

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# Quicken Steel

## Made In America and Carving Out a Niche

**THERE AREN'T OFTEN OPPORTUNITIES FOR** builders and contractors to get in on the ground floor anymore but Quicken Steel and its light-gauge metal buildings are one of them.

Developed in Australia decades ago, the technology moved to the United States in 2018, starting in Claxton, Georgia, with an emphasis on self-storage and cold-formed steel buildings.

Now owned by Majestic Steel (as of Q3 2022), the company is trying to carve out a niche — light-gauge metal buildings that pass local building codes, even residential. So, whether you are fairly new to building, or simply want a fast and simple way to start upselling affordable clear span metal buildings, Quicken Steel's design software and its local (meaning American) sourcing of materials might be for you.

### QUICKEN STEEL'S OFFERINGS

At its core, Quicken Steel designs and manufactures metal buildings. Providing all the design information and products customers need, Quicken Steel is a one-stop shop. They offer cost-effective options across build types ranging from residential garages and barndominiums to self-storage facilities. They



### Company Philosophy

Quicken Steel's objective is to provide customers with the materials they need for a fundamentally sound building in a timely fashion coupled with excellent customer service and continuous improvement for the latest innovations.

are fully engineered and easy to assemble with custom punched components for bolt-together construction. The entire process — planning through production — can be done in as little as two weeks, and almost always within six weeks, the company says.

As you know by now, since the pandemic, there have been supply shortages in the building industry. As a result, supply manufacturers have had increased wait times, and businesses have had delayed orders. However, Quicken Steel says it has been able to avoid this issue by “implementing state-of-the-art technologies that allow you to design your next steel building on the Quicken Buildings website, or one of our distributors' websites.”

Their lineup includes:

- Self-storage design and manufacturing
  - Custom, fully engineered, cold-formed steel buildings
  - 18, 16, 14, 12, 10 gauge galvanized, and red oxide components
  - Various roof and wall panel profiles
  - High-capacity trim line with custom profile capability

### WORKING WITH BUILDERS

The company tries to partner with builders and contractors. They design their buildings to local building codes using the job site address in the software. The bill of materials, engineering and drawings will be included for the builder/contractor, and those drawings include plans for the slab or foundation.







The company also stressed that its products are affordable but not low-end or cheap. “Everything we supply is commercial grade made for America’s tough weather conditions,” said John Wilson, Vice President of Business Development and Strategic Accounts. “And everything we supply is engineered to your area. We even supply the foundation design, which can save you \$1,500 to \$5,000.”

The Quicken Steel staff said this new building systems technology is a niche business opportunity for builders. Most builders and contractors are already busy, of course, and have their specialties, whether that be residential post-frame, barns, or metal roofs. For some builders and contractors, Quicken Steel could be a way for “you to get additional sales for granny shacks, man caves, a warehouse and workshop, a small home, or one of these little fire stations you’ll see in rural areas just outside of town.”

## Future Plans

Despite its recent founding in 2018, Quicken Steel has made a great start in the steel building and component industry and plans to open a new facility in Texas next year. As their cold-formed building and component segments continue to grow, Quicken Steel is concentrating a great share of its effort into solar energy, self-storage and farming markets.

## About Cold-Formed Steel

Cold-formed steel gets its shape from being rolled, pressed, or stamped. CNC machines can give steel its form. A galvanized or galvalume coating is applied to the metal to fight against the elements. Customers often are given a chance to order a paint covering. No welding is involved in cold-formed steel. Bolts are used to assemble every beam, making assembly fast and easy. Quicken Steel buildings utilize G90 galvanized steel.



said Chris Lynch, sales manager. “The farming community is probably one of the hottest markets in America for our cold-formed building systems.”

The Quicken team also suggested that builders and contractors should consider becoming a Quicken distributor. As an example, a residential builder could use that product to upsell a barn or shed. Quicken leaves room for profit margin because of its affordability. And because it’s light gauge steel, even the slab is more affordable (obviously, because it’s lighter). “About 100-foot clear span is probably as far as we can go competitively, depending on the required wind loads,” Lynch said.

## THE SOFTWARE

Home and shed design software is becoming simpler across the board and Quicken is one of those companies that really loves its online product. “I took a customer’s design off our website today, and in less than 10 minutes, I quoted the job, and the customer was ready to buy a fully engineered steel building, compliant with the local building codes. We will deliver it in two weeks,” Wilson said.

Using the job site address, Quicken’s distributors can very quickly tell the customer “that the seismic load is 3 and the snow load is 30 pounds a foot and the wind load in your area is 150 miles an hour,” he added.

The product is particularly good for radiated floors and wide-open-inside floor plans. “We have load-bearing walls, so you have no columns inside,” Wilson said. “Inside, you can do whatever you want, and you can change your mind later, or put the shell up quickly and start using it.” **RB**



## ■ BARRICADE UNVEILS CONTINUOUS INSULATION CORNER SHEATHING

INDEVCO North America has introduced a new patent-pending Barricade Thermo-Brace Guard product, a structural continuous sheathing for building envelope corners that unitizes walls and insulates corners for higher energy efficiency, while eliminating the need for corner flashing.

This continuous corner guard solution can be applied with Barricade Thermo-Brace lightweight structural sheathing or with Barricade Thermo-Brace SIB (R3 or R5) reversible structural insulated sheathing, both of which are produced in Doswell, Virginia. Said Geoff Baldwin, Chief Innovation Officer at INDEVCO North America, “The way it wraps a corner joins two separate walls into a complete enclosure, creating continuous insulation that protects against air infiltration and prevents moisture build-up at the corner. It also eliminates the cost and installation challenges associated with corner flashing, which saves money and time for builders and contractors.”

