

Rural Builder

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**PRODUCT
FEATURE:
STOP LEAKY
SKYLIGHTS**

MARCH 2021
Vol. 55, Issue 2

**TIPS
FOR MOLD
REMOVAL**

**HOW TO:
GRADE-1
INSULATION**

**BUYING THE
RIGHT
BOOTS**

**HANGAR
HOME
TRENDS**

**BUILDING FOR
WASTE
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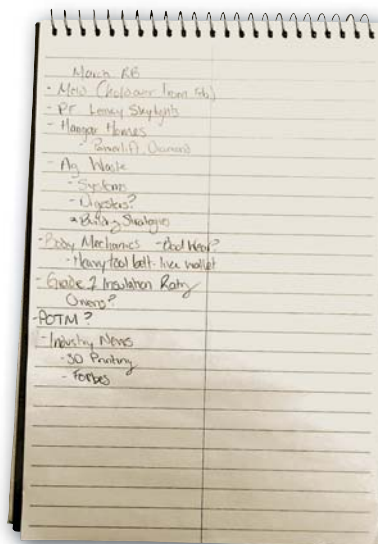
Keep It Sharp

I GOT A NEW PENCIL sharpener for my desk this month. And even though it's an increasingly digital world, and I don't know if students even use pencils in school anymore, I couldn't pass it up. It's a bright red sharpener with a hand crank that knows to stop grinding when the pencil is sharp.

While I do a lot of typing and emailing, I do like to take notes, and write to-do lists, in pencil. As you know, things in the construction world are changing all the time, so life at a construction trade publishing company moves pretty quickly. The ability to make quick edits to plans, shifts to story ideas, and changes to an ongoing process is essential.

My jar of pencils is also a reminder that work wears us down, that we must take conscious action to sharpen our tools, and that we are most useful and efficient

when we are sharp. Everybody loves a sharp pencil. How you stay in tiptop condition is up to you; it's definitely different



for everyone. Take time to evaluate, reassess, and erase some things if you need to.

There is a reason that when we measure twice and cut once, those tick marks are made in pencil! If I had used marker when figuring out the miter cuts on the cove molding I installed on our three-season porch this summer, there would not be enough primer at the hardware store to cover up the lines. I am daily grateful for the eraser and the chance to correct my mistakes as I learn.

Take care,



Jenn Milner

Jenn Milner,
managing editor
jenn@shieldwallmedia.com

market pulse

■ LUMBER AND STEEL PRICES CONTINUE TO SPIKE IN 2021

According to estimates by the National Association of Home Builders (NAHB), the average price of a new home is outpacing the average value due to increased lumber prices. Softwood lumber prices, including lumber of various dimensions (including any that may be appearance grade or pressure treated for outdoor use), plywood, OSB, particleboard, fiberboard, shakes and shingles, have increased in the last 10 months from \$350 per thousand board feet to \$975 per thousand board feet. These materials are commonly used for structural framing, sheathing, flooring, interior walls, cabinets, doors, decking, and more.

The NAHB chairman, Chuck Fowke, and Associated General Contractors of America (AGC) CEO, Stephen Sandherr, are urging congress and President Biden to help lower prices by increasing domestic production rates and lowering tariffs on Canadian lumber. The rapid increase in prices is hurting builders who often have to eat that extra cost or put projects on hold until they can obtain cheaper materials. Now an industry that has stayed strong through a pandemic-torn economy is facing a stall while lumber remains scarce and

prices remain high.

"The extreme runup in recent months for the price of all categories of lumber has created a hardship for contractors that were called upon earlier in the pandemic to create spaces vitally needed for care of patients and social distancing of workers and the public," Sandherr wrote. "AGC believes the White House can play a constructive role in mitigating this growing threat."

Supply chain issues are creating similar effects in the steel industry, raising the prices on everything from rebar to appliances and hardware. Iron and steel scrap has surged 50.8% in the last 12 months, including a 25.8% jump from November to December, followed by another 20.6% jump from December to January, according to January's Producer Price Index report. Some contractors are finding ways to sub other materials to replace costly steel in their building projects. Versatility and innovation will be important going forward as these increases continue to cause issues. Fortunately, demand for new homes is holding steady, despite increased prices, and overall builder confidence remains at a recent industry high. **RB**



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Rural Builder®



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Rural Builder (ISSN: 0888-3025) Volume 55
Number 1 is published monthly, except January,
April, June and November, by Shield Wall Media
LLC, 150 Depot St., Iola, WI 54945. Periodical
postage paid at Iola, WI, and at additional
mailing offices. Canadian Agreement Number:
40665675. POSTMASTER: Send address
changes to Rural Builder, Barb Prill, PO BOX
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\$29.98 for 1 year, \$55.98 for 2 years, and \$79.98
for 3 years in the U.S.; \$39.98 for 1 year, \$74.98 for
2 years in Canada.



MAY PREVIEW

- Product Feature: Fasteners
- Big Span Recreation Venues
- Metal and Wood Trusses

ON THE COVER:

After 100 years, the barn at the heart of the UGA-Tifton College of Agriculture in Athens, Georgia is reinvented for a new era. See the amazing before and after shots!

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?

QUESTION OF THE MONTH

How are lumber and steel costs effecting your business?

Drop me a line at jenn@shieldwallmedia.com or mail to Rural Builder Editor, P.O. Box 255, Iola, WI 54945



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Check our website, the Construction Magazine Network:

www.constructionmagnet.com

BY RURAL BUILDER STAFF



■ FIRST PERMITTED 3D PRINTED HOME FOR SALE

The New York State residential property, printed on-site using SQ4D's revolutionary Autonomous Robotic Construction System (ARCS), is the first 3D printed home slated to receive a certificate of occupancy and is listed as new construction for \$299,999. At that price, it is 50% below the cost of comparable newly constructed homes in the area. SQ4D developed its patent-pending ARCS technology to robotically build the footings, foundations, interior, and exterior walls of their homes on-site. The 3D printed home will feature over 1,400 square feet of living space, plus a 750-square-foot, 2½-car garage, all on ¼ acre. This home includes 3 bedrooms, 2 full bathrooms, and features an open floor plan.

■ 3D CONSTRUCTION EXPANDS INTERNATIONAL CODES

Black Buffalo 3D Corporation, a leading provider of large-scale 3D printers for construction and a member of HN Inc.—formerly Hyundai BS&C Co. Ltd.—announced its success in working with the International Code Council Evaluation Service (ICC-ES) to revise its ICC-ES AC509 criteria. This update enhances the acceptance criteria (AC) for 3D Automated Construction Technology for 3D printed concrete walls from a single-story building construction to multi-story building construction. The company continues to invest in its 3D construction printers and material science with the intent to become the first 3D construction printing company to meet ICC-ES AC509. With printers developed by its sister company, Hisys (based in South Korea) the latest model is capable of printing buildings up to four stories high.

■ THE CARLSTAR GROUP ENDORSES “BUY AMERICAN” EXECUTIVE ORDER

In late January, President Joe Biden issued an Executive Order designed to strengthen Buy American Provisions, with the goal of creating more quality U.S. manufacturing jobs. The Carlstar Group, a leading specialty tire and wheel manufacturer, has always had a strong manufacturing presence in the southeastern United States. “We are very encouraged by the President’s efforts

to strengthen the Buy American Provisions by directing more of the federal government spend on goods and services toward supporting America’s workers and businesses. Regardless of what part of the political spectrum you support, buying American-made products is just good for U.S. manufacturing and the businesses, such as Carlstar, which are committed to it,” said Jacob Thomas, CEO of The Carlstar Group.

■ \$13.7B IN 2021 CONSTRUCTION INDUSTRY PPP LOANS

The construction industry comes second only to restaurants and hotels in the total Paycheck Protection Program (PPP) loan amounts. In the 2021 iteration of the loan program, construction firms have received \$13.7 billion, which, according to the Small Business Administration is 14% of all funds paid as of February 7, 2021. The average loan across all industries was \$78,000 and about 70% were less than \$50,000. About three quarters of businesses receiving loans this round (starting in mid-January) also received PPP funds last year.



■ DOOSAN BOBCAT SIGNS MULTI-YEAR AGREEMENT WITH SYNCHRONY

Global compact equipment leader Doosan Bobcat North America announced a multi-year agreement with Synchrony, a premier consumer financial services company. The collaboration provides Doosan Bobcat customers access to competitive consumer financing options through the company’s network of more than 500 Bobcat dealer locations across the United States. The new program will provide attractive promotional financing to the growing number of retail customers interested in purchasing Bobcat compact equipment for personal and small business use. The retail customers who purchase Bobcat equipment using a Synchrony Installment Loan will benefit from convenient, flexible fixed monthly payments that fit their budget. This gives customers more purchasing power and allows them to purchase the variety of Bobcat equipment they need for landscaping, grounds maintenance, and construction projects.

The First Look into Your Building

TOP 10
2020 PRODUCT

Rural Builder



Plyco Performance ♦ Plyco Quality

Since 1951 Plyco has created construction opportunities for contractors with a complete line of entry doors that surpass building codes and customer expectations.

Plyco's entry doors are designed for post frame and metal building applications:

Structural Performance

Plyco doors are tested to ASTM E330 for structural performance of exterior doors. Each Plyco door is engineered to specifications for a durable long lasting product

- Series 92: AAMA LC-PG40 - LW +/- DP 40 PSF (4070)
- Series 20 w/deadbolt: ASTM E330 DP +/- 60 psf (4070)
- Series 95 w/deadbolt: ASTM E330 DP +/- 75 psf (3070)



**Structural
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**Water Infiltration
Tested**

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- Water Penetration: ASTM-E331
- Physical Endurance: AAMA 920



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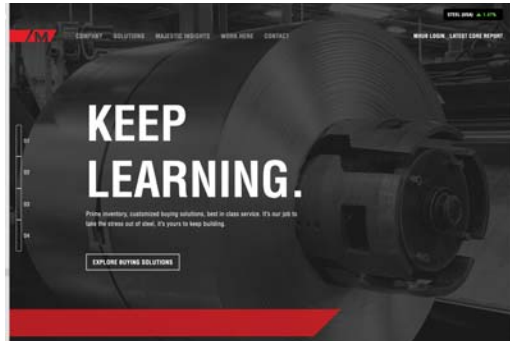
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SLIDE DOOR TRACK & RAIL ♦ SPECIALTY PRODUCTS ♦ PLY-FOIL ♦ CLOSURES

WEARABLE HARD HAT TECHNOLOGY IMPROVES SAFETY

Electronic engineers from the University of Southampton are working with the tech company Mafic to develop a hard hat that uses the Internet of Things (IoT) to track construction worker movements and improve safety.

The hard hat, called Safeguard, is a wearable device that fits inside a hard hat. It uses machine learning to recognize workers' unique movement patterns while they are completing tasks and records while it is happening. It is aimed at enabling the real-time communication and analysis of data from remote locations to improve the productivity and industrial health of workforces.

