

METAL ROOFING

Advancing the Metal Roofing Industry Since 2001 **MAGAZINE**

SNOW MITIGATION

MERGING ART & SCIENCE

TOP 5 WAYS TO RETAIN STAR EMPLOYEES

VIRTUAL TRADE SHOW

AN IN-DEPTH LOOK AT SELECT MATERIALS

PRODUCT PROFILES
.....
SNOW & ICE MANAGEMENT

SEE OUR PRODUCT PROFILES ON PAGE 52



October/November 2020
Volume 19 • Number 6
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Your Safety Is Our Top Priority!

In response to the other shows canceling in 2020, we thought it appropriate to stress the steps we are taking to ensure our exhibitors and attendees are safe in this interesting world.

Addressing the show, there are essentially three moving parts: the Netherland Plaza Hotel, the Duke Energy Convention Center (DECC), and the show itself. Both the Netherland Plaza and the DECC have taken extraordinary steps to guarantee the safety of their guests. The DECC is a Global Biorisk Advisory Council (GBAC) Star facility. If you would like to learn more about the GBAC Star program, visit <http://bit.ly/BioRisk>. The Netherland Plaza is a Hilton hotel. Hilton has adopted a Clean Stay Program where they instituted aggressive cleaning programs, including thorough disinfecting of the rooms. I stayed there a few weeks ago to prepare for the show and even the TV remote was sani-

tized and wrapped in plastic between stays. With the hotel and venue taking additional steps, the logical next question is what are *we* doing? What we've done so far:

- Cancel the Introduction to Rollforming intensive class to allow for social distancing.
- Move attendee registration to the common area outside the hall to facilitate social distancing while in line.
- Hand sanitizing stations will be placed throughout the hall and common area.
- Personal-size hand sanitizer available.
- Allow a maximum of 20% of permitted capacity for Exhibit Hall A (should not inhibit attendee traffic).
- Operate banquet halls at 25% of traditional occupancy.
- Require masks in accordance with state regulations.
- Provide masks sufficient for each

attendee and exhibitor to have a new, clean mask each day.

- Conduct voluntary temperature scans during exhibit hall hours. People scanned will receive a "Roofing Elements is COOL" hat commemorating the launch of our new addition, *Roofing Elements Magazine*.



REGISTRATION NOW OPEN!

We urge everyone to be safe. But, be at the Construction Rollforming Show. Registration is now open! Visit <https://bit.ly/CRShow2020>.

If you would like info on exhibiting, sponsoring masks and hand sanitizer, or anything else Construction Rollforming Show-related, contact me at gary@shieldwallmedia.com or 715.252.6360.

METAL ROOFING MAGAZINE UPCOMING ISSUES

From the publishers of *Rural Builder*, *Metal Roofing Magazine*, *Frame Building News*, *Rollforming Magazine*, *Garage, Carport & Shed Builder* and *Roofing Elements Magazine*.

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METAL ROOFING MAGAZINE

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ON THE COVER:

Crew member Dave Lancour works on a custom metal roof shown in the Peak Performers article, page 23. Photo by Sharon Thatcher, Shield Wall Media.

ONLINE SERVICES:

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An “Elephant” of a Project!

Just when you think you’ve seen it all, someone pulls up to your office with an 11’ tall elephant—and I’m not exaggerating. There we were, hard at work on the next magazine issues, when we heard a knock at the front door. A gentleman asked if we’d “seen his elephant in the parking lot,” causing one collective turning of heads.

We filed outside and, sure enough, a life-size elephant came into view, constructed entirely of salvaged metal. Upon closer examination, we spotted flatware, pipe, oil drums, hand tools, automotive parts, and much, much more. Its owner and creator, write-in presidential candidate Kasey Wells, explained that he designed the massive metal project as a low-cost conversation starter for his



campaign trail, while also representing the “elephant in the room.”

An elephant is certainly a surprise, but the use of metal can be surprising in other

ways as well. Flip to page 42 for our first “Design Corner,” featuring a Canadian A-frame residence with a unique, custom designed “dragon scale” roofline. You’ll understand what I mean when you see it! This will be a spot for future creatively designed projects that are definitely not your average metal roof.

If you’re in the learning mood, head to page 15 for a deep dive into snow mitigation on metal roofs. There’s an art and science behind snow guard systems, and we’re covering it in-depth here. Now is a good time to brush up on your snow retention knowledge, since winter will be here before you know it!

Jessica Franchuk, Managing Editor
jessica@shieldwallmedia.com

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got news?

If you have news you think belongs in *Metal Roofing Magazine*, feel free to send us a press release (and high-resolution image if applicable) for consideration. This is a no-cost editorial opportunity for all metal roofing-related businesses.