The continuous corner sheathing application has the same strength as the Thermo-Brace structural sheathing, which is rated higher than OSB bracing requirements identified by the International Building Code.

## ■ WORX INTRODUCES NEW COMPOUND MITER SAW

WORX says its new Nitro 20V Power Share 7-1/4-inch sliding compound miter saw with hold-down clamp and Power

Share PRO Battery “is ideal for cutting trim and molding, building decks, and making custom miter, bevel, and angle cuts.”

The WORX Nitro benchtop miter weighs 21 lbs. (with battery) and with its aluminum base construction weighs significantly less than a conventional 10-inch sliding compound miter saw.

Most miter saws have hold down clamps, but what’s unique about this new saw is that the hold down clamp is lever-operated and holds down the work piece on both sides of the blade. This maintains a stationary work piece throughout the cut. According to WORX, “The feature offers a safer solution in keeping hands away from the blade during cutting operations. No other miter saw has this dual feature.”



## ■ NOVA USA WOOD PRODUCTS NAMED EXCLUSIVE U.S. PROVIDER OF RHINO WOOD

Nova USA Wood Products, Inc., a supplier of high-quality wood products and accessories, has been named the exclusive provider of Rhino Wood in North America. Rhino Wood is a modified timber produced through a patented two-stage process that uses thermal modification and pressure to impregnate the original wood right to the core with a proprietary compound. This patented process results in a sustainable alternative to hardwoods like Ipe. Rhino Wood achieves the same high-density, low-maintenance and Class 1 du-

rability characteristics as Ipe hardwood, while aging beautifully into a silver-grey color over time.

“Rhino Wood is the ideal complement to our premium line of exotic hardwood decking and siding products,” said Steve Getsiv, the company’s CEO. “Many of the hardwoods that were previously used throughout the marketplace are now either scarce or prohibitively expensive. Rhino Wood is the latest example of our efforts to meet customer needs with high-quality woods that will stand the test of time with beauty and great structural integrity.”

Rhino Wood’s patented thermal heat and pressure impregnation process was specifically developed to double the hardness and density of sustainably sourced South African Pine species.

Added Steven Suntutup, Rhino Wood’s U.S. representative, Nova USA “has an extensive distribution network that extends from the U.S. into Mexico and Canada. Plus, they know the true value of innovation and the need to continually meet client needs with premium products that look great and perform exceptionally well no matter the climate. This includes providing a large variety of cost-effective alternatives to the hardwoods that are increasingly becoming cost-prohibitive and less available.”

## ■ CAMO INTRODUCES NEW CODE-COMPLIANT SCREWS

National Nail’s CAMO brand announces a new line of high-performance structural screws for deck substructure, internal framing, ledger, and general construction. They are certified IRC/IBC code compliant and “rigorously third-party tested and certified by DrJ Engineering,” according to the press release.

All structural screws feature CAMO’s proprietary PROTECH ULTRA 4 coating, a four-layer system for industry-leading corrosion resistance and tested 2X longer than industry standards. The Ledger, Multi-ply and Truss screws also do double-duty, requiring fewer fasteners per job





and less SKUs for dealers. Unlike most structural screws, all CAMO structural screws can be used for interior and exterior projects. There are numerous varieties in the product line.



**■ ATLAS ROOFING LAUNCHES ENERGYSHIELD XR**

Atlas Roofing Corporation announces

the introduction of EnergyShield XR, a new polyiso insulation product specifically engineered to provide continuous insulation for foundation walls and under-slab use. EnergyShield XR expands upon their polyiso wall solutions to create a versatile, industry-leading portfolio for both commercial and residential applications.

“EnergyShield XR effectively insulates the building foundation to help improve energy efficiency and interior comfort for occupants,” said Jen Frey, Senior Product Manager for wall insulation at Atlas. “It’s engineered to effectively reduce energy loss through foundation walls with exceptional durability to resist loads from soil and hydrostatic pressure.”

Atlas said this new product has a very high R-value and a 15-year thermal warranty.

**■ CAT LAUNCHES NEW HAMMER DRILL WITH GRAPHENE BATTERY**

The New Cat 18V ½-inch DX13 Brushless Hammer Drill claims the distinction of being the first portable power tool to feature a graphene battery. This state-of-the-art 18V, 5.0Ah graphene battery delivers twice the power, charges three times faster, and provides four times longer life cycles than conventional lithium-ion batteries.

“Imagine the ability to fully re-charge a



5Ah battery in 20 minutes and have twice the amount of power to tackle some of the toughest applications on the jobsite without being connected to a cord,” stated the press release. “Plus, the graphene battery provides four times the amount of life cycles, which translates to 1200 charges on a single battery, with a 5-year warranty to stand behind it.”

All cordless tools on the Cat 18-volt platform are compatible with the 18V, 5.0Ah graphene battery. Cat also said the Hammer Drill features “25 percent more power, provides 50 percent longer runtime, and adds 10 percent longer life, compared to traditional brushed motors.” **RB**



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# ‘Cautious Optimism’

Annual Frame Building Expo Encouraging for Industry

**CAUTIOUS OPTIMISM WAS IN THE** air during the 55th Annual National Frame Building Association Conference & Expo held February 22-24 in Louisville, Kentucky.

More than 140 exhibitors set up at the Kentucky International Convention Center to show off new products and meet both existing and potential customers. The most common question? “Will there be a dropoff this year?” The most common answer was “yes, eventually there will be a slowdown, but if it’s happening this year, there’s no evidence to that effect.” The near future of the financial markets, both broadly and specifically in post-frame, was the single biggest topic of discussion at the Shield Wall Media booth and at social events.