Mafic and the university recently received a grant from the £5 million (approximately \$7 million) SPRINT (SPace Research and Innovation Network for Technology) program to upgrade the technology. Combined with location to +/-20cm (7.87") and data from environmental sensors, the device provides workforce-wide insight at a level of detail that has not been possible until now, detecting when and where hazards, activity, and opportunities are across an entire workforce and workplace.



MAJESTIC STEEL LAUNCHES NEW WEBSITE

Majestic Steel USA, Inc., a leading steel service center, announced today the launch of its new website. The re-imagined majesticsteel.com showcases the breadth and depth of Majestic's resources. With a shift to digital becoming more of a reality for the steel industry, redefining the site as a dynamic business tool was necessary for growth and innovation. The website will be updated on a regular basis with company news, new product offerings, market intelligence, and job opportunities. **RB**

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MAILING
MARCH
2021



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■ AKZONOBEL STANDARDIZES COIL COLORINGS

Businesses across the coil coating industry can look forward to improved product availability, concentrated color volumes, and quicker turns on projects, thanks to AkzoNobel's CERAM-A-STAR 1050 Select color program. Developed specifically for use with CERAM-A-STAR® 1050, the market-leading silicone-modified polyester (SMP) coating, CERAM-A-STAR 1050 Select ensures the same exceptional product performance and warranty, now with the benefit of a standard color palette program. The program, comprised of 41 of the most popular coil industry colors, drives operational efficiency through the entire coil distribution channel. For coil coaters, it reduces overall complexity and drives volume and demand of standard colors. Longer runs of popular colors and less color switch-outs improves productivity as customer orders are driven by standard color options.

■ SHERWIN-WILLIAMS ANNOUNCES THREE-FOR-ONE STOCK SPLIT

The Sherwin-Williams Company announced that its Board of Directors has approved and declared a three-for-one stock split in the form of a stock dividend to make the stock more accessible to employees and a broader base of investors. Each Sherwin-Williams shareholder of record at the close of business on March 23, 2021 will receive two additional common shares for each then-held common share, to be distributed after close of trading on March 31, 2021. Trading of Sherwin-Williams common shares will begin on a stock split-adjusted basis on April 1, 2021.

■ CONSTRUCTION AND MANUFACTURING COMPANIES RECEIVE HIGH HONORS

In early February, Forbes announced its lists of America's Best Large and Midsized Employers, which lauded construction industry companies including Stanley Black & Decker, Owens Corning, Pella Corporation, Sherwin-Williams, Steel Dynamics, Briggs & Stratton, and The Timken Company. To determine the list, market research company Statista surveyed 50,000 Americans working for businesses with at least 1,000 employees. All the surveys were anonymous, allowing participants to openly share their opinions. The respondents were asked to rate, on a scale of zero to 10, how likely they'd be to recommend their employer to others. Statista then asked respondents to nominate organizations other than their own, as well as identify organizations they would not recommend to others. The final list ranks the 500 large and 500 midsize employers that received the most recommendations.



■ ARCHITECTURAL CERAMIC REBRANDS TO ARCHITESSA

Architectural Ceramics, Inc. announced its new trade name, Architessa, and updated branding assets. The rebrand of the 35-year strong women-led residential and commercial tile business includes launching a new e-commerce website, www.architessa.com, as a resource for homeowners, A&D, and the trades. With over 100,000 choices, they've been known as the librarians of tile, calling themselves Architessans. The website will launch with 5,000 favorites. Architessa desires to help elevate tiled spaces and gain prominence both locally and digitally. The new name also opens the door for additional related surface products.

■ 2020 BOOM FOR LP BUILDING SOLUTIONS

Despite the challenges of 2020, Louisiana Pacific Corporation increased net sales by 60% along with other other signs of growth. "LP ended 2020 having exceeded our 3-year transformation targets for growth and efficiency, with a cumulative EBITDA impact of \$178 million. We reached this milestone a year early, largely as a result of exceptional SmartSide sales growth, which

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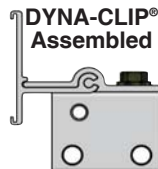
X-Clip™ II	\$2.75
X-Gard™ 1.0 Bracket	\$1.85
X-Gard 2.0 Bracket	\$4.50
S5S Stainless Mini Clamp	13.85
SnoClip™ II	\$1.35

**EXCITING
NEW
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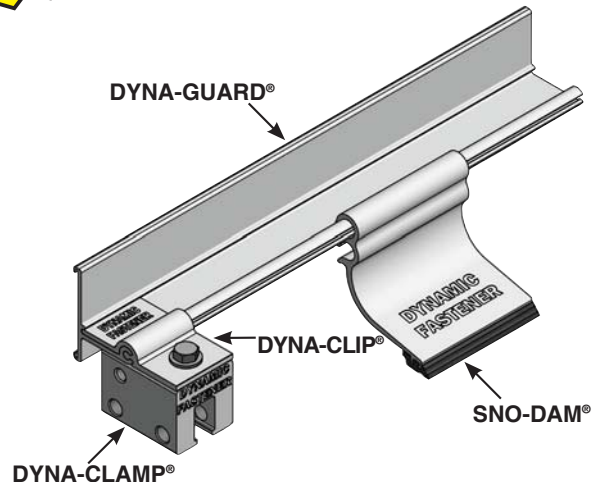
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Hover over this code with
your smart device's camera
to land at our ARCAT page.

reached 30% in Q4,” said LP Chairman and Chief Executive Officer Brad Southern. “In order to meet growing customer demand for SmartSide and OSB, LP will convert our mill in Houlton, Maine to the manufacture of SmartSide, with production beginning early in 2022, and we have begun the process to restart our OSB mill in Peace Valley, British Columbia. COVID made 2020 a difficult year for LP employees, our customers, their families, and the communities we all serve. Our results are a testament to their resilience and determination, and I am extremely proud of the results we achieved in the face of these challenges.”

■ NATIONAL DISTRIBUTOR FOR NEW MAXIMUM SECURITY SCREW

Tanner Bolt & Nut Inc. of Brooklyn, NY reached an agreement with Parker Fasteners of Buckeye, AZ to become the exclusive master distributor in the United States for its Lock-Out® maximum security screw. Lock-Out® is a new and innovative security fastener featuring a unique patented drive that is engineered to perform in high torque applications. The distinctive oval center pin and multiple drive/key combinations gives customers the option to select higher levels of security in a tamper-proof fastener. They are available in a multitude of head styles, threads, diameters, lengths, materials, and finishes. Diameters range from ¼"-⅝", M1.4-M16, and #0-#10, with lengths up to 12" for certain diameters. Materials available include carbon steel, stainless steel 302HQ, 304, 316, A286 & brass alloy steel 4037, 8740.

For absolute maximum protection of your property or product, Lock-Out® can be manufactured with a one-of-a-kind, drive pattern that is exclusive to your company. bit.ly/Tanner-Lock-Out



■ JOHN DEERE ADDS NEW COMPANIES TO STARTUP PROGRAM

John Deere has added four companies to its 2021 Startup Collaborator program: Nori, NVision Ag, Scanit, and Teleo. The Startup Collaborator program helps John Deere deepen its interaction with startup companies whose technology could add value for John Deere customers in the future. The year-long program enables John Deere and selected startup companies to test innovative technologies with customers and dealers without a more formal business relationship. The companies include industry innovators in climate science, agricultural disease prevention, and construction robotics.

■ INCREASED ANTICORROSION COATING IN HIGH DEMAND

Greenkote, global provider of advanced anticorrosion metal coatings, has announced a major expansion of production capacity

at its headquarters facility in Brook Park, Ohio. The expansion comes in response to an upsurge in demand for corrosion protection on environmentally-exposed metal fasteners and hardware in a number of different industries, including automotive, rail, utilities, and construction. Greenkote coatings are diffused into the metal surface making them damage resistant and long-lasting. Learn more at [Greenkote.com](https://www.Greenkote.com).



■ NEW PRODUCT FOR CONDENSATION ABSORPTION

John Deere Carbon-Core Corp. of Troy, Virginia, has installed a new manufacturing line to manufacture a new condensation blocking material, CondensBlock. CondensBlock is a unique material made with volumized thermoplastic microspheres that are embedded in elemental fibers of polyester veil. The volumized material allows substantially more efficient condensation absorption as compared to felt type materials. The new fully automated Siemens PLC controlled line is capable of making material up to 3.4 meters wide and 300,000 square feet per day. Supplied to roll formers and metal roofing manufacturers in a light grey color with adhesive backing and de-coiling equipment at no charge. Free sample roll and consultation by our process engineers are available. We are actively seeking distributors and installers worldwide. For more information, visit www.carbon-core.com. **RB**



Profiles available: Classic Ag, Heavy Duty Classic Ag, Pro Panel II, Ridge Light, CD 2000, Commercial Grade R Panel, Heavy Duty R Panel. Scan the code to get the brochure or call us at 800.360.6467 to learn more!



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Geocel® provides brushable-grade sealants that are an excellent choice for both installing or addressing leaks around skylights or daylighting. Geocel® 2310® Brushable Repair Coating or Geocel® 2315LRF® Leak Repair Fibered Coating can be applied with a chip brush. Only a thin 1/16" coating, extending 4" to 6" around the perimeter of the skylight, can seal many spots where water can enter. A second thin coat is recommended to ensure proper sealing.

DYNAMIC FASTENER

Dynamic Fastener
www.dynamicfastener.com

Dynamic Fastener sells a product called Drop-Stop®, which is a family of synthetic rubber coatings used for metal roofs and problem areas such as gutters and expansion joints. Drop-Stop® Clear is a brush-grade mastic with unique physical properties for use with skylight panel restoration. Before applying, the area must be free from dirt, moisture, and all foreign material. One could use a brush and water (repeating if necessary) until the repair area

is properly clean. Remember to let the area dry before applying Drop-Stop Clear. Apply product in a temperature range of 40°F to 120°F.

Keep in mind, this product is used on the skylight itself. A leak can also occur if the flashing around the skylight might be damaged or corroded and may need to be replaced.



BUILDING PRODUCTS CORP.

MFM Building Products Corp.
www.mfmbp.com

MFM Building Products manufactures a product called Peel & Seal, which is a self-adhering, self-sealing membrane to flash around any exterior roof penetration, including skylights. The membrane is flexible, tough, and durable, and it seals around common roofing fasteners to maintain a waterproof barrier.

Here is a tip: Some sealants will eventually dry and crack, or shrink when fully cured, allowing moisture to enter the roof structure and cause damage. By using a self-adhered membrane like Peel & Seal, the membrane will expand and contract with the skylight and the adhesive system will not crack. Even when the roof system is installed, the membrane will self-seal around fasteners to prevent water leaks. Self-adhered membranes are easy to work with and are oftentimes a less costly method to flash this potential leak area.