Send us news of your:

- Milestone anniversary
- New product, material, or service
- New program for the advancement/betterment of the trade
- Outstanding achievement
- Business location change/expansion
- Accolades/awards
- Staff promotion/staff addition
- Public service work/engagement
- Trade association involvement
- Branding changes
- Sponsoring/exhibiting at a trade show
- Merger/acquisition
- Case studies
- Joint projects with an industry partner

Send us a notice of your successful completion of a challenging or unusual project and you may see it featured as a Project of the Month. We would also need 4-5 high-resolution images and details about the products used in the project.

**Got questions? Call 920-224-5146
or email jessica@shieldwallmedia.com**

News announcements and projects to be considered for Project of the Month placement can also be mailed to Metal Roofing, ATTN: Jessica Franchuk, PO Box 255, Iola, WI 54945.



CALENDAR

NOTE: Due to the pandemic, many events have been rescheduled or cancelled. Contact the show for updates before traveling.

October

14-16. ENR FutureTech (Virtual). www.enr.com.

21-23. **CANCELLED.** METALCON 30th Anniversary Event. Las Vegas, Nevada. www.metalcon.com.

28-30. Design-Build Conference & Expo (Virtual). www.dbia.org.

November

4-6. Adhesive & Sealant Council Convention and Expo (Virtual). www.ascouncil.org.

10-12. Greenbuild Virtual International Conference & Expo. www.greenbuildexpo.com.

December

10-11. 2nd Annual Construction Rollforming Show. Duke Energy Convention Center. Cincinnati, Ohio. www.constructionmagnet.com/construction-rollforming-registration.

2021 January

12. **CANCELLED.** Wisconsin Lumber Dealers Leadership Conference. Wisconsin Dells, Wisconsin. www.nlassn.org.

13-15. Construction Safety & Health Conference. Glendale, Arizona. safety.agc.org.

19-22. World of Concrete. Las Vegas, Nevada. www.worldofconcrete.com.

2021 February

4-5. 1st Annual Garage, Carport & Shed Builder Show. Century Center. South Bend, Indiana. www.constructionmag.net/garage-carport-shed-builder-show-home-page.

9-11. International Builders Show. Orlando, Florida. www.buildersshow.com.

24-26. International Roofing Expo. Las Vegas, Nevada. www.theroofingexpo.com.