“Cautious optimism continues to be the theme in our market,” said Mike O’Hara, National Sales Manager for Levi’s Building Components. “Rollformers and contractors continue to be busy and are anticipating a good first half of the year.”



**(ABOVE)** NovaGard’s Keith Rys, regional sales manager for the Midwest, discusses the company’s silicones.

**(TOP)** The Boss Hammer Company brought along some great options.

What the post-frame and metal building markets seem to be exhibiting is that they are increasingly a solution for a lot of builders and homeowners. “Metal roofing continues to gain in popularity for residential use,” O’Hara said, while post-frame companies also said their practicality offers hope even if or when the building boom declines.

Headlining the new products on display was a new precast concrete skirt board product from Perma-Column®, while SDI (Steel Dynamics, Inc.) has a new ability to print on metal that will likely be game-changing as well.



The biggest industry news came from the NFBA itself, which announced it has created an online course in conjunction with the University of Missouri Extension entitled “Basic Principles for Post-Frame Construction – Basic Self-Study Guide.” It is intended for contractors and builders to educate employees and hopefully create an opportunity to recruit younger people by demonstrating a clear path to a good job.

Here’s a rundown of the biggest newsmakers at the show.

**FBE SHOW NEWS**

**Perma-Column**


Perma-Column® introduced precast concrete skirt boards which it says “elevates the post-frame industry again.” A patented product, precast skirt boards have a hybrid concrete/wood design that eliminates all wood contact with the ground. “There’s nothing like it in North America,” said Mark Stover, CEO and President of Perma-Column. “This is the new way to build.”

The company also announced a new Pro Builder program. Pro Builders receive sales and marketing support from Perma-Column®, branded gear, and exposure on Perma-Column®’s social channels and website, in exchange for supporting the program.

*(RIGHT) Mark Stover of Perma-Column demonstrated the company’s new precast skirt boards, which have a hybrid concrete/wood design.*



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## FBE New Products

**Hixwood** announced it would soon be producing a “commercial rib panel” that Sales Manager Bob Kortbein said is sometimes called an R-Panel or a PBR Panel. “It will primarily be used for commercial buildings with a steel frame,” he said. It will be available in 24 and 26 gauge and have a profile of 12 inches.

**HB Fuller** unveiled a deck post anchor system that is far less cumbersome than cement and is permanent. From a press release, “Simply mix the two-component kit, pour the contents into the hole, and let it sit for 15 minutes. Each two-pound bag easily sets a 4” x 4” post in an 8” deep hole. This means that you can set posts with smaller holes and get more from each bag.”

**Post Protector**, which offers slide-on “Barrier” protection for in-ground posts as its primary product, has now licensed a remedial chemical treatment designed to “re-treat” in-service posts. For 25 years, this technology has been used exclusively in the industrial sector, extending the service life of utility poles by restoring preservative levels as their original preservative treatment depletes.

Post Protector is now offering this same technology to the retail sector as “Post Proservative.” It dissolves and is dispersed into the post to create up to 10 more years of protection. Simply drill a hole and insert the preservative stick. Sticks are typically “re-loaded” every 6-8 years.

**S-5!** introduced CanDuit Pipe Clamps after feedback from customers asking for a better way to handle conduit and pipes. “CanDuit is the perfect solution to restrain, secure, and support piping, conduit, condensate lines, and other round shapes – all while protecting your metal roof.” The new product fits all S-5! Clamps and brackets.



**Post Protector's Ken McDonnell described for attendees the company's new Post Proservative.**

“Perma-Column® Pro Builders have fantastic stories to tell and knowledge to share with fellow post-frame builders,” Stover said. “They have made a commitment to building on permanent foundations that benefit customers. Their inspirational stories serve as valuable learning experiences for the industry overall. We’re looking for more builders like them to recognize and honor.”

Learn more about that program at [permacolumn.com/pro-builders](http://permacolumn.com/pro-builders). Stover said Thursday of the show was one of the company’s best ever, adding that “builders



**HB Fuller unveiled a post-anchor system that sets in 15 minutes. A 2-pound bag sets a 4"x4" post.**

are very optimistic about 2023.” He said there were four Perma-Column® distributors exhibiting.

### SDI Digitally Printing on Metal

Steel Dynamics (SDI) has started taking orders for its new product that is unlike any previous attempt to print images on metal. The company is using the latest technology including “electron beam




**Klar showed off its Rigid PVC ribbed corrugated panels as an alternative to the traditional metal sheet. Klar calls its panel the only multilayer panel with “thermo-acoustic” properties.**



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coatings and curing.” Don Switzer, company Sales Manager of Special Products, said it’s been a few years in the making and available a few months. “We have been painting steel for 20 years and our customers have been after us to do prints,” he said. “We were waiting for the technology to catch up. About three years ago, we started investing in the process. We have spent a significant amount of money and time developing the process.”

It paid off with a product that’s been available a few months. It’s called TruSteel HD and it prints a reproduction of an actual picture or image, which doesn’t repeat for up to 32 feet. The high-definition image is 400 dpi and “it’s very lifelike. We’ve been fortunate at this show to have customers lined up. The reason is we start with real wood and our creative team does

their magic.” A typical use case: “We are working with a company that makes log cabins and we’ll be able to do the chink line, as an example.” Look for an expanded article on this product in a future issue.