Daystar Systems
(618) 426-1868

Daystar is a manufacturer of complete skylight systems. We prevent leaks in skylights by supplying the roof curb with the skylight. Most manufacturers let the contractor figure out how to install it; we want to own that process. One thing that is very important: the curb we supply with each skylight system is customized to the roof; the contractor doesn't have to supply a generic item and make it fit. We believe this is one way to reduce leaks.

A successful installation gives peace of mind. The other thing that happens when the customer or the contractor is forced to supply their own curb, is uncertainty when something goes wrong. Who do we get to fix it: the skylight or curb man or the contractor? We like to consolidate that so there is no finger pointing.

It's very desirable to install the skylight in a way that you never have an issue. We really promote reading the installation manual the day before and then taking the extra time to install it right. It takes a contractor who cares enough to put some thought into how it's designed to work, with the manufacturer's planned install method. Then, when you're ready to start, make sure you have all of the proper supplies, screws, and tools. And, if there's questions, call us. (Preferably before you install.) We are here to help. We want to avoid installation issues, so you do not have to call six

months later saying they all leak. It pays to put a little thought in ahead of time. Don't be afraid to call, even if you're on the roof.

When a skylight *does* leak, the first thing to do is determine if it's the dome of the skylight or the curb. If it's coming from the roof, then it's going to be an installation issue. Somehow you have to figure out where the water is coming in. You need to get down and study the skylight. Possibly you may find a gap in the mastic. Or possibly there are not enough screws. If it's a gap, the most comfortable for us is to back the screws out and put a new piece of mastic in the gap. Sometimes it's old enough to have to caulk the gaps after the fact. When it's still fresh, then we like to fix it using the above method. As a manufacturer, we are here to assist you in a successful, leak-proof installation.



Palram Americas
www.palram.com

In order to prevent leaks in corrugated polycarbonate light-transmitting panels, it is imperative that installers adhere very strictly to the manufacturer's installation guidelines.

The most common mistake of an installer is to assume corrugated polycarbonate

is installed utilizing the same methods as corrugated metal. While many steps in the process are similar, there are intricacies that need to be followed closely to ensure a leak-free installation. Palram Americas has detailed installation instructions for all of its products, including SUNSKY® corrugated polycarbonate panels.

The use of compatible sealants and correct fasteners is the single most important aspect of the installation. This information is also part of the manufacturer's installation recommendations.

Quite honestly, once leaking occurs, it is often too late. This is why it is imperative to follow the manufacturer's installation recommendations. Usually, efforts to resolve leaking result in an unaesthetic appearance. **RB**



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On-Site Mold Prevention

Keeping Yourself and Your Clients Safe and Healthy

MOLD CAN QUICKLY SPREAD THROUGHOUT the home. This is equally true for existing homes being renovated, as well as new construction. The health impacts of mold are quickly being brought to the forefront of the public's awareness, meaning as builders you need to educate yourself on prevention and remediation of mold. Here are some easy pointers you can share with your clients on preventing mold.

For starters, if you or your client think mold may be present, a quick way to check is to lift open your toilet tank and see if you have mold growing in the tank or on the tank cover. As mold becomes aerosolized and finds areas with water (such as your toilet tank), it can begin to grow in and around it. If you do have mold in your toilet tank, odds are you have a source somewhere in the home.

I often use the following analogy to describe mold: mold is like a weed in the sense of how it grows and quickly reproduces. Weeds produce seeds that get aerosolized and find more water and soil to begin to plant their roots and grow into more weeds. This is why when you have weeds in your front lawn, they can quickly spread and take over your whole yard. Mold is very similar except mold "seeds" are spores.

Since mold requires water, moisture, or high relative humidity before a spore can begin to grow and colonize, identifying and fixing issues in the home that lead to excess water, moisture, or high relative humidity are key to maintaining a mold-free home. It's also important to note that keeping the home clean of naturally occurring dust on a consistent basis will provide value as mold requires a food source such as porous materials, dust, and debris.

Understanding those basic fundamentals is imperative to educating your clients on any potential mold concerns they may



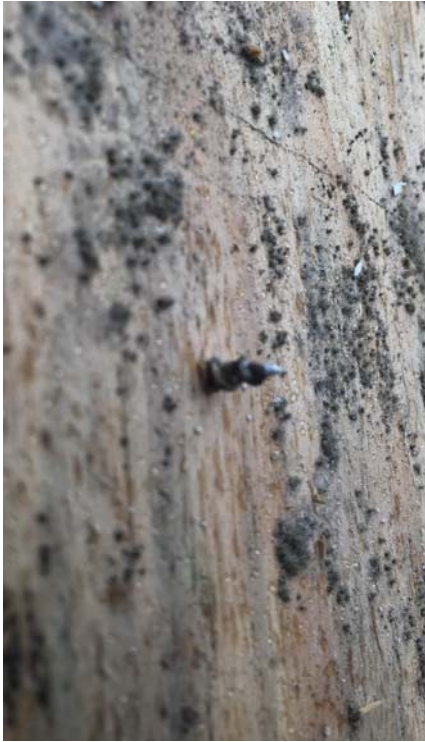
have. For those looking to dig deeper, here are ten quick signs to look for that will help keep mold from inhabiting the home:

1. Make sure the roof is inspected regularly for any signs of degradation of the roof structure, missing shingles, and flashing integrity.

2. Inspecting around exterior windows and doors for any gaps, such as loose caulking or cracks that can occur as the home settles, will be crucial to preventing unwanted moisture, water, and humidity from entering the home.

3. Inspect the grading around the exterior to ensure it's not sloped toward the house. This can be problematic if you have a basement or crawl space, as they lead to more water than usual during rains that will push against the foundation due to hydrostatic pressure. Also, if the home is built on a slab, moisture can wick into the sill plate of the house during heavy rains or snow if your grading is too high, causing unwanted moisture intruding into the living space.

4. Inspect any patios or decks you may have, which are typically secured to the home in some fashion. Make sure they are counter-flashed properly and do not have any points of entry



that could cause unwanted moisture and water intrusion.

5. Making sure you have proper ventilation in an attic space will help hot, humid air escape through the venting system during the summer months when our attics are most vulnerable. I have seen many clients get new insulation installed in their attic at the recommendation of a contractor and unfortunately, improperly adding new insulation on top of old insulation can lead to blocked ventilation in the soffit vents.

6. Make sure you have proper ventilation in your bathrooms and kitchens to remove excess moisture during showering and cooking. Also, check to make sure that none of these exhausts empty out into the attic, as this will add unwanted moisture to the space.

7. If you have a basement, ensure you have proper moisture countermeasures, such as a moisture-blocking primer on your foundation walls in conjunction with a dehumidifier to keep the relative humidity around 40%.

8. If you have issues with water pen-



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etration in a basement space, having a proper waterproofing strategy installed such as a French drain will be key. We are typically against the vinyl wall insulation covering systems. They are phenomenal for creating a pathway for water, but the flaw is that they trap moisture between the vinyl and the foundation wall, al-

Contractor Tips for Mold Handling

The Environmental Protection Agency (EPA) in conjunction with the Occupational Safety and Health Administration (OSHA) provide extensive guidelines for safe and effective mold remediation. Remediation includes identification and correction of the conditions that permit mold growth, and the steps to remove mold-damaged materials. Follow these quick tips when you come face-to-face with mold.

Minimum Recommended PPE:

- Rubber gloves that extend to the elbow
- Properly fitted goggles or face respirator (not safety glasses!)
- N-95 respirator
- Disposable paper overalls

Next-Level PPE:

- Face respirator with HEPA filter
- Full-face powered air purifying respirator (PAPR)
- Mold-impervious disposable head and foot coverings
- Seal all gaps around ankles and wrists
(many professionals use duct tape for this purpose)

Take Extra Care If:

- A particularly toxic mold species has been identified or is suspected
- When extensive hidden mold is expected
(such as behind vinyl wallpaper or in the HVAC system)
- When the chances of the mold becoming airborne are estimated to be high
- Sensitive individuals (e.g., those with severe allergies or asthma) are present

Cleanup and Removal

The use of bleach is not recommended as a routine practice during mold remediation. As a general rule, simply killing the mold, with biocide for example, is not enough. The mold must be removed, since the chemicals and proteins, which can cause a reaction in humans, are present even in dead mold.

Building materials and furnishings that are contaminated with mold growth and are not salvageable should be double-bagged using 6 mm polyethylene sheeting to minimize the dispersion of mold spores throughout the building. These materials can then usually be discarded as ordinary construction waste. Large items that have heavy mold growth should be covered with polyethylene sheeting and sealed with duct tape before they are removed from the containment area.

lowing mold to grow behind it (and eventually that mold will start to impact the living space).

9. If you live in a humid climate, installing a whole home dehumidification system may be the most practical way to deal with humidity in the summers, as the HVAC may not keep up with its natural dehumidification process.



10. Protecting your HVAC is essential as the coil constantly condensates and drains out through its drain line. This makes the coil the most optimal place for mold to grow should the spores make their way through the return ducts to the coil. Protecting your HVAC system with a product like the Intellipure air purification system provides protection, removing particles as low as seven nanometers in size. Filtration and purification is by far the most effective way at keeping your coil free from mold and other contaminants.

These steps will help ensure that your clients' homes will remain mold-free and avoid high mold remediation costs in the future. **RB**

MICHAEL RUBINO, The Mold Medic, is the authority on mold remediation. As President of All American Restoration, Rubino specializes in working with people who are immunocompromised or have acute and sustained reactions to mold exposure. He is a council-certified Mold Remediator by IICRC and ACAC and a contributing member, sponsor, and speaker for the Indoor Air Quality Association.

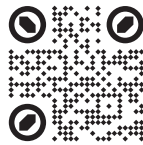
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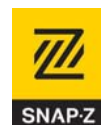
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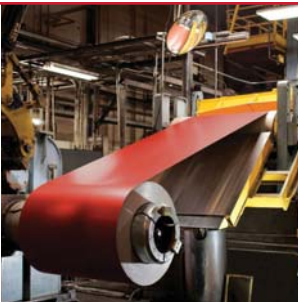




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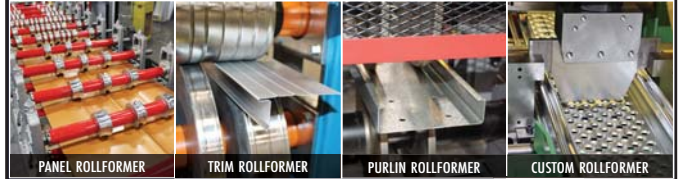
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THE ICONIC

UGA-Tifton Campus Barn

Rebuilding a Piece of the Past

THE UNIVERSITY OF GEORGIA (UGA)-TIFTON Campus lies within the heart of south Georgia agriculture, among the nation's leading producers of peanuts, pecans, cotton, and soybeans. It's home to the Coastal Plain Experiment Station—the research and extension arm that cares for crops on the coastal plain that serves as the backbone of the region's economy—and the UGA-Tifton Campus Conference Center.