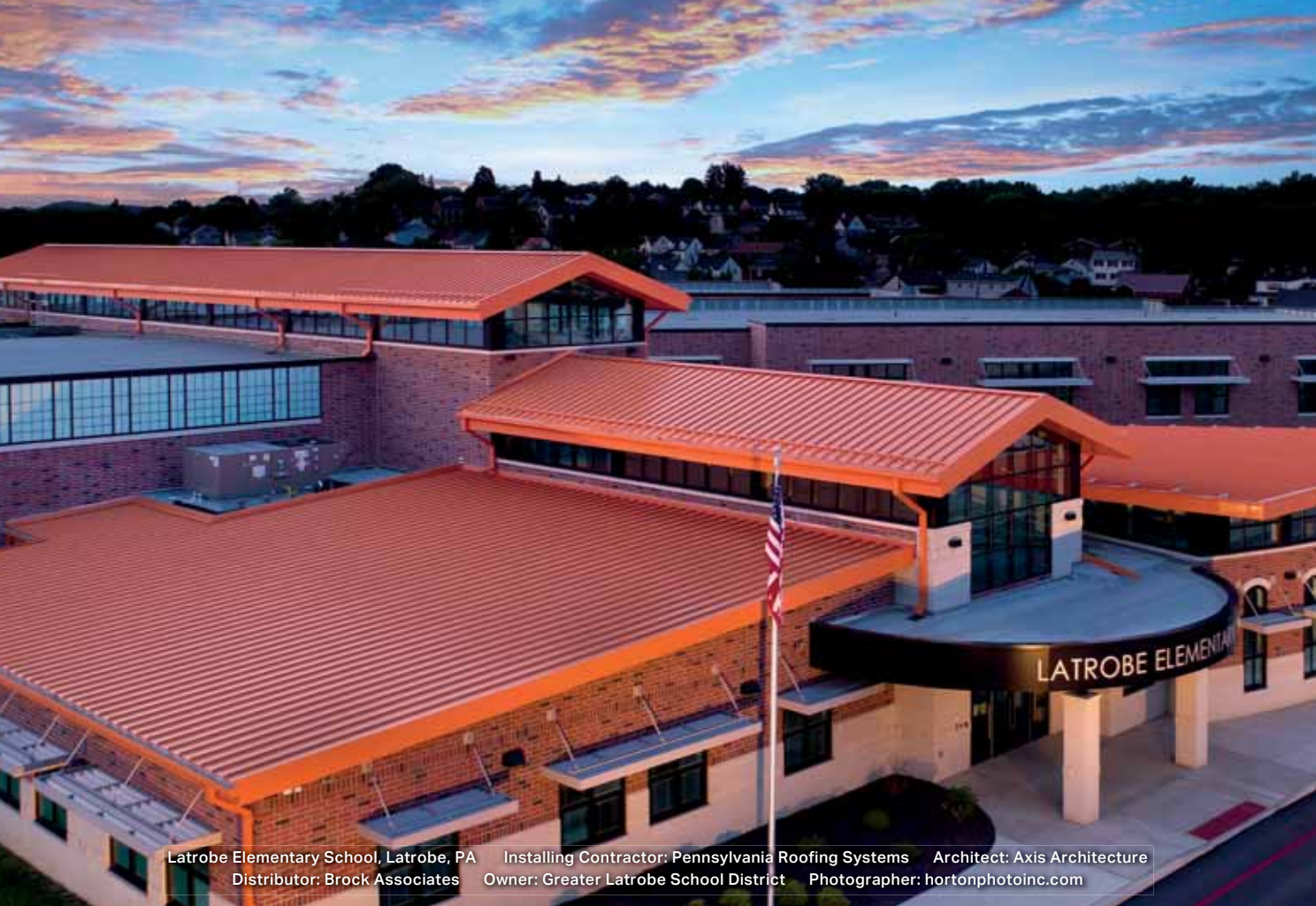
2021 March

3-5. Frame Building Expo. Nashville, Tennessee. www.nfba.org.

2021 April

14-16. **NEW DATES.** International Roofing Expo. Las Vegas, Nevada. www.theroofingexpo.com.

MR



Latrobe Elementary School, Latrobe, PA Installing Contractor: Pennsylvania Roofing Systems Architect: Axis Architecture
Distributor: Brock Associates Owner: Greater Latrobe School District Photographer: hortonphotoinc.com



TITE-LOC PLUS
METAL ROOFING SYSTEM

Custom color: Marquis Orange



Bright Future

Petersen's Tite-Loc Plus metal roofing system in a distinctive Marquis Orange finish brightens the vision of the new Latrobe Elementary School. The 22-gauge panels complement the classic terra cotta-toned brick that clads the upper two-thirds of the school's façade.

CASE STUDY @ [PAC-CLAD.COM/LATROBE](https://www.pac-clad.com/latrobe)



Introducing the Shield Wall Media Building Progress Award Program

We wish to recognize those who have made significant impacts on the growth or development of the construction trade. The Metal Roofing Hall of Fame and the Rural Builder Hall of Fame programs ran for many years, but we felt they had run their course. After much discussion, we revised the awards into a single program, now called the Shield Wall Media Building Progress Award. The process is briefly outlined here, with more information to come in future issues.

- One award will be given per year.
- Anyone in the construction industry

can nominate one or more candidates.

- Individuals previously inducted into the Metal Roofing or Rural Builder Halls of Fame are eligible.
- Once a nominee has been vetted as qualified, a professional profile will be published online and in all Shield Wall Media titles (time permitting).
- The Nomination Period closes October 31, 2021, when voting will commence. Ballots will be published in each of our magazines, distributed via email, and available online.
- Voting will continue through the final day of the 2021 Construction

Rollforming Show. Voting is limited to one vote per person.

- The nominee with the most votes will be announced at the 2022 Garage, Carport & Shed Builder Show and will be bestowed the honor of the very first Shield Wall Media Building Progress Award.
- Additionally, Shield Wall Media will donate \$1,000 to the charity of the recipient's choice (subject to approval; must be a 501(c)(3)).
- Non-winning nominations will be rolled over and included on the next year's ballot. **MR**

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The RICOWI Foundation, Inc.—Funding for Industry Research

The RICOWI Foundation, Inc. has been officially recognized as a 501(c)(3) nonprofit. The Foundation's work of industry research is important to the future growth and direction of the building community, which includes academia, industry, contractors, code officials, specifiers, insurers, and general consumers.

The Foundation is one of very few organizations that provide such informative studies.

The mission of the RICOWI Foundation is to enhance and promote research related to the performance of roofing products and systems. The Foundation was developed to help support the activities of the RICOWI, Inc. organization and other industry research requests as a funding mechanism through which grants, special research projects, and natural disaster event investigations might continue.

The roofing industry acknowledges there is no greater "think tank" of expertise in the country to tackle the issues of roof performance during extreme Weather Events. The RICOWI, Inc. website can provide greater insight into the types of programs and avenues of research information that are envisioned, and will be a model of the expected extent of the research. While the Wind and Hail investigation programs are well recognized, the work in codes, best practices, and overall roof system performance are equally important to the building industry. Visit www.ricowi.com for more information.



Harbor Freight Tools for Schools Finalists Selected

Fifty skilled trades teachers and teacher teams from across the country were recently named as finalists for the 2020 Harbor Freight Tools for Schools Prize for Teaching Excellence. The teachers and their high school skilled trades programs are in the running for a share of \$1 million in total cash awards.