**NFBA Online Course**

The NFBA announced that it has created a Post-Frame Builder Training Curriculum which includes an online course to teach people the basics of post-frame construction. The online study course is described as “a great way to teach the students if you do not have the time or resources to teach the course.” The online study course is conducted by the University of Missouri.

To learn more about the curriculum or to inquire about pricing, contact the NFBA at [NFBA.org](http://NFBA.org). **RB**



*Hixwood was wall-to-wall at its booth while describing its post-frame buildings.*



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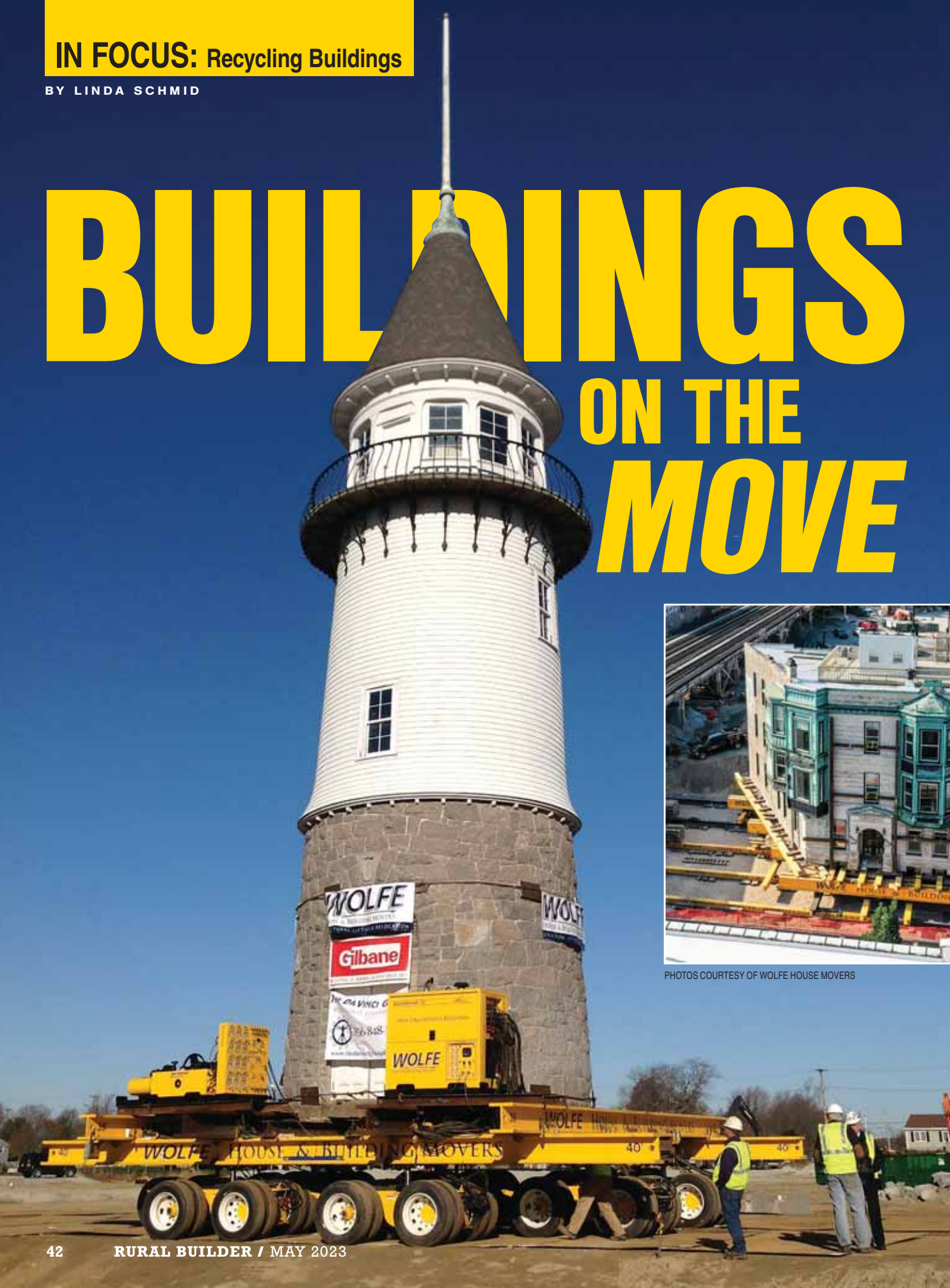
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BY LINDA SCHMID

# BUILDINGS ON THE MOVE



PHOTOS COURTESY OF WOLFE HOUSE MOVERS



**WHY MOVE A BUILDING? ACCORDING** to Mike Brovont, Sr., Sales Manager at Wolfe House Movers, many houses in the east were built along foot paths or horse carriage trails and that is why they are now being moved to make room for more expanded roadways. Others are moved as land is developed or its owners decide to build new structures, and the alternative is to give them over to the wrecker.

Andy Jonassen of Jonassen Structural Movers says a home worth \$200,000 can be moved and, depending on the difficulties of the move, you might end up paying half as much ... in effect you doubled your money. Plus, you kept a building out of the landfill.

Jonassen said that much of history is able to be preserved by the moving of structures. A few years ago they moved a plantation home built before the Civil War, a World War II Memorial Fountain, and just recently they moved a house built in the '40s.

Brovont says that old buildings make up 25-30% of the buildings they move and lift. Sometimes people just have buildings lifted in order to place a new foundation under them to replace an old, crumbling foundation, thereby still preserving an otherwise usable structure.