While the university celebrated 100 years of agricultural progress last year, it now has even more to celebrate: the unveiling of the new iconic UGA-Tifton Campus Barn.

The original gambrel barn was built as the gateway to the

campus and is the first thing visitors see when they come to Tifton. It was also one of the university's first buildings, housing everything from mules that performed work at the research station to the office where celebrated plant breeder Glen Burton conducted his groundbreaking pearl millet feed grass research in the 1940s and '50s.

While its new replacement maintains the traditional “red top” aesthetic that UGA-Tifton's buildings have become known for, it also comes with a modern twist. As scientists at UGA-Tifton Campus prepare the next generation of agricultural leaders to take the world's stage, they'll now have a durable metal building



(Above) The original UGA-Tifton Campus Barn was erected in the 1920s, soon after the founding of the campus. Photo courtesy of UGA-Tifton Campus Library.



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(Above) The original UGA-Tifton Campus Barn, still a useful and iconic piece of the campus landscape in 1985, seen from behind the RDC. Photo courtesy of UGA-Tifton Campus Library.

structure, designed to stand the test of time.

Reimagining the historic barn as a cost-efficient, pre-engineered steel building is something UGA-Tifton Campus Assistant Dean Michael D. Toews believes was the right building material choice, citing the benefits of sustainability, cost efficiency, ease of construction, and longevity for which metal buildings are known.

“We thought it was a great way to honor our legacy by building

a new gambrel that kept the historical roots of where we come from and maintained its original qualities,” he said. “This barn is part of the fiber of our campus, so we wanted to maintain the character of our first 100 years with a structure that’s built to get us through the next 100 years.”

The new barn, which will be used for farm implement storage and as an office for the farm manager and researchers at UGA-Tifton, was manufactured by Vulcan Steel Structures. The metal building fabricator has grown into the largest steel building manufacturer in Georgia and is now one of the largest privately owned steel building manufacturers in the United States.

Vulcan Steel Structures prefabricated the UGA-Tifton Campus Barn’s metal framework for the structure and roofing, which was erected quickly and efficiently on-site. The traditional gambrel-style metal roof tops out at 42’ in height and features a 24-gauge PBR Kynar roof coated in the classic UGA-Tifton bright red that’s been quintessential to the campus since 1920.

“This is not your typical farm building with straight walls and a straight roof,” said UGA-Tifton Campus Superintendent Plant Operations & Engineer Kurt Seigler, who was involved in the project. “This is an out-of-the-box structure, and Vulcan Steel really stepped up to the plate to design a structure that’s not in anybody’s playbook.”

Once the steel structure was in place, Georgia-based contrac-



The new UGA-Tifton Campus Barn features three coiling steel roll-up doors for maximum space efficiency. Photos Courtesy of Charlie Fernandes.



The new UGA-Tifton Campus Barn has a large storage area for farm implements and an office space, just like the original. Photos Courtesy of Charlie Fernandes.

tor Allstate Construction, Inc. handled all the finishing elements that brought the signature barn to life. This included the BMC wood-framed walls placed between the pre-engineered building columns, a Nichiha premium Savannah Smooth series of fiber cement siding and the barn's second floor framing that features an engineered Trus Joist wood flooring.

The structure also boasts motorized coiling roll-up doors by Overhead Door, aluminum storefront windows from YKK AP, and additional sliding barn doors built by Brooks Welding, Inc. that were placed on a Richards-Wicox track. The proximity to the conference center makes it a real showpiece of the campus.

Now fully functional, this new metal building structure is a true testament to the blending of history and modern engineering capabilities. **RB**



Project Details:

Building: UGA-Tifton Campus Barn

Location: University of Georgia, Athens, Georgia

Building Size: 5,100 square feet, 42' high

Contractor: Allstate Construction, Inc.

Frame: Prefabricated Metal Building by Vulcan Steel Structures

Roof Panels: 24-gauge PBR Kynar®

Trusses and Wall Panels: BMC

Siding: Fiber Cement Savannah Smooth Premium Plank Siding by Nichiha

Second Story Floor: Engineered Trus Joist® TJI® Joists

Rolling Doors: Motorized Coiling Steel Doors by Overhead Door

Sliding Barn Doors: Brooks Welding, Inc.; Richards-Wicox track

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TOM KEARNEY, 58, OF INDIANA, pushed through the pain and continued his career as a lead carpenter for 35 years. He wasn't injured, in the sense that he fell, was hit, or even felt that defining twinge while lifting. He just had a backache—all the time.

"After a while," Kearney said, "it got to be that I was unable to stand still without hurting."

When he no longer wanted to go to church with his family or hold his daughter, because both required standing, Kearney's wife recommended he see a chiropractor.



The various stressors on a construction professional's body can be detrimental to long-term health. A combination of body mechanics and PPE can make the difference.

"You know the adage you 'work through the pain?'" he said. "You take more aspirin, not go to the doctor. That's a sign of weakness for a man."

But when a few years of pain turned into 20, and his wife's recommendation turned into constant reminders, he went.

"I honestly felt my back pain wasn't work related because I couldn't pin it to one particular incident," he said, "but the chiropractor kept focusing on my job, asking me all kinds of questions."

She finally concluded that years of wearing an out-of-balance tool belt led to one hip being pushed forward, causing misalignments of the

spine that pinched nerves. The pinched nerves caused not just back pain but poor circulation and cramps in his legs and feet.

"Equipment belts can get heavy," said Nathaniel Cooley, DPT with Valley Health in Winchester, Virginia. And he knows. Dr. Cooley worked in the residential building industry throughout his high school and college years. Since beginning his career as a doctor of physical therapy, he's treated many construction workers.

"Back and shoulder pain caused by overuse are the top complaints I see among construction workers," he said. But there are ways to both prevent and treat that pain.

START HEALTHY

Cooley believes construction work ranks up there with professional athletics as one of the most physically demanding jobs. He said that staying healthy and fit is as imperative to avoiding injury as regular maintenance is for heavy machinery.

Rob Leonard is a personal trainer, cyclist, long-distance runner, and has worked in the construction industry for 40 years. Fortunately, he's also the director of Build Smart Institute (BSI), a trade school in Roanoke, Virginia.

All of BSI's core students, typically high schoolers, receive instruction on ergonomics, lifting techniques, exercise, and eating a whole-foods diet, according to Leonard. "But that's because it's a personal passion of mine," he said.

"I can't say if other schools are offering this type of training. It goes against the industry's culture."

Leonard describes a culture where young laborers are "thrown to the wolves," trained by those who weren't properly trained themselves, and where production supersedes everything. "Often, even over safety," he said, "until something happens, then there's a panic."

In this macho culture where the young are invincible, Leonard said that nutrition and living a healthy lifestyle is hit or miss. Yet, even a relatively healthy person can injure tight muscles. That's where regular exercise comes in.

Cooley recommends a daily exercise routine

for construction workers that keeps their core, back, shoulder, hip, and leg muscles toned and strong. Keeping the muscles in good condition helps to prevent injury.

BASIC BODY MECHANICS

Even if you're healthy, eat right, and exercise, carpenters who don't pay attention to how they perform daily tasks still get injured. "The most important thing," said Cooley, "is to be mindful of the position you're in when working." For example, always follow these key lifting techniques:

- Keep your feet shoulder-width apart.
- Squat down, don't bend.
- Face the load, keeping your back straight.
- Slowly lift with your legs.
- Hold the load close to your body.
- Don't twist your spine.
- Set it down with the same controlled motion.

A light load can cause injury, too, when repeatedly lifted with a twisting motion, as often is done when unloading lumber or shingles. And, working in the same position for extended periods of time, like leaning over a task, or working overhead, can cause problems, too. For this reason, both Cooley and Leonard recommend taking breaks and alternating responsibilities.

"Administrative control is part of the equation," said Leonard. That's where the supervisor moves people from one job to the other to prevent repetitive injury. People work in teams, trading off physically demanding or repetitive tasks with more auxiliary roles. This method increases the staying power and wellness of each worker.

PERSONAL PROTECTIVE EQUIPMENT

Once educated, Kearney didn't just equalize the weight of his tool belt, he bought a new one. "I bought a lighter, nylon belt," he said, "with shoulder straps to take some of the weight off my hips."

Choosing ergonomically designed tools and personal protective equipment (PPE) is another way to prevent injury on the job. According to Leonard, students at Build Smart Institute learn to select the proper tool for the task, choose the right footwear, and more.

The United States Department of Labor's Occupational Safety & Health Administration (OSHA) recommends construction workers wear equipment to protect their eyes/face, head, feet, hands, and hearing. A few more considerations include:

■ Use protective gloves appropriate for the job—leather to protect against cuts, splinters, or burns; canvas for dirt or abrasions; insulated rubber to protect from electrical shock; and chemical resistant for handling corrosive materials.

■ Wear respiratory protective equipment when working in areas of dust and fumes.

■ Use fall protection devices when working at heights greater than six feet.

■ Wear footwear with slip- and puncture-resistant soles and safety toes to prevent crush injuries.

■ Use knee pads when working on your knees.

■ Wear a lumbar binder when lifting heavy loads.

Tom Kearney has a college degree in residential construction and said he learned injury prevention techniques as part of his training. He maintains his weight, jogs, and plays racquetball regularly.

"I just always thought that if I were going to get hurt, the real risk was from falling," Kearney said. His chiropractor showed him otherwise. And, in addition to changing his tool belt, she prescribed muscle treatments and an exercise routine.

Going forward, he doesn't just watch his step; he watches how he moves. **RB**

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A Good Pair of Work Boots

What your boots are telling you and what to do about it.

WORK BOOTS PROVIDE AN INTERFACE between the foot and the ground, protecting the foot from undesirable external stimuli, particularly in harsh work environments. Occupational environments and the tasks performed by workers vary widely among different industries, requiring a variety of work boot designs to match unique workplace safety requirements. However, there is an over arching issue that remains constant through the years, as occupational footwear appears to be designed for occupational safety at the expense of foot (and by extension, body) health and comfort.

Standards exist specifying the design, construction, and classification of work boots. The design features focus on reducing injuries to the feet resulting from contact with objects, friction or pressure blistering, objects piercing the sole or upper, hazardous material contact, and slipping. Some of the resulting primary design features that differ among work boot styles include the materials from which boots are made, the need for waterproofing, the height of the boot, whether a steel safety cap and/or closures are required, and the stiffness and design of the sole (see Fig. 1). Even within a single occupation, boots are often task- and environment-specific. Despite numerous design variations among work boots, there is a lack of focus placed on the fundamental tasks common to most occupations, such as walking or standing.

Walking and standing constitute a large component of the day-to-day activity in occupations that require safety work boots.