The finalists hail from 23 states and specialize in trades including manufacturing, welding, construction, automotive,



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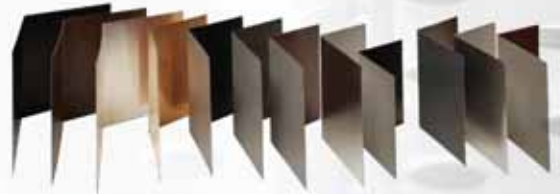


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INDUSTRY NEWS

agriculture mechanics, and technical theater. The teachers—some competing as individuals and some as teams—were selected by an independent panel of judges from a field of more than 600 applicants. “Trades teachers are truly unsung heroes, and our prize seeks to show everyone how powerful these classes can be,” said Danny Corwin, Executive Director of Harbor Freight Tools for Schools. “Skilled trades education has enormous potential to offer students pathways to multiple postsecondary opportunities, and these are the teachers who are providing them with the knowledge, skills, and inspiration year after year.”

The Harbor Freight Tools for Schools Prize for Teaching Excellence was started in 2017 by Eric Smidt, founder of national tool retailer Harbor Freight Tools. The prize recognizes outstanding instruction in the skilled trades in U.S.

public high schools and the teachers who inspire students.

Now, in the fourth year of the prize, more than 200 teachers have been recognized as winners or finalists. Winners join a nationwide network of outstanding trades teachers who convene regularly by webinar and in a three-day summer workshop to share best practices and advance their field.

“There’s a reason why polls show enormous support for trades education—with more than 8 in 10 parents and voters believing it deserves more funding,” Smidt said, citing a poll conducted by NORC at the University of Chicago and released this spring by Harbor Freight Tools for Schools. “Trades teachers are turning out the tradespeople of the future—the workers who will build and maintain our critical care infrastructure, our communication networks, our homes, and our cars. These teachers

deserve to be celebrated.”

The 2020 finalists now advance to a second round, where they will respond to online expert-led video learning modules designed to solicit their insights and creative ideas about teaching practices. Two rounds of judging, each by separate independent panels of reviewers, will narrow the field to 18 winners and, finally, name three of those teachers Grand Prize recipients. All winners will be announced in late October.

The 18 winners will split the \$1 million prize. Grand Prize winners will each receive \$100,000, with \$70,000 going to their public high school skilled trades program and \$30,000 to the individual skilled trades teacher or teacher team behind the winning program. The 15 additional winners will each be awarded \$50,000, with \$35,000 going to their public high school program and \$15,000 to the teacher or team.

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**METALCON 2020
Postponed Until 2021**

METALCON 2020, the metal construction industry's largest international event for metal construction products, technologies, and solutions, has postponed its 2020 show until October 6-8, 2021 in Tampa, Florida.

"Due to the ongoing concerns of the COVID-19 pandemic and mandates established by the state of Nevada, METALCON 2020 cannot take place as planned for this October," said Frank Stasiowski, FAIA, CEO of PSMJ Resources and METALCON.

"To their credit, Las Vegas and the State of Nevada have done everything they can to try to get us to open up in October and have our convention there," continued Stasiowski. "They work with dozens of other meetings and trade shows trying to do the same, but this virus is relentless and is really working against all of us, including the State of Nevada and the great people at the Las Vegas Convention & Visitors Authority."

While it is difficult to replace a live, person-to-person event, the METALCON team is focused on developing new programming and essential training to help attendees take their businesses to the next level, and is announcing three new initiatives:



1. Safety Certificate Program for both supervisors and foremen in the metal construction industry, leading to an annual credential.
2. Business Development Program, featuring education and training in all aspects from the technical to business to sales.
3. METALCON Live! New Industry Briefs featuring industry leaders who will provide up-to-date information on what is happening in today's marketplace.

"We will continue to navigate these uncharted waters to the best of our ability and ask you to navigate them with us," said Judy Geller, Vice President of Trade Shows at METALCON. "Until we can meet again in person, we look forward to connecting with you virtually and to delivering a world-class event next year in Tampa!"

For attendees and exhibitors already registered for this year's event, registrations will automatically be applied to the METALCON 2021 event. For those unable to commit to the rollover, contact METALCON at info@metalcon.com.

**Garland Provides D7™
Disinfectant as Part of
School's Reopening Plan**

The Dunklin R-5 School district in Herculaneum, Missouri, is among hundreds of thousands of school districts across the country working diligently to provide a safe environment for students, teachers, and staff to return to this fall. The district serves about 1,500 K-12 students and is welcoming back about 70% of its population for in-person classes. The remaining 30% opted for virtual learning.

Part of their newly established disinfection routine included applying D7 antimicrobial disinfectant to high contact touchpoints on the exterior of Herculaneum High School and the nearby Taylor Early Childhood Center and its playground. The first application was a trial run of sorts, since Dunklin R-5 Superintendent Clint Freeman, Ph.D., is new to this level of disinfection: "We wanted to learn about the D7 product

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and see how it worked before setting up a full-scale application.”