If the building is on the historic register, then the register's office must be informed and approval received. If the building is going to be moved down the road, an oversized load road permit is required, a detour may need to be set up and the police may even need to be involved if it is so stated on the permit. Brovont says they will take care of the permits, however it is up to the contractor or building owner to take care of any tree trimming that may be required, organizing traffic control, and getting wires moved, if needed. Moving wires can get expensive, especially in crowded areas.

While each move is different, Brovont says that the lift is usually pretty similar. The house is unbolted from the foundation.

If the movers can't get to the bolts, they use a Sawzall to cut it from the sill plate. Excavating then occurs in which holes are jack-hammered through the foundation walls. Steel beams or "mains" are installed, running through the holes. Then "crosser" steel beams are placed the other way approximately every 4' as support. All load-bearing and floor framing points are supported. Then "needle beams" are placed between crossers to support end



PHOTO COURTESY OF JONASSEN STRUCTURAL MOVERS

## ON THE MOVE

The first priority when planning a move, is to get permissions and permits in place. New foundations usually require building permits. If there is a mortgage on the building, the mortgage provider's permission will need to be secured. Jonassen says that depending where you are, different government offices need to be contacted; county, state or both.

walls. Oak shims are added where the steel has perforated the foundation. If the building is very large, up-sized steel beams, and more of them at smaller intervals, would be placed under the building.

A hydraulic, unified jacking system raises the building 6" at a time so that crib piles may be built up under it. The unified jacking is very important, Jonassen says, because it prevents cracking and weakening of the structure. Then the space is backfilled and compacted to bring it up to the level of the surrounding ground.

Finally, the building is ready for the dolly platform system and then the building is ready to head out. Meanwhile crib piles are built and steel beams set up at the new site so the building can be driven over and placed upon the new foundation.

## A BIT OF ADVICE

Jonassen suggests that people proceed with caution. "Talk to a realtor and see what the value of your building will be in its new location, then figure out the total cost of moving," he said.

While he has never heard of anyone who did not come out ahead, it can come close, so it is a good idea to do the math first and know where you are headed. **RB**



# Northern Lights Farm Moves a Barn

**MARCY WENTWORTH AND HER HUSBAND** Dan own Northern Lights Farm, an organic dairy farm. In November of 2016, the dairy barn burned down. When they began looking at building a replacement, they discovered that while a two-story barn like they had was heat and labor efficient with the feed in the second story, it wasn't cost-effective to build. Mr. Wentworth liked the layout they had, so he came up with a solution.

A building supply company about 4 miles away had an old barn on their property that they were using mainly to house lumber, but the company was going out of business and the barn was no longer needed. The barn was a very lucky find for the Wentworths because the barn's situation was very similar to the layout of their old barn: both were on a hill with "high drives" and doors lined up so you could drive a tractor into the top floor. The Wentworths were excited.

Now came the more challenging part. They went to the Wisconsin DOT for permission, and it was refused. The barn would have to be transported about a half mile down the highway, and as luck would have it someone had recently dumped a building

on the highway, and the DOT did not want another situation like that one. They called in a state senator to help them gain permission from the DOT. The agency came back and said it could be done to the tune of \$7,000 for rerouting traffic. The compromise was that the barn was moved down the highway at night.

Other preparations included cutting back a neighbor's tree and getting the power company to take power lines down, which meant that the neighbors' power would be out for a while. Letters were sent warning people that their power would be out for a short time, but that was not enough. The power company required them to sign a release relieving the company of responsibility if something negative happened because the power was off. Happily that ended up being an unnecessary precaution.

The move was handled by Schuette Movers of Merrill and Waupaca County highway workers were hired to help with the move. Eighty foot long beams were placed the length of the barn, with four hydraulic dollies of eight wheels in the back and a larger gang up front.

This oversized load journeyed down the state highway to a





*On the preceding page and in the two photos above, the barn moves from its previous home, including a nighttime highway ride. Below and in the right column, it is placed at the Wentworth farm. Bottom right, it now looks like it always belonged there. Photos courtesy of Marcy Wentworth.*



county road and from there to a narrow town road.

Marcy went out to see the barn coming down the road at 3 or 4 a.m. To her surprise, she found that it took a couple of hours to maneuver that oversized load around the last corner.

When they got to the site, the movers had planned on leaving the building and placing it on the new foundation the next day, but the weather forecast had changed so they decided to just keep working and put it in place.

All in all, it all turned out really well, Marcy says. They ended up with an unplanned window in the milk house due to a beam that stuck out and was built around, but they can drive into the upstairs with the tractor just the way they had hoped. The barn came with two roll-up metal doors, which has worked out really well, although the hay wagon doesn't fit in there, which would have been nice.

The original milk house was really cramped, but now they have

a nice, big, new one that is well-lit. There are fewer cow stalls now, 42 of them, all wider tie stalls. They have dry cows and heifers in another building. Overall the barn is 40' by 80' and Marcy said they built the foundation a foot taller than the original barn to have a high ceiling in the cow barn below.

The Wentworths are glad they did it, and Marcy said that the cost of what they paid for the barn itself and the labor of moving it, the power company, county workers, ground work masons, carpenters, and electricians was expensive, but unless you had a community barn raising like the Amish, you couldn't build the barn they have for what they spent. **RB**



*EstiFrame's automated marking system prints blueprints directly onto the framing members.*

## ■ SIMPSON STRONG-TIE ACQUIRES ESTIFRAME TECHNOLOGIES

Simpson Strong-Tie, which offers engineered structural connectors and building solutions, announced it has acquired Elk Grove, California-based EstiFrame Technologies, Inc.

Founded in 2017 by Coby Gifford and Aaron Love, EstiFrame provides component manufacturing and framing technologies to the construction industry, including the EasyFrame automated marking system that matches saws with digital printers to label 2x frame members for fast and accurate assembly.