In most occupations, an individual's work boots must meet the demands placed on their lower limbs while walking and when performing other working tasks. Without appropriate footwear, the risk of workers incurring a lower limb injury is increased, whether it is an acute injury — such as a

the way the foot moves while walking, affecting the way the ground reaction forces are distributed throughout the lower leg. If the lower leg is forced to move in a way that opposes its natural structural alignment, excess strain can be placed on the supporting anatomical structures (in the

hips and pelvis), such as the ligaments, tendons, and muscles, to maintain balance and strength. For example, when the normal ankle range of motion is restricted, the knee is forced to compensate for loads that the ankle is unable to absorb, increasing the risk of sustaining knee strain injuries.

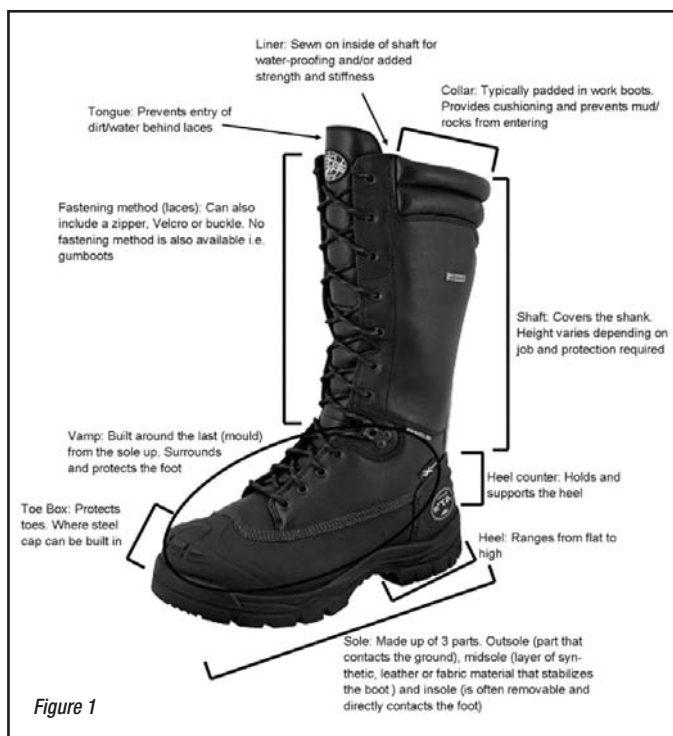
BUYING THE BEST WORK BOOTS

Just as you prepare for a long day on the job, shopping the correct way to find your best work boots takes preparation. Below are some simple tips to remember when shopping for your next pair of work boots:

- Shop for boots in the afternoon or early evening. Feet tend to swell throughout the day, especially for those on their feet. By trying on footwear when your feet are at their largest, your work boots will also feel comfortable, even on the longest days.

- Come prepared with the proper attire. Bring a typical pair of socks that you might wear to better understand how your boots might fit. Also, bring your insoles if you use them.

Finding a good pair of work boots can solve a great deal of the problems associated with plantar foot, knee, and low-back pain. You want a work boot with good padding and shock absorption in the heel,



sprain/strain due to slipping/tripping — or a chronic injury — such as overuse due to prolonged walking. Lower limb injuries are prevalent in occupations that involve prolonged walking and standing. In trades such as fabrication (e.g., shipbuilding, an industry where workers spend an average of eight hours walking and standing on concrete per shift) serious lower limb injuries were reported annually.

It has been postulated that abnormal loading of the lower limb at the shoe-to-surface interface while walking can partly contribute to this high incidence rate of lower limb injuries. Boot design can alter

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BOOT BUILD:

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RUBBER OUTSOLE:

This catch-all term refers to the bot-

tom of the boot; however, understanding its materials and functions is paramount. Rubber is a common outsole component and is typically abrasion-, oil-, and slip-resistant — important features for work in construction or manufacturing settings. Vibram® is a high-performance rubber and an excellent choice for work sites with rugged terrains and provides maximum traction on both wet and dry surfaces. Today's manufacturers often have their proprietary rubbers, allowing their outsoles to have additional performance or safety attributes.

TPU OUTSOLE:

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THE SHANK:

Shanks are what keep your work boots in shape, as they stiffen the outsoles to give you a stable platform. They're tucked into the interiors, located above the outer soles at the waist (or center section) of your work boots. These trusty metal or non-metal shanks are situated right between your heels and the ball areas of your feet. Don't let the stiffness fool you — they're shaped to contour your feet for comfort and reinforcement. If you're wearing your work footwear right now, these flat, rigid pieces of material are just below your arches. Though steel sounds like it'll weigh

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Wear is typically most apparent when looking at the boot heel. Uneven wear is relatively common and boots like the above can either indicate a high arch or supination (placing weight on the outside of the foot while walking). When worn boots are continually used, they can exaggerate resulting pain or discomfort until lack of proper alignment and body stress is transferred to knees, hips or low back. A simple way to help prevent injury and

correct your gait is to replace or re-sole work boots before they become excessively worn down. Dr. Vincent Catteruccia recommends examining your boots for wear every two to three months and replacing or re-soleing when necessary.

If you have joint pain and your work boots wear unevenly, check with a health professional. The solution may be as simple as investing in a different type of shoe, insoles, or wedges.



you down, these are thin pieces of metal that are naturally flexible and have a lot of springiness to them.

Picture them as small metal plates within your work footwear. They're stiffer than other shanks, so they're the best at preventing objects from penetrating from below. Unfortunately, they set off metal detectors and are sensitive to cold weather, but their benefits tend to outweigh their disadvantages. Their puncture-resistance is desired by hikers and workers who walk across sharp rocks and other razor-edged surfaces. Along with puncture-resistance, these strong steel shanks reduce stone bruises on the bottoms of your feet. If you climb ladders and stomp on shovels often, you'll have fewer "ladder rung bruises" and "stone bruises" with this type of hidden, protective feature.

FIT MATTERS

At the end of the workday, your feet should not be rubbed raw, squeezed tight, or sore with blisters and abrasions. Too-tight shoes can lead to a variety of foot ailments including in-grown toenails, blisters, corns, or worse. Additionally, the wrong fit may cause discomfort in the toe box from the safety toe cap. A leather boot will stretch somewhat as it conforms to the shape of your foot; however, a steel toe will never stretch and once tight, is always tight, so never purchase a pair of safety-toe boots with the idea that they will eventually break in and stretch out. Finding the right size boot is very important for achieving all-day comfort. Today's manufacturers offer both regular and wide widths. When trying on a boot for the first time, if it feels too snug, don't be afraid to move to wide width. **RB**

Dr. Vince Catteruccia is a Musculoskeletal Rehabilitation Expert and creator of the Living Free Pain Method. He is known for uncovering hidden sources of physical pain and producing lasting solutions for his patients — without medication or surgery. His natural approach to solving pain is guided by his unique combination of professional credentials including a PhD in Behavioral Health, a Master's of Science in Kinesiotherapy, and a Master's of Science in Human Performance. Dr. Vince is also a licensed neuromuscular therapist.

Dr. Vince offers a unique perspective as a musculoskeletal expert, derived from his multiple higher education degrees and other advanced learning credentials from prestigious American and European associations. With an encyclopedic knowledge of the intricacies of body movement, Vince has a gift for creating fast and effective treatment strategies and conditioning plans.



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Achieving a Grade 1 Insulation Rating

THE EFFECTIVENESS OF INSULATION IS highly dependent on how it is installed. Because of this, there is a grading scale in place that provides a single set of guidelines for the many installers in various construction disciplines and sets a quality threshold for energy efficiency certifications like LEED, NHBA, and ENERGY STAR®. In general, Grade 1 refers to minor defects, Grade 2 moderate defects, and Grade 3 substantial defects based on the stated criteria.

THE BASICS

The RESNET grading system has four main requirements:

1. The insulation is installed to the manufacturer's specifications
2. No air spaces between different insulation types or systems (except for reflective insulation that works with an air barrier)

3. Insulation is installed to the required density and thickness to achieve the labeled R-Value

4. Insulation fits around obstructions (framing, wiring, pipes, etc.) without gaps

Of course, these requirements are interpreted and implemented differently for each type of insulation material: insulated sheathing, batt insulation, loose fill insulation, open- and closed-cell spray polyurethane foam (SPF), and reflective insulation.

The best way to ensure a Grade 1 rating is to have the requirements on-hand so you can check your progress as you go along. The current approved standards, ANSI/RESNET/ICC 301-2019, can be found in PDF format at codes.iccsafe.org. And if you're really into reading code language, you can purchase a printed version for your library.

Carrying around 160 pages of codes isn't practical, but the ap-



(Above) **NO GAPS/VOIDS**—Insulation is in full contact with all sides of the cavity, side to side and top to bottom. All photos courtesy of Owens Corning.



(Above) **NO COMPRESSIONS/MISALIGNMENTS**—Insulation fits around obstructions without gaps.

Insulation Type	Grade 1 Standards
Batt Insulation	•Insulation fills the cavity side to side, top to bottom with no voids. •Insulation is cut/split around blocking, plumbing, HVAC, and electrical components. •Insulation enclosed on all six sides by durable materials. •Faced batts with tabs are stapled to face or edge of stud with no buckling. Batts with friction fit or faced without tabs don't need staples. •When side stapled, compression beyond the depth of the tab not permitted. •No more than 2% of insulated area compressed below the required R-Value thickness.
Loose Fill Insulation	•Insulation fills the cavity side to side, top to bottom with no voids. •Insulation enclosed on all six sides by durable materials. •Insulation containment fabric should be stapled no more than ½" back from the stud face. •No more than 2% of insulated area compressed below the required R-Value thickness.
Open-Cell SPF	•Installers are trained and have taken the online health and safety training. •Spray foam well-bonded to framing and sheathing with no voids. •Installed to the minimum thickness required to be air impermeable. •Insulation should be trimmed when it extends beyond the wall cavity to allow contact with interior sheathing. •Insulation fills the cavity to within at least ½" of the stud faces.
Closed-Cell SPF	•Installers are trained and have taken the online health and safety training. •Spray foam well-bonded to framing and sheathing with no voids. •Installed at a minimum thickness of 1½" and in contact with the substrate; permitted to be a component of the continuous air barrier. •No more than 2% of insulated area should be greater than ½" less than the specified thickness.
Reflective Insulation	•The products can be either face or side (inset) stapled and shall be permanently attached to the framing member. •When side stapled, installed at the depth in the cavity to attain the required airspace(s). Refer to manufacturer's installation details. •When face-stapled, the material width shall match the framing width (e.g., 16" wide material is used for 16" on-center framing). •When reflective insulation is a vapor retarder, the tabs are over-lapped or taped when face stapled. When inset stapled, the edges are attached to the sides, top, and bottom of the framing. •No more than 2% of the area installed so building envelope exterior sheathing (wall) is visible from the building's interior.
Structural Insulated Panels	•Seal panel joints to manufacturer's requirements. •Use spray foam to seal penetrations through the SIPs. •Any damaged areas are repaired. •All gaps and penetrations through SIPs including windows, doors, and foundation or roof connections should be air-sealed with expanding foam compatible with the SIP materials. •No more than 2% area of SIPs have un-repaired damage, including cutouts for utility boxes.
Insulated Sheathing	•Edges and joints taped or otherwise sealed if used as an air barrier, vapor retarder, or drainage plane. •Sheathing carefully taped or sealed around obstructions. •Stagger joints when installing two or more layers. Air sealing for barrier only required on one layer. •Void exceeding ⅛" through interior to exterior not permitted.

pendices of the document have some useful, condensed information. Appendix A includes the grading system spelled out with examples for each type of insulation. Appendix B is a very detailed guide of

procedures for building inspectors, so you can see exactly what an inspector is looking for. It's like an open-book test!