D7 is an EPA-registered disinfectant that kills 99.99999% of bacteria, fungi, germs, and viruses in minutes and has shown effectiveness against viruses similar to the coronavirus/COVID-19. It can be used on exterior surfaces or applied as a fog or spray inside buildings. D7 capitalizes on the natural cleaning power of hydrogen peroxide to penetrate and eliminate pathogenic bacteria, sanitizing down to the molecular level. D7 contains zero VOCs, is biodegradable, and can be applied using standard equipment.

“Although D7 differs from Garland’s traditional roofing and waterproofing products, we quickly recognized the need to provide our customers with a safe and effective disinfectant that allows schools and businesses to begin safely reopening their doors,” said Brett Wygal, Garland’s operations manager.

Reed’s Metals Merges With Oakland Metal Buildings

Reed’s Metals of Brookhaven, Mississippi, recently announced a merger with Oakland Metal Buildings. The combined company will go by the name of Reed’s Metals; the new name represents the company’s unified commitment to effectively serve customers and communities across the Southeastern U.S.

Reed’s Metals is dedicated to customer satisfaction, continued operational excellence, and innovation. This merger will drive sales, efficiencies, and customer satisfaction, by supporting a comprehensive product portfolio with nine locations, including two IAS Certified Metal Building plants.

The metal buildings that Reed’s Metals will be offering will be the same buildings that Oakland Metal Buildings has been providing to the industry, just with more locations to support customers’

goals and growth strategies.

Recent Addition to Coated Metals Group’s Sales Team

Coated Metals Group (CMG) is proud to announce the addition of Dennis

Sowatzke to its Denver, Colorado, sales team. Sowatzke brings extensive knowledge and experience gained through various roles within the metal roofing



Dennis Sowatzke

industry, including sheet metal installer, job site superintendent, lead estimator, and recently the branch manager for a metal distributor. With CMG, Sowatzke will expand the company’s already extensive sales footprint. **MR**

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The Art and Science of Snow Mitigation on Metal Rooftops

By Rob Haddock, CEO and Founder of S-5! Metal Roof Innovations, Ltd.

Year-after-year, rooftop avalanches cause hundreds of millions of dollars in property damage, personal injury, and even death. Snowpack can suddenly release and dump tons of snow below the eaves in a matter of seconds—endangering building elements, adjacent roofs, landscapes, vehicles, property, and, even worse, pedestrians. Inadequate snow guard systems (or none at all) create a life-safety issue and potential liability for building owners, designers, and contractors.

The best way to mitigate this avalanche danger on your metal roof and reduce liability caused by sliding snow and ice is by installing a scientifically tested and engineered snow retention system specific to the snow loads expected on your particular roof and metal roof profile.



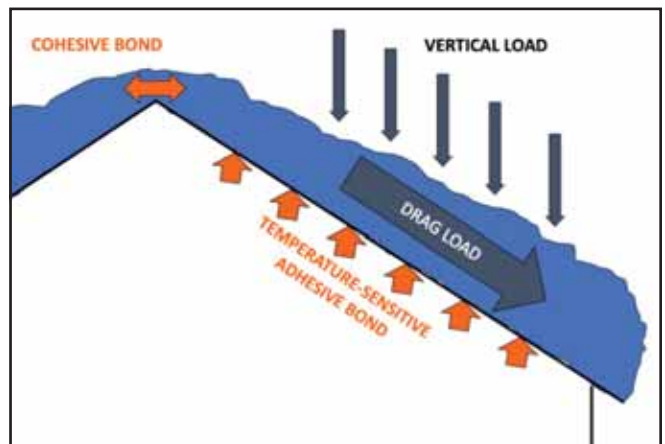
A snow guard is a device or system that mechanically provides a frictional interface between the roof and the snow, so that snow evacuates the roof in a predictable and controlled fashion—evaporation (sublimation) and thaw rather than by a sudden and dangerous rooftop avalanche.

Before you can determine the best snow guard system for your metal rooftop, a number of considerations should be taken into account:

1. Understand what causes rooftop avalanches;
2. Know the math and science that goes into calculating service loads;
3. Consider the design of the snow retention system for your roof profile;
4. Weigh your options; and
5. Vet the snow retention system and its manufacturer/vendor's qualifications.

Let's Begin With...What Causes a Rooftop Avalanche?