Designed to reduce construction timelines and address skilled labor shortages in framing and construction, the EasyFrame system prints framing blueprints for a structure directly onto the framing members themselves. Paired with either a manual or automated saw, the system provides wall panels that are pre-marked for easy assembly, driving construction efficiency and accuracy.

"EstiFrame has established a strong reputation for providing easy-to-adopt, scalable solutions to LBM dealers and framing shops looking to gain critical efficiencies in component manufacturing," said Simpson Strong-Tie Vice President of Customer Facing Technology April Burt. "The EasyFrame system is a logical and complementary addition to the Building

Technology solutions already provided by Simpson Strong-Tie, and expands our offerings for customers who continue to seek more efficient ways to convert the digital frame into strong, safe physical structures."

EasyFrame software is designed to save the greatest amount of wood possible by managing cut completion activity and constantly re-optimizing on the fly. Gifford and Love will remain with the EstiFrame team.

**In other Simpson Strong-Tie news,** the company was named as one of the Building Talent Foundation (BTF) 2022 Industry Champions winners, which honors companies that are committed to building a workforce in residential construction. BTF, a national nonprofit organization established in 2019 to address the talent shortage across the building trades, said the winners have an "above-and-beyond commitment, contribution, and collaboration in building a sustainable workforce in residential construction."

BTF connects youth and people from underrepresented groups with internship and employment opportunities. BTF has coached over 1,400 people into jobs and, in 2022, BTF engaged more than 23,000 people across the U.S. in exploring careers in construction.

A few of the other winners included Carrier, Daikin, Kohler, Kohler, Sherwin-Williams, and Builders FirstSource. For

more information on BTF, visit the website at [www.buildingtf.org](http://www.buildingtf.org).

## ■ NATION'S BEST ACQUIRES FORSLUND BUILDING SUPPLY

Independent home improvement company Nation's Best has announced the addition of Forslund Building Supply, which serves the Upper Peninsula of Michigan and northern Wisconsin.

"As a dominant player in a rural market, Forslund couldn't be a better fit for the Nation's Best family," said Chris Miller, President and CEO of Nation's Best. "As we continue to expand our presence across the country, the UP is an appealing area with tremendous growth opportunities. Through three generations, Forslund Building Supply has established a strong brand and an even stronger reputation for serving their communities in Michigan and Wisconsin."

Forslund Building Supply was founded in 1950. It will maintain operations, keep its name, and continue with its key leadership team. "There's a tremendous potential for us to expand the Forslund brand in our market and I'm proud to be able to be a part of this next step in our company's history," said Owner Gus Forslund.

Nation's Best Holdings, which was founded in 2019, now owns and operates 43 locations in 12 states.

## ■ MULE-HIDE PROMOTES KYLE STAVISH TO NATIONAL BUSINESS DEVELOPMENT MANAGER

Mule-Hide Products Co. Inc., manufacturer of low-slope roofing systems and products, has promoted Kyle Stavish to national business development manager. Stavish joined Mule-Hide Products in 2017 as territory manager for Upstate New York and was promoted to national training manager in 2021. In his new role, Stavish will lead the company's business development team, which is responsible for strengthening relationships with building owners, developers, general contractors, design professionals and roofing



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**RB MAY 2023**

consultants, and is the key point of contact for national and strategic accounts.

Mule-Hide Products Co. Inc. offers roofing products and systems, with a strong focus on sustainable solutions.

## ■ ABC SUPPLY TO ACQUIRE STANDALONE WALLBOARD DIVISIONS OF US LBM

ABC Supply Co., Inc. has entered into a definitive agreement to acquire the standalone wallboard divisions of US LBM, including Feldman Lumber, Richardson Gypsum, Rosen Materials, Wallboard Supply Company, and Coastal Roofing Supply.

ABC Supply is a distributor of exterior building products, and its subsidiary L&W Supply distributes interior building products used by residential and commercial specialty contractors. ABC Supply said it is the largest wholesale distributor of roofing and other select exterior and interior building products in North America.



## ■ FGIA UPDATES GUIDANCE ON FENESTRATION PRODUCTS

The Fenestration and Glazing Industry Alliance (FGIA) has updated a document providing specific information to assist industry professionals in selecting the appropriate adaptations to the existing testing standards for application to field investigations of fenestration products.

AAMA 511-22, the “Voluntary Guide for the Forensic Evaluation of Water Intrusion at Fenestration Products,” is now available for purchase. This document was last updated in 2008. It may be purchased from the online store at the discounted member rate of \$20 (non-member price \$60). For more information about

FGIA and its activities, visit [FGIAonline.org](http://FGIAonline.org).

ASTM E2128 provides the foundation for field investigations of water leakage in building walls. This document is designed to provide supplemental guidance and highlight required information and actions regarding fenestration product investigations. ASTM E2128 identifies seven steps of forensic investigations, and this document provides additional information regarding each step, grouped into two categories: four steps prior to testing and three steps during and after testing.

## ■ AKZONOBEL BRINGS COATINGS TO HVAC SEGMENT

Specifiers, distributors, and coaters in the HVAC sector have another option for coatings in HVAC equipment. AkzoNobel announced it has brought its POLYDURE portfolio of coil coatings to HVAC. It contains a proprietary resin technology specifically tailored to the needs of the HVAC segment, including commercial, industrial, and residential applications.

Said a press release, “The proven coating system provides a trouble-free application combined with a consistent, smooth film. It contains excellent forming properties and provides batch consistency, along with a broad range of color, gloss, and texture options.”