There is a lot to know but understanding the standards that apply to the insu-

lation you work with most-frequently is useful and achievable. For simplicity's sake, the guidelines in the table will apply to wall assemblies, but there are guidelines available that cover everything from flooring and roof assemblies to HVAC systems and ceiling fans. **RB**

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*National Home Builders Association/Wells Fargo Housing Market Index.
**Fortune magazine analysis with Fastmarkets RISI economist Dustin Jalbert.

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(Above) Installed to the required density and thickness to achieve the labeled R-Value.



(Above) Insulation is cut/split around electrical components.

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Decisions about posts, flooring, and ventilation all play a part in building the ideal structure to manage agricultural waste. Photo courtesy of Wick Buildings.



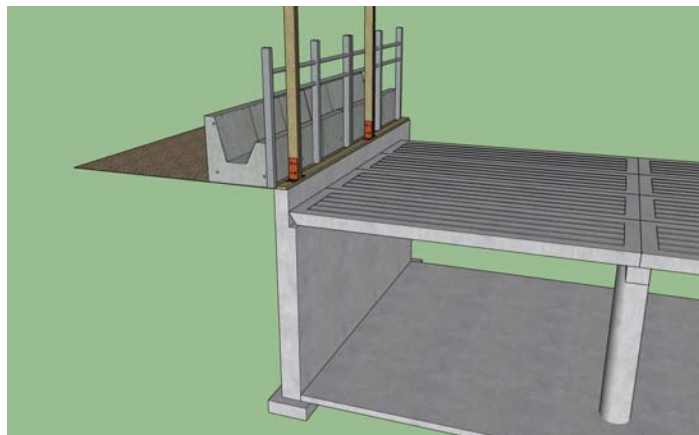
Building for Waste Management

Don't Let Agricultural Waste Be a Party Pooper

A FARM IS A SYSTEM with many changing variables and moving parts. “There is much more to them than what you can see from the road when driving by,” says Curt Gooch, an agricultural engineer who has worked in agriculture his entire life with over 30 years of professional experience. And one of those parts that often goes unseen (if not un-smelled) is

the handling of agriculture and livestock waste. “First off, manure storage systems are to provide an opportunity, so farmers don’t have to haul manure to the fields every day,” says Gooch. “If they don’t have open land to spread the manure on, they have to store it so the manure can be put down when it’s more opportune to use the nutrients.”

When you really stop to think about it, even 100 head of cattle or swine produce an immense amount of waste. Where does it go? What has to be done to protect the local environment? And possibly of most importance to builders and contractors, how will it interact with the built structures of the farm? It’s helpful to understand these issues before taking on an ag-



A solid concrete floor is warmer in cold months, has better traction and footing, causes fewer hoof issues, and should be grooved or roughened. A slatted floor works best with a gable or solar system, eliminates the need for bedding and scraping, and requires minimum six-month manure storage below. Images courtesy of Wick Buildings.

ricultural building project.

MORE THAN JUST SMELLY

The corrosive nature of waste products isn't a surprise, but do you know how exactly waste wreaks havoc? According to Gooch, it's a combination of high-moisture content and waste byproducts like biogas. "Dairy and pig manure have a large percentage of moisture," says Gooch. "Moisture itself can be a problem, whether it's liquid or evaporated moisture." Moisture from waste, moisture from weather, and moisture from animal respiration are all contributing factors to the damage seen in farm buildings.

And while the waste is kept at ground level, the effects can travel all the way up. "A lot of animal housing barns are made out of wood frames," says Gooch. "Moisture can get trapped in the attic and that can cause structural degradation in rafters and trusses." Proper ventilation can be just as important as choosing the right building materials.

Gasses are also problematic in waste management. "Some manure gasses can be pretty corrosive," says Gooch. "Hydrogen sulfide comes from a certain population of anaerobic microorganisms that munch on manure solids. Ammonia gas is produced from nitrogen which is naturally occurring in manure."

All of these corrosive materials are adding to the natural rate of decay. Ken Mc-

Donnell, founder of Post Protector, has made understanding decay one of the pillars of his business. "In the ground are microorganisms that want to feed on wood fiber. Moisture enables the microorganisms to live. Chemical protection, like in pressure-treated posts, doesn't waterproof the wood; it's a pesticide to keep microorganisms from eating the wood."

BUILDING SOLUTIONS

So farm buildings are up against a lot of challenges. Luckily, building technology has been considering these challenges for a long time, and have come up with a variety of solutions.

McDonnell has developed a product that maintains typical post-frame foundation techniques while adding a layer of

protection to the posts. "If there is animal waste around that post, it's going to be compromised," he says. "Post Protector is simply a physical barrier so that there isn't direct contact." The barrier is made from a specialty high-density polyethylene that is commonly used in landfill liners. McDonnell continues, "The material is flexible and really strong. Anything that comes in contact with the post has had zero ill effects on this material."

Mark Stover of Perma-Column® has gone in a more heavy-duty direction: concrete. "Over 50 percent of our projects are agricultural construction," says Stover. "Instead of putting wood in the ground that will rot, we use pre-cast concrete with steel brackets that connect to the rest of the wood frame. This eliminates the need



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Do You Want Your Own Island?

Georgia Web fills a new need by upgrading a product they have lots of experience with.

Do you have a pond or wetland on your property (or a client that does) that is impacted by nutrient runoff? Managing water quality in and around agriculture can be a real challenge. The necessary use of fertilizers and manures to optimize crop production presents a very real impact on ponds, lakes, and wetlands on the farm. Even with the best runoff and erosion management being employed by America's top-notch crop and livestock producers there still is a need to remove some excess nutrients from ponds, lakes, and wetlands on and around farms today. A new and innovative way to do that is to start using the pond or lake as a water and nutrient supply for plants on a floating island. The plants growing on your floating island will take up nutrients from your pond and can be removed each time you cut back or replace those plants. A floating island can also bring you many other side benefits depending on how you use and design it.

Georgia Web, located in Wrens, Georgia, is making a product that can be used to create these floating islands for a variety of applications. They are leveraging their years of experience in creating air-lay non-woven products such as roofing ridge vent material to create an industry leading product for floating islands and erosion control. "Georgia Web's product is unique in its uniformity (density and thickness) and in its ability to stand up to ultraviolet radiation and other weather impacts," says Wylie Prescott. "We can make this Floating Island Matrix in any thickness from 1-3 inches, but most of what we produce right now is 1¾ inch thick material." Floating Island Matrix material is currently available in 60 or 80 inch widths in sheets or rolls and can be stacked to achieve greater thicknesses and floatation depending on your needs. Applications for this type of product range from erosion control (applying the product to the ground) to nutrient and water quality clean up (floating islands) in ponds, lakes, and wetlands, but the utility only starts there! Floating islands can be used as duck blinds and waterfowl habitat, gardens, and anything else you can dream up. Essentially you can add beauty and utility to your water body while at the same time improving the water quality.

Using plants to take up excess nutrients from water is the cornerstone of a production system where crops are grown without soil. These hydroponic systems can be highly productive as they supply all the needed water that might normally limit plant growth in a field or garden. The downside to typical hydroponic systems is the infrastructure and investment to build and maintain them. A floating island, however, can be very simple to build and takes advantage of the same ideas and productive capacity as hydroponics. With the water supply readily available (your pond, lake, or wetland) and the necessary nutrients already in your pond (even if you don't want them there), all that remains is to build the floating island to whatever specifications you see fit. What we have here then is a win-win situation. Not only can these floating islands help clean up your pond, but they can also help you grow food, feed, or compostable plant material for use on your land. They also may enhance the fishery in your pond with cover and protection for both small and large fish.

Building one of these floating islands does require a quality and long-lasting substrate for the plants to anchor themselves in and grow. Here is where Georgia Web has you covered with a product that will stand up to the elements for 15+ years of continuous use. This durability makes it worth the investment to install a floating island in your pond or wetland to get the benefits you want. Beyond the product durability, Georgia Web is using recycled polyester materials to construct the Floating Island Matrix material and has had their product tested to ensure that it is free of harmful chemicals or effects on your water life. With



this confidence in green material sourcing and safe tested material you can set about cleaning up your pond or wetland and enhancing its beauty and function.

Floating island design parameters, such as size, plant selection, and material thickness depend on the intended use and current water quality of the pond or wetland. Support for determining what you need for your island design can be found from Martin Ecosystems and other floating island builders that Georgia Web can put you in touch with.

Once you have designed and built your floating island the plants you use can be cut-back or removed and replaced as determined, as this is the major method of getting the nutrients out of the water in your pond. This is a critical point to consider in your design. The strength of the Floating Island Matrix product here is in its light weight, strength, and durability. You can create modular islands and easily pull them ashore to harvest your plants after which you simply put your floating island back out into the water to keep growing and cleaning up your water.

Georgia Web is manufacturing their product in the USA and shipping it worldwide for a variety of uses with floating islands being a new and exciting application. Being one of two domestic suppliers for a similar product, Georgia Web's Floating Island Matrix is the product of choice right now for those wanting to construct floating islands due to its uniformity in production and its durability in practice and use. The Floating Island Matrix material has also been used to capture sediment in flowing water, reduce the impacts of wave action on shorelines, and provide erosion control and bank stabilization. If you have other ideas for use or want a custom product feel free to contact Wylie Prescott wprescott@georgiaweb.biz for more information.



Planning is crucial for success. Cattle—and Mother Nature—have a way of finding and exploiting weaknesses in any structure or system. Photo courtesy of Wick Buildings.

for treated lumber in the columns.” By elevating the wood out of the ground, it’s no longer in constant contact with the microorganism-filled materials that cause decay.

Beyond the posts, waste should be taken into consideration when making other building decisions as well. In their Cattle Building Planning Guide, Wick Buildings discusses the pros and cons of solid vs. slatted flooring, trusses vs. rafters, and gables vs. monoslope. “Of all the decisions you’ll have to make with respect to your building, the floor is among the most important. It affects many aspects of the operation, from project cost to building size to cattle health to labor and bedding costs to manure management and more,” says Bret Buelo, Marketing.