During snowfall, sunlight is occluded and snowpack is retained on the roof by two bonds between the snow blanket and the metal roof panels. The first is a very strong temperature-sensitive adhesive bond between the blanket of snow and the roof. The second is a cohesive bond at the upper ridge, where snowpack on one plane of the roof meets snowpack on the other

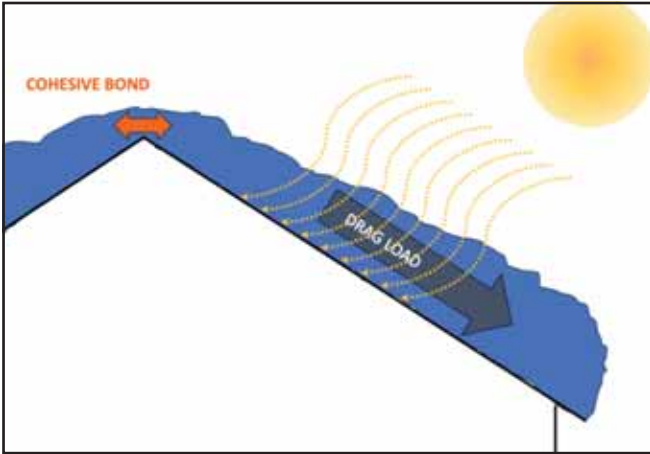


Vertical load results with drag load. Drag load resisted by two bonds.

(see above). The bonding effect adds a vertical load to the roof surface, which translates to a vector load parallel to the panels' surface, often referred to as the "drag load" or "gravity load"—the weight/force of snow trying to slide off the roof. When vector forces exceed the strength of the two bonds, a rooftop avalanche occurs.

When a snowstorm passes, infrared rays from the sun pass through the translucent snowpack, warming the roof below and freeing the temperature-sensitive bond, while the interface is being lubricated by melt-water.

The vector force of the snow blanket is now resisted *only* by the cohesive bond at the upper ridge. The force exceeds the cohesive bond's strength, and the blanket of snow splits at the ridge, causing a sudden release of snow from the roof. This can happen on one side of the ridge or both simultaneously, depending upon orientation of each to the sun (see top of next page).



Infrared radiation from sunlight passes through the snowbank, warming the roof surface, melting the adhesive bond. Snowbank insulates the process from sub-zero ambient temperatures.

Understanding the Math and Science— Calculating the Service Load

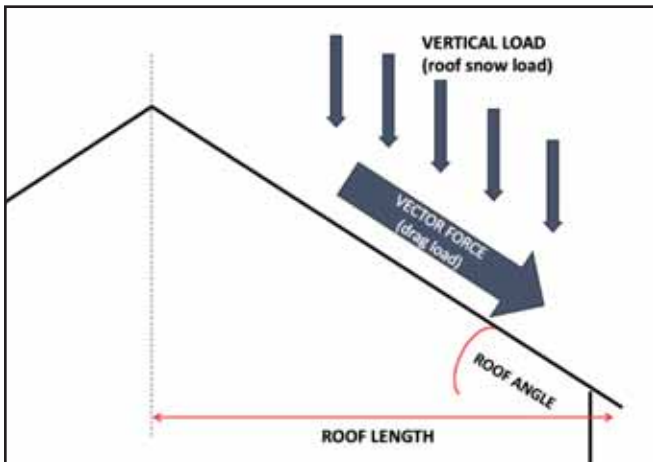
Now that we have covered what *causes* rooftop avalanches, let's quantify the forces of snow on your rooftop. They *can* be mathematically calculated...and *should be* for any snow guard system.

The service loads applied to a snow guard system are a relatively simple calculation that varies with site specifics, all of which should be known to the design team:

1. the design roof snow load,
2. roof slope, and
3. roof length (eave-to-ridge)

These three factors determine the vector force that a system must resist for any roof surface and should be included in plans and specifications requiring an engineered system.

Vector force: The vertical weight of snow is reduced by the sine of the roof angle to arrive at the vector force parallel to the



*Vector (PSF) = Vertical (PSF) x Sine of Roof Angle

*Vector (Pounds per Panel) = Vector (PSF) x Roof Length (Ft) x Panel Width (Ft)

This calculation should be done for any snow retention system. System testing must prove strength of system exceeds this calculated force.

roof surface that acts on a snow guard. To calculate this force, multiply the vertical load (psf) by the sine of the roof angle. The loads for the entire length of each roof panel from eave to ridge are tributary to the snow guard(s) restraining it. That tributary force is determined by multiplying vector force (in psf) by the roof length (in feet) and the panel width (in feet) (see below left).

A number of factors should be considered when calculating this force acting upon the snow guard system:

1. The roof design snow load (not ground snow) should be used in these calculations. The roof snow (vertical) load is usually reduced from ground snow by some factor, but it may also be increased depending on project-specific variables. These variables are all dictated by engineering standards.

Caution should be exercised when roof and wall geometries create aerodynamic shade, resulting in drift loads on roof areas. This occurs on roofs adjacent to parapet or other wall conditions that extend above lower rooflines. Such conditions may increase roof loads significantly (see right). When a lower roof has a roof above not protected by snow guards,

the discharge of sliding snow can also cause increased loading (and impact factors) to the lower roof.

A determination must also be made with respect to using uniform or non-uniform loads in design. Building codes should be consulted and appropriate engineering standards and calculations used to determine the actual in-service roof loads in all cases.