“Specifically designed for HVAC applications, our POLYDURE coatings protect against abrasion and corrosion, while their durability means they look as good many years down the road as the day they left the factory,” said Manoel Rodrigues, Regional Business Director, Americas.

## ■ NONPROFIT CREATES GUIDE TO SOLAR GRANT PROGRAM

National nonprofit Solar United Neighbors (SUN) have released a new guide to help farmers and rural small business owners apply for a key federal grant and loan. This will make it easier for solar installers to guide them through the process of installing solar energy at their property. The comprehensive guide takes applicants step-by-step through the Rural Energy for America Program (REAP) application process.

“It’s a great time for farms or rural small businesses to go solar,” said Anya Schoolman, Solar United Neighbors Executive Director. “We’re excited to offer this first-of-its-kind guide to help installers guide customers through the process.”

REAP started in 2002 as part of the federal Farm Bill. The USDA Office of Rural Development administers this grant and loan program. The program is designed to help farmers and rural small businesses access renewable energy and energy efficiency technologies.

The REAP program has been so popular that funding for the grants has not been able to meet the demand. The Inflation Reduction Act, passed last year, addresses this challenge. It quadruples REAP funding over the next 10 years.





“Going solar eight years ago is one of the best decisions I have made since I started farming,” said Art Thicke of Enchanted Meadows dairy farm in LaCrescent, Minnesota. “We have enough solar panels to produce the electricity we use so our energy costs are fixed. When energy prices go up, we don’t notice. Farmers looking to control costs and increase sustainability should take advantage of REAP and other programs to go solar.”

Farmers and rural small business owners can receive loan guarantees of up to 75% of total eligible project costs through REAP. They can receive grants for up to 40% of the total project cost. The USDA accepts applications twice a year. Visit [www.solarunitedneighbors.org](http://www.solarunitedneighbors.org) to learn more.

**■ CERTAINTEED DEBUTS NEW BRANDING**

CertainTeed unveiled its new brand identity at the IBS show earlier this year. “This milestone represents a major paradigm shift for the manufacturer — reinforcing its customer-focused, comprehensive offering of light and sustainable building solu-

tions and systems,” its press release said.

Elements created for the rebranding to-date include:

**New Logo and Visual Identity:** The new visual identity is “inspired by the creative ritual of reviewing and selecting materials in the early stages of construction or remodeling. Logo details, such as the cartouche, borrowed from the logo of parent company Saint-Gobain, serve as a subtle nod to their connection, while the interlocking pattern acknowledged CertainTeed as an interdependent collective of connections – both in its work, its communities, and our planet.”

**New Market Mission:** “Futurebuilt™” – expressing the company’s resolve to building a more sustainable, comfortable and safer future. **RB**

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**new products**  
BY RURAL BUILDER STAFF

**■ BOR-MAX SERIES EARTH AUGERS**  
General Equipment Company has introduced the 250 Bor-Max Series earth augers and auger extensions, offering digging performance for small, hand-held type earth auger products. These augers are specially designed to drill through uncomplicated soil classifications, such as loams, sands, soft clays and granular soils that absorb sweat instead of venting odors, stains, acetone and a towel or shirt sleeve. Not even American-made are you a universal fit in all makes of hand tools and bit sets are compliant with standards requirements. The 250 Bor-Max Series earth augers are engineered with heavy-gauged ball-bearing fighting and axle-to-butter withstand bending and torque loads. Overall, the augers are built to be aggressive with soil penetration, requiring less horsepower to dig a hole. Cupped fighting flitch is positioned, requiring less horsepower to dig a hole. Cupped fighting flitch is positioned with an increased fighting flitch is automatically designed to maximize the amount of soil removed to produce clean holes with less spill back. The cast-steel boring head features an alloy-steel screw bit and heat-treated cutting blades that are easily field replaceable to ensure minimal downtime. The cutting blades outside edge extend past the fighting head and flitch to extend service life of the auger. The auger come in 6 1/2 to 20 1/2 inch. The plan shaft-type auger extension can be used with all auger sizes and increases the digging depth by 12 1/2 (317 mm).

The Bor-Max series earth augers are designed specifically for use with General Equipment Company's 200 Series EPIC products utilizing 1 1/2 diameter auger drive connections.

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**■ DISPOSABLE HARD HAT LINERS**  
Solvus has created the first disposable hard hat liners specifically for hard hats that absorb sweat instead of venting odors, stains, acetone and a towel or shirt sleeve. Not even American-made are you a universal fit in all makes of hard tools and bit sets are compliant with standards requirements. The 250 Bor-Max Series earth augers are engineered with heavy-gauged ball-bearing fighting and axle-to-butter withstand bending and torque loads. Overall, the augers are built to be aggressive with soil penetration, requiring less horsepower to dig a hole. Cupped fighting flitch is positioned, requiring less horsepower to dig a hole. Cupped fighting flitch is positioned with an increased fighting flitch is automatically designed to maximize the amount of soil removed to produce clean holes with less spill back. The cast-steel boring head features an alloy-steel screw bit and heat-treated cutting blades that are easily field replaceable to ensure minimal downtime. The cutting blades outside edge extend past the fighting head and flitch to extend service life of the auger. The auger come in 6 1/2 to 20 1/2 inch. The plan shaft-type auger extension can be used with all auger sizes and increases the digging depth by 12 1/2 (317 mm).