Solid floors (either concrete or dirt) can end up holding manure for months, especially in a composted pack bedding situation. “[Slat flooring] requires minimum 6-month manure storage below the building,” says Buelo. So proper, non-corrosive materials are important. “Make sure that the rebar in the concrete isn’t too close to the surface, that there is sufficient concrete protecting it,” says Gooch.

Ventilation is another crucial element when building a structure that deals with a lot of waste, not only for the building, but for the animals. “Byproduct gasses become problematic if there isn’t enough ventilation,” says Gooch. Buildings can employ natural ventilation, windows, curtains, or more mechanical systems




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Post Protector is a physical barrier made from a specialty high-density polyethylene that is commonly used in landfill liners. Photo courtesy of Post Protector.



Perma-Column elevates the wood posts out of the ground with pre-cast concrete and steel brackets. Photo courtesy of Perma-Column.



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like tunnel ventilation. “A ventilation system works at optimum performance when installed with equal amount of soffit ventilation,” says Martin Rotter of ProfileVent by Ventco. He continued, “The ventilation system allows for the flow of fresh air into and throughout the building, while allowing excess heat, moisture, and fumes and opportunity to escape.”

ENVIRONMENTAL CONCERNS

Just as animal waste can damage building materials, it can harm the environment when not properly stored and managed. “Especially with COVID, environmental and food safety are more critical than ever,” says Stover. Post-frame engineers have had to look at how to build these structures with no residual runoff.”

The farming industry has been concerned with these environmental effects for many years. Agricultural building has changed to accommodate new restrictions and conservation standards. “Nitrogen and phosphorous can infiltrate into the groundwater, and leach into rivers or other water bodies causing water quality challenges,” says Gooch. Water protection from manure and related wastewater, powering farms and communities with greenhouse gasses like methane and CO₂, and understanding how to best sequester carbon emissions from the air in the roots and soil of our farms are all part of the agricultural efforts to protect the environment. “The dairy industry, in spring of last year, committed to being carbon neutral or better by 2050,” says Gooch. “To accomplish that, containment of biogas from long-term manure storage plays a role.” **RB**

Hangar Homes

Pilots Who Want to be Ready for Takeoff at Any Time

ANY HOBBYIST'S DREAM IS TO have immediate access to their hobby whenever they want it: living on the golf course, an easily accessible boat landing, and, increasingly, a garage and runway for your airplane. "It's the nature of a pilot," says Tim Suderman of Diamond Doors. "They have a very large passion, so what's better than to live at an airport?"

Scott Douglas of Powerlift Doors has been building hangar homes for all types of pilots, from those with several hangar homes across the country to those who have saved their whole lives for this large of an investment. "The common denominator is that they fly a lot and they want to make it easy to fly. They just want to walk out the back door, fly, and come home," says Douglas.

Hangar homes have been popular in the southern states for many years. Texas, Florida, Mississippi, and Alabama have many hangar home communities and privately-owned airstrips. More recently, says Suderman, they are heading north. "We're seeing it develop in Montana, Idaho, Oregon, and Washington." Anywhere

with wide-open spaces where large pieces of land are available for purchase and pilots can fly without a lot of interference have become popular locations.

BUILDING CHALLENGES

Some of the rise in demand for hangar homes comes from the declining availability of nearby hangar space. "A lot of the hangars are old and are becoming decommissioned, but no one wants to invest in fixing them up," says Samantha Wiebe of Diamond Doors. "You are often dealing with developers for multi hangars and they have a lot of issues with regulations and codes." It's these demanding regulations that tie the hands of developers and make them shy away from investing.

So pilots have taken the matter into their own hands through private airstrips and hangar home communities where each home has easy access to a central runway. "If they're going to spend \$150,000 on a hanger, they may as well spend a little more and make it their home too," says Suderman. Builders still have



Hangar Home with 60 x 16 door.
PHOTO COURTESY OF POWERLIFT DOORS.

to contend with the FAA and other building regulations, but you're getting a lot of value and convenience for the effort. "It's not just coming up with a plan and handing it in," says Wiebe. "This is a years-long process."

Part of the challenge, says Douglas, is working with large building teams on so many unique project types. "You're working with various contractors and the owner and figuring out where we fit in. Sometimes it's insulated concrete forms (ICF), sometimes it's wood or steel; you get used to what works and what they want."

Suderman points out that these are almost never run-of-the-mill, cookie cutter projects. "There is a lot of attention to detail that is required," he says. "For each project we custom build the doors." And while the rest of the house is important, it's not really a hangar home if the plane can't get in and out.

MORE HOME THAN HANGAR

Probably the most important feature of modern hangar homes, is that they don't



55 x 18 door on hangar condo. PHOTO COURTESY OF POWERLIFT DOORS.

look like hangars at all. "They don't just want a normal looking hanger, because it is their house," says Suderman. "There is so much extra detail with the door incorporated into the building." Pilots are looking for truly spectacular looking buildings that run seamlessly from home to hangar, not something that looks like Frankenstein's monster. And when you can afford a hobby plane, you don't skimp on those smaller details. "They are not necessarily looking so much at pennies," says Douglas.

And he should know. Powerlift Doors has produced more than 15,000 hydraulic

hangar doors ranging in size to accommodate airplanes from biplanes to full-sized jets. On some projects, he said, "add in the price of a couple of jets and you hit the 100 million mark pretty easily." You certainly don't have to spend *that much* money for a nice hangar home, but pilots will invest the money to get the features they are looking for. "Typically, not a whole lot of extra money is spent on details in an individual hanger. But with hangar homes, they are spending extra money. This is their home," says Suderman.

One common trend is hangar homes is



Airpark condos with six 54 x 14 Doors. PHOTO COURTESY OF POWERLIFT DOORS.

to make the hangar door blend in with the rest of the building. John Fehr of I-Beam Doors speaks to the versatility of these wide hangar-style doors, “The whole purpose of a single panel is it’s simplicity and effectiveness to cover it easily with infinite options of siding or glass; whatever covers the building can be used on the door,” says Fehr. Finishing materials like masonry, wood, siding, brick veneer, and glass are not uncommon. “We see a lot of cedar shake and wood finishing, because a lot of homes will have accents in that type of wood on the house itself,” says Wiebe. Douglas has been covering doors with all sorts of materials, “A lot of people ask if it can be done, not necessarily how much it will be.”

The doors also have to perform well

technically for the project to succeed. Expectations, and the dimensions, are only getting bigger. “If the hangar is 90 feet wide, they want an 85-foot door,” says Douglas. “We have engineers on staff. We just focus on making it right for the customer and their project.”

Suderman agrees, “I’d say if you’re building a hangar home, you’re looking for ease of use and convenience. You want innovative features like an auto-lock system with a remote. Our doors are relatively quiet, and the opening speed is fastest in the industry.”

And, of course, the doors themselves are top-of-the-line. “The outstanding performance of our system with complete automation and control,” says Fehr, “makes the system very safe, reliable, and mainte-

nance free for decades of use.” Fehr’s doors also have the benefit of an R-50 insulation rating, making it easier to incorporate the door into a residence while maintaining interior comfort. “My door system is not only designed as wide doors for airplanes and equipment, but also for wall openings in residential spaces, being able to bring the outside inside and inside outside,” says Fehr.

An expanding aviation market means more hangar homes may be popping up around you. They are often creative projects for a really unique customer. “People who fly like to fly without fuss. That’s what a hangar home does,” says Douglas. “Just walk out your back door and you are immediately in a plane; five minutes from when you get up you can be flying.” **RB**



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The Postmaster Vibratory Driver has three models – MINI, MIDI and MAXI – designed for excavators and skid steers to provide a fast, accurate, safe and efficient solution to driving posts. Hydraulic post clamps secure the post for positioning then hold it while vibrating it into the desired depth. Postmaster also removes and repositions posts with ease. Distributed by Seago International.



■ SMART LOCK WITH A SEAMLESS LOOK

The brand says Level Lock is the world's first invisible smart lock. Designed to fit seamlessly inside a deadbolt to preserve the existing look of a home, Level Lock lets homeowners easily share access with family, friends, or service providers at the touch of a button. Apple HomeKit us-

ers can easily operate Level Lock via Siri, add automations such as locking the door when the last person leaves, or receive real-time entry and exit notifications. The lock meets ANSI Grade 1/A standards.



■ TWO-WAY HEAVY-DUTY ALUMINUM SLIDE FROM ACCURIDE

The AL4165 is a bold new heavy-duty slide that offers two-way full-extension travel for loads up to nearly 600 lbs, ideal for storage, loading systems, tool changers, and machine extensions. Additionally, the new industrial-grade solution uses aluminum slide members and stainless-steel bearings to deliver lasting performance in harsh environments. The AL4165 comes in four-inch even increments from 16 to 40 inches. The slide comes max-rated at 594 lbs. and quality tested up to 10,000 cycles.



■ NEW FASTENERS FOR COMPOSITE DECKING

Together, CAMO and Fiberon offer the most comprehensive fastening system in the composite decking industry, providing versatile solutions for Fiberon grooved deck boards. Fiberon EDGE®,

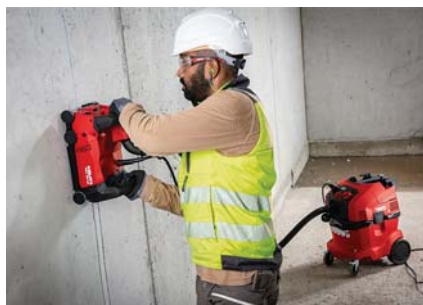
EDGEX® and STARTER Clips are all warranted for use with Fiberon grooved deck boards. Both EDGE and EDGEX Clips eliminate the need for partial installation. EDGE Clips (90-degree deck patterns) hug the joist, and EDGEX Clips (any deck pattern) fit in the board groove, allowing contractors to set multiple rows of boards and clips in place before fastening with the NEVER-MISS™ Guide included in every pail. STARTER Clips offer a fastener-free deck surface that is easy to install.



■ BENJAMIN OBDYKE SELF-ADHERING DRAINABLE HOUSE WRAP

Building product manufacturer Benjamin Obodyke says its new HydroGap SA is the industry's first self-adhered drainable housewrap on the market. Offering air and moisture protection, HydroGap SA combines the original HydroGap air-sealing technology with an acrylic adhesive backing that can be repositioned before it adheres too strongly. With a perm

rating of 12, the HydroGap SA works in all climates and can be installed in temperatures as low as 25 degrees Fahrenheit without primer. Thanks to the split release liner, it's easy to adhere the housewrap in different methods and ways and to peel the liner from the actual wrap. The wrap measures 80 feet long per roll and 4.75 feet wide. It also has a class A fire rating.