2. The vector force experienced by the snow guard system is reduced by the coefficient of friction between the roof material and snowbank. This coefficient can be substantial for some materials but is almost nonexistent for metal. For this reason, it is not utilized in calculation on metal roofs.
3. Matching Product Limitations to the Service Load: Factors of safety (FS) are used when designing a connection based on the *tested* failure load of any attachment. "Ultimate" load is the point at which failure occurs by system testing. "Allowable" load is the load used in design to ensure that doesn't happen in service. The appropriate FS is subject to designer/engineer discretion. The Metal Construction Association (MCA) recommends an FS no



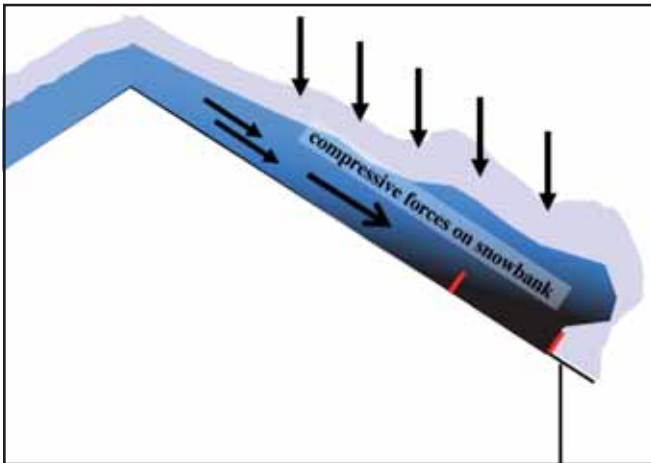
While roof loads are usually lower than ground loads, aerodynamic shade (drift load, shadow load) can cause roof design loads to be several times that of ground snow.

less than 2.0 for mechanically attached snow guards.

The designer should be aware of and consider the repetition, credibility, and validity of any testing of snow guard products to determine the frequency of placement and expected performance life (which should be equivalent to the roof life). After determining the service loads to be resisted and matching them to the snow retention system, it is important to determine population and placement for your specific metal roof.

Snow Retention System Design Considerations

- **Snow Retention Population and Placement:** Snowbanks typically accumulate and densify in a cross-sectional wedge pattern. All snow guards rely on the snow's own compressive strength to restrain its movement. Gravitational forces compress the snowbank the most at its interface with the roof surface, especially toward its lower (eave) end—so this is where compressive strength is greatest (see below). The interface of snow retention devices at this location has proven to be strongly preferred worldwide and considered to be most effective.



All snow guard devices rely on the compressive strength of the snowbank, which is greatest at snow-roof interface and at the lower end of the roof.

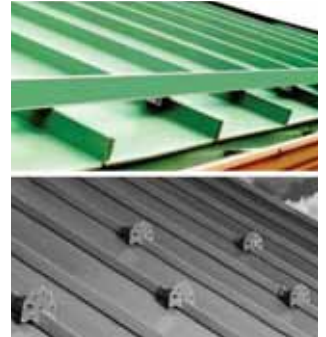
Because the compressive strength is so great at the base of the snowbank, snow guard devices only a few inches in height have proven to be successful, even when snowbanks are many feet deep.

- **System Design:** Two snow guard system designs are quite common. One utilizes *continuous* horizontal components, assembled laterally across the roof in the style of a “fence.” Such assemblies are usually installed at or near the eaves. Depending on specific job conditions and load-to-failure characteristics of the devices, they may also be repeated in parallel rows up the slope of the roof, but with greater concentration near the eave area.

The other design consists of small, *discontinuous* individual units used as “cleats,” generally spot-located at or near the eave or repeated in a pattern progressing up the slope of the roof, again with a greater concen-

tration near the eaves. This style also relies upon the shear strength within a snow bank to “bridge” between the individual units.

Both styles of snow guards (fence and cleat) have demonstrated satisfactory performance when tested, engineered, and installed properly and adequately (see right).



Top: A “fence” (continuous) type snow guard; Bottom: A “cleat” (discontinuous) type snow guard

- **Additional Considerations:** Aside from adequate testing for holding capacity, other design considerations include verifying metals’ compatibility, matching corrosion resistance of the device with that of the panel material, and color matching.

Devices that utilize air-dried paints to match the color of roof panels may provide a perfect match initially, but a poor match after weathering a few years. This is due to inferior characteristics of air-dried paints when compared to the factory applied finishes of metal panels. Powder coating may provide greater longevity in terms of color stability, but generally is not equal to factory-applied PVDF panel finishes. The objective is serviceability that lasts as long as the roof.