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**NEW PRODUCTS**

**Dust Goggles from Brass Knuckle**  
Brass Knuckle's Grasshopper (BKDST-100N) dust goggles/spectacle offers workday versatility without sacrificing comfort. A soft, comfortable EVA foam dust filter with built-in air channels fits the grip between glasses and the face. Keeping dust out, standard protective eyewear. Lenses are durable polycarbonate, meet or exceed ANSI/ISEA Z87.1-2010, and are manufactured with Brass Knuckle's "N-Fog" anti-fog coating. N-Fog performance testing shows an anti-fog capability exceeds the world's most stringent anti-fog standard — European EN 166/168 — lasting 15 Hours longer. This high degree of fog protection makes Grasshopper perfect for jobs requiring workers to migrate between widely varying temperature extremes that make fogging common occupational hazard. The sporty European design features a soft, hygrothermal flexible thermoplastic rubber (TPR) grom-grom temples provide without distracting optics. Grasshopper is also fully diopter-free (no lens).

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[www.brassknuckle.com](http://www.brassknuckle.com)

**Visibility Jackets from Pyramex**  
Pyramex' Winter Workwear jackets are designed to be highly functional when in the field. They feature features that provide protection you require from both a safety standpoint and against the elements. According to the United States Bureau of Labor Statistics, injuries involving ice, snow or rain in 2017. Experts agree key factors in staying safe when working outdoors in the winter include dressing the part and being visible. The RCTP35 Series waterproof, hi-vis jacket has both a outer parka and an inner fleece with elastic bands at the wrists, and bottom. The outer parka has 8 outer tie-ins for hi-vis polyester fleece has 2 tie-ins. The RPTM Series jacket meets ANSI standards.

The RPTM Series jacket (shown) features a liner fleece, hi-vis outer parka and an inner fleece with elastic bands at the wrists, and bottom. The outer parka has 8 outer tie-ins for hi-vis polyester fleece has 2 tie-ins. The RPTM Series jacket meets ANSI standards.

[www.pyramex.com](http://www.pyramex.com)

**Carding Flash and Trim Mallets**  
KNOXER SENCO Industrial Tools (SENCO), an industry leader in fasteners and fastening systems, has updated its stainless finish and trim mallets, the company announced. The new F-1XP 16-gauge finish mallet, and F-1XP 18-gauge trim mallet are available through SENCO distributors. The new tools feature SENCO's patented FENSO™ Pneumatic Technology that have been engineered to be more ergonomic, as well as easier to use and replace. Each new SENCO mallet is made from high-quality steel and the internal components can be easily removed. The new FENSO finish and trim tools were they are even more like a traditional pneumatic, other brands require tools to be sent back to be re-tuned before, said Eric Rehm, SENCO Product Development Manager. Each new SENCO mallet can be serviced at any authorized service center, allowing for easy return and less downtime. Each new stainless finish and trim tool possess a durable storage bag and a 5.6Ah battery and a quick-charging dock (not included). The new SENCO 3.0AH batteries include complete framing mallets. [www.senco.com](http://www.senco.com)

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# CSI: How Large Are Rural Builder Subscribers' Businesses?

Shield Wall Media and METALCON partnered to generate data about the market segments we serve. Through the survey we learned what builders and manufacturers experienced in 2022 and what they anticipate for 2023.

**RURAL BUILDER SUBSCRIBERS ARE CLOSER** to "All Respondents" than any of the other publications. One interesting difference is the drop in participation in general roofing.


The surprise was the number involved in sheds and carports. Rural Builder subscribers are 17% more likely to be in this market than All Respondents.

We will do future surveys to determine why and how post frame builders are participating in this market. **RB**

What is your primary type/ area of construction?	All Respondents	Rural Builder Subscribers
Roofing	7%	3%
Metal Roofing	20%	24%
Other (Gutters)	0%	0%
Post Frame	23%	32%
Metal Building	20%	13%
Wood Framed (Stick Built)	7%	11%
Modular, Sheds & Carports	1%	2%
Masonry, SIPs & Concrete	3%	3%
Sub-Contractor	1%	0%

In what types/niches of construction do you participate?	All Respondents	Rural Builder Subscribers
Roofing	33%	25%
Metal Roofing	66%	64%
Other (Gutters)	22%	21%
Post Frame	47%	65%
Metal Building	54%	59%
Wood Framed (Stick Built)	35%	44%
Modular, Sheds & Carports	31%	48%
Masonry, SIPs & Concrete	13%	14%
Sub-Contractor	10%	14%

What is your annual volume in gross sales?	All Respondents	Rural Builder Subscribers
\$0-2,000,000	30%	29%
\$2,000,000 – 5,000,000	19%	13%
\$5,000,000 – 10,000,000	11%	13%
\$10,000,000 – 20,000,000	14%	16%
\$20,000,000 – 50,000,000	9%	10%
\$50,000,000+	17%	17%

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- 1886 Purchases First Nail Machine to Produce Nails from Pure Zinc
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- 1900 First Manufacturer to Pack Nails in 50 Lb. Boxes
- 1905 First Manufacturer to Pack Nails in 5 Lb. Boxes
- 1914 Produces the First Hot-Dipped Nails by Hand
- 1930 Designs and Launches Spiral Shank Nail Product Line
- 1934 Designs and Launches Ring Shank Nail Product Line
- 1955 Develops Exclusive Stormguard Double Hot-Dip Galvanizing
- 1996 Founded S.S.E., our Collating Division
- 2006 Earns Miami-Dade County Approval on Selected Roofing Nails
- 2008 Certified by Scientific Certification Systems for Recycled Content
- 2011 Fifth Hot-Dip Galvanizing Production Line Installed
- 2011 Highlighted on ABC News, Diane Sawyer's *Made In America*
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