■ VIRTUALLY DUST-FREE SLITTING TOOL FROM HILTI

The new Hilti DCH 150-SL takes slitting to a whole new level, with faster performance, even better handling, and virtually dust-free operation. With a higher cutting speed than any other slitter on the market, the DCH 150-SL delivers significant gains in productivity – min. 40% faster than its nearest competitor. Soft-touch grips have been added to the unique parallel handles, making it comfortable to hold regardless of the height or direction of cut. The addition of a built-in spirit level is positioned so it's easy to see. The depth lock helps to ensure straight and consistent slitting every time. We have added a laser that keeps the end slitting targets at sight for precise cutting and less re-work, all at the comfort of workers building construction and fastening mechanical and electrical cables & pipes.

■ NEW STRUCTURAL SHEATHING SOLUTIONS FROM BARRICADE® BUILDING PRODUCTS

Thermo-Brace and Thermo-Brace S.I.B. incorporate an air and moisture barrier on both sides of the light-weight structural



sheathing solutions. Saving on labor and material costs, the sheathing line offers a better alternative to OSB and expensive, heavier panel system competitors. Thermo-Brace is high quality, long fibered, specially treated water- and weather-resistant plies. Plies are pressure laminated with a special water-resistant adhesive. Thermo-Brace S.I.B. is a reversible, lightweight, 4-in-1 structural sheathing solution that provides four layers of enforced protection against water, moisture vapor, mold, and more.



■ BRUSHLESS AND CORDLESS BELT SANDER FROM MAKITA

The 18V LXT® ¾" x 21" Detail Belt Sander delivers corded performance with cordless convenience. The compact design and 160-degree pivoting arm can reach tight spaces and is easy to store. The belt sander is engineered for detail work in wood and steel applications, including fine carpentry and furniture-making, welding, ornamental metal structures, automotive, and more. It also features an adjustable L.E.D. light, variable speed control, locking trigger, and an electric brake. The large 21" belt produces 4⅝" maximum sanding length for faster work. ¼" and ½" arm assemblies are available.

RB



Fly Away Home

Retired Contractor Builds Dream Home at Local Airpark

RETIRED PLUMBING AND HEATING CONTRACTOR, Anthony Spino has now built two homes that he has lived in. This first was a log home nearly 40 years ago. Now, it's a place to retire for him and his wife, along with their single-engine aircraft.

"Our local airport opened up an airpark: a gated community with 30 lots, each with the street doubling as the taxiway to the runway," says Spino. So in 2018 he purchased the land, had it cleared of trees and stumps, and began construction.

Guests could be flying in from all over, so he wanted enough space for friends to come and stay. Totalling 3,213 square feet, the two-story hangar home has a large hangar, garage space, and carport on the first floor, with spacious living quarters on

the second floor.

For the exterior of the home, Spino wanted to make sure it could stand up to the sometimes brutal climate of Eastern Canada. Steel siding by Canadian manufacturer Vicwest is made to stand up to the elements, and the realistic wood grain with durable paint system makes for striking curb appeal. The batten-style steel roofing panel from Vicwest completes the finished look. Both panels have hidden fasteners to prevent water damage and other common maintenance woes.

In preparation for the cold, snowy winters, the home is well insulated with R-50 blown cellulose insulation in the roof and R-40 fiberglass and extruded polystyrene in the walls. Snow guards from Vicwest can also be seen on each section of the

roof to keep control of the months of piling winter snow.

The hangar door, a custom bi-fold hangar door from Diamond Doors, remains low-profile when fully open, ensuring no loss of clearance space. At just over seven feet high with a 30-foot wingspan, the 1964 Piper Cherokee PA-28-140 needs quite a bit of space, and the door makes entry and exit from the hangar smooth.

The door also features rubberized weather seals at the bottom of the door and covering the hinges to ensure total separation between indoors and the elements.

Now Spino can spend his retirement doing what he loves, flying his vintage airplane and spending time with the other hangar-homeowners that live just down the airstrip. **RB**



No matter the weather, Diamond bi-fold doors are hassle free from install to operation. Competitively priced and exceptional quality.



www.DiamondDoors.com | (833) 565-0933

THE DETAILS:

Building: Custom build

Location: Lachute, Quebec

Contractor: Anthony Spino

Building Size: 2-story, 3,213 sq ft

Wall & Roof Panels: Pre-finished hidden-fastener steel panels by Vicwest

Insulation: Roof: R-50 blown cellulose;
Walls: R-40 fiberglass and extruded polystyrene

Snow Guards:

Rack Round Snow Stop by Vicwest

Fasteners: Vicwest

Door: Bi-fold Hangar Door
by Diamond Doors



YOUR VOTE COUNTS!

GOLD KEY

of Excellence Awards

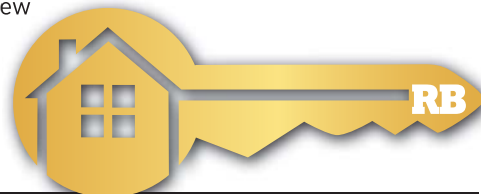


**VOTE
ONLINE**

In July, *Rural Builder* magazine will present its **Gold Key of Excellence Awards** for the 39th time. Help us determine the names of suppliers of building materials and/or construction equipment who do the best job of providing you with all of the services and products you need to run your business successfully. **Take a minute to submit your vote today.** You can select up to three suppliers from the following list or nominate someone new in the spaces provided below.

CRITERIA TO CONSIDER WHEN MAKING YOUR CHOICES INCLUDE:

- Quality of customer service
- Product quality
- Within budget
- On-time delivery
- Warranty procedures
- No surprises



- | | | |
|---|---|--|
| ☐ A.B. Martin Roofing Supply | ☐ Graber Post Buildings | ☐ Plasti-Sleeve |
| ☐ A.J. Manufacturing | ☐ GSSI Sealants | ☐ Plyco Corporation |
| ☐ ABC Supply | ☐ Gulf Coast Supply | ☐ Richland Laminated Columns |
| ☐ Acu-Form | ☐ H&H Metals | ☐ RigidPly Rafters |
| ☐ AG-CO | ☐ Hershey's the Metal Meister | ☐ Royal Crowne Cupolas |
| ☐ Akzo Nobel Coatings | ☐ Holmes Lumber | ☐ S-5! |
| ☐ ASC Machine Tools | ☐ Innovative Energy, Inc. | ☐ Safe-Way Garage Doors |
| ☐ Atlas Bolt & Screw | ☐ Klauer Manufacturing Co. | ☐ Sherwin-Williams Coatings |
| ☐ Becker Specialty Corporation | ☐ Leland Industries | ☐ Sioux Steel |
| ☐ Beck America (Fasco) | ☐ Levi's Building Components | ☐ Snap-Z |
| ☐ Boral | ☐ Mac Metal | ☐ ST Fastening Systems |
| ☐ Bradbury Company | ☐ Marco Industries | ☐ Star Building Systems |
| ☐ Cannonball:HNP | ☐ Marion Manufacturing | ☐ Starwood Rafters |
| ☐ Coverttech/rFoil | ☐ Maze Nails | ☐ Steel Dynamics |
| ☐ DECRA Roofing Systems | ☐ Menards | ☐ Stockade Buildings |
| ☐ Direct Metals | ☐ Metal Rollforming Systems | ☐ Sukup Manufacturing |
| ☐ Drip Stop | ☐ MFM Building Products | ☐ Swenson Shear |
| ☐ Dynamic Fastener | ☐ Mill Steel | ☐ Trac-Rite Doors |
| ☐ East Coast Fasteners | ☐ MWI Components | ☐ Triangle Fastener Corporation |
| ☐ EDCO Products | ☐ National Hardware | ☐ United Steel Supply |
| ☐ Everlast Roofing, Inc. | ☐ North Star Metals Mfg. | ☐ Varco Pruden Buildings |
| ☐ Extrutech Plastics (EPI) | ☐ Palram Americas | ☐ Ventco |
| ☐ Fabral | ☐ Perma Column | ☐ Wick Buildings |
| ☐ Fasteners Direct | ☐ Petersen Aluminum (PAC-CLAD) | |

Can't find your favorite suppliers above?

Then nominate up to three suppliers in the spaces provided below.

1. Company Name & Location _____

2. Company Name & Location _____

3. Company Name & Location _____

Your name: _____

Company: _____ Location: _____

[Your information will remain confidential.]

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Rural Builder

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☐ Other _____

PLEASE CHECK THE PRIMARY CATEGORY THAT DESCRIBES YOUR BUSINESS:

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or Installer
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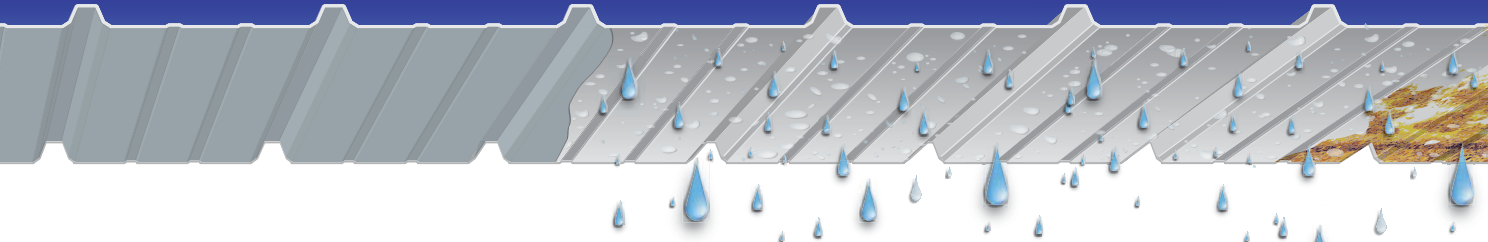
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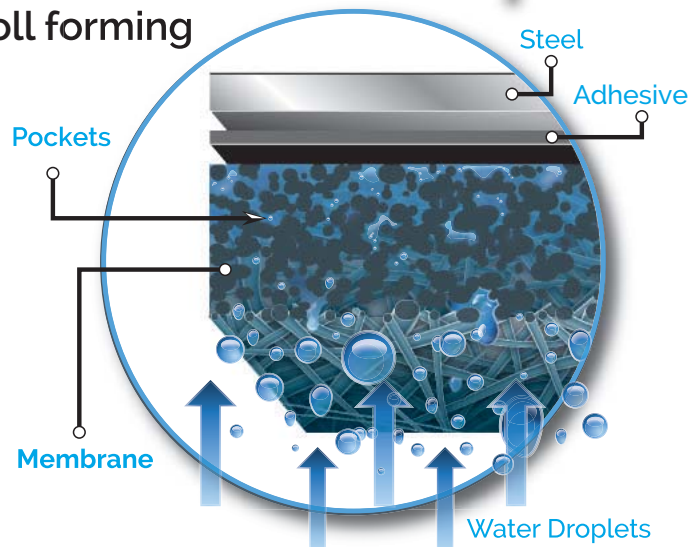
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