Snow Retention Techniques

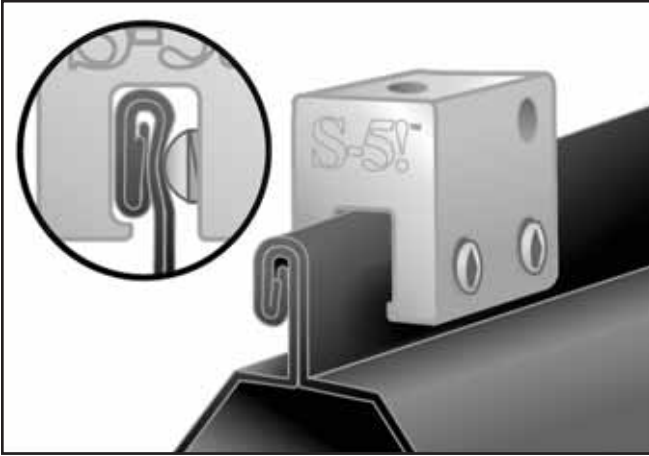
Next, let’s review the three techniques for mounting snow retention systems to a metal roof.

Two techniques use *mechanically-attached* snow guards. The distinction between the two involves clamping, which grips the standing seam in some fashion without actually puncturing the panel material (non-penetrating), versus fastening screws through the roof material (penetrating) into the structure. The third uses a *chemically-attached* “stick-on” adhesion method, which involves gluing individual snow guards to a roof surface.

1. **Clamping a Snow Guard to a Standing Seam Type Roof:** This method uses a seam-clamping attachment, and is a *measurably* secure option for a standing seam metal roof profile. Clamps attach directly to the roof seam using setscrews that do not penetrate the roof (*mechanically-attached*).

At S-5!, our clamping products use polished, round-point setscrews that compress the seam material against the opposite wall of the clamp—dimpling the material, but not penetrating it—and without coating damage (see top of following page). Clamp-to-seam attachments can easily be mounted after the roof has been installed and will not fatigue due to thermal heating or cooling of the roof. These measures prevent potentially voiding the warranties of a long-life, premium roof.

What You Can Expect With Clamp Mounted Attachments: With this method, the sliding force of the snow is transferred to the clamp and then into the roof



Mechanical clamp attachment with round point setscrews is advocated by MCA, MBMA, and USDOD.

panels. These loads vary from job to job. The holding strength of such a system *should be quantified* through rigorous testing and proven to resist the loads on any given job. At S-5!, we have tested and re-tested our clamps with almost every metal roof profile (more than 500 of them). You can view these results at www.s-5.com under the “Load Test Results” tab.

2. **Attaching to the Building Structure Itself:** The second method for mounting snow retention is a system that attaches snow guards through the roof and into the building structure (also a mechanical-attachment). Attaching to the building structure provides a secure and reliable method if properly tested, designed, installed, and waterproofed (see below left). It is only suitable for a roof that is attached the same way (i.e. with screws that



Mechanical bracket attachment (for face-fastened roofs only) can also work successfully when tested and engineered correctly. This one wasn't.

penetrate the roof's surface, attaching it to the structure).

What You Can Expect With Structure Attachments: Snow guards that attach directly to the structure, require penetration for anchorage of snow guard brackets. With these devices, weatherproofing for the long-term service life of the roof is of paramount importance, or you run the risk of leaks. Such waterproofing requires a high degree of expertise in part design, sealant chemistry, selection/sourcing, etc.

With S-5! components, we eliminate the guesswork by providing a state-of-the-art system with factory-applied sealants—designed to last the life of the roof—including protection from UV exposure and over-compression of the seal. We test for leak-free performance in accordance to ASTM E 2140.

The strength of the structural attachment mounting method is also important and should be proven and matched to the in-service loads to which the snow guard will be exposed. S-5! provides web-based tools, enabling you to calculate your service loads quickly and easily. And, these proven holding strengths determine snow guard population to the specifics of your project scientifically—not by guesswork.

3. **Using a Stick-On Guard:** The third type of snow retention is a stick-on (adhered) part (*chemical-attachment*). Some variations employ a factory-applied adhesive and others a field-applied one. At a glance, stick-on snow guard systems appear to be a very convenient and a lower cost option, but they are only lower in cost when you consider part costs versus total project costs, including labor and quantities required to do the job. Moreover, the replacement costs over the life of the roof are extensive.

This is not “if,” but “when” the adhesive diminishes in holding strength. Adhesives all diminish in holding strength, beginning with the first day of exposure. Replacement time is often relatively soon after installation, depending on orientation to the sun and other environmental factors (see below).



Adhesive holding capacity diminishes over time when exposed. There are three generations seen on this 8-year-old roof.

COVER STORY

What You Can Expect With Chemically-Attached, Stick-On Mounted Attachments: Installation is simple enough. These parts attach directly to the roof with a glued application. But, if you look closely at the detailed instructions, installation becomes a bit more complicated—careful surface preparation is required, as well as many days of curing time for some at specific temperatures. (Suddenly, this is not as simple as it first seemed.)

When installed, stick-on snow guards typically have the lowest holding strength (which continues to diminish with age). When they fail, they can rip away paint coatings, leading to corrosion (see below). They also



The adhesive bond is to paint. If the adhesive does not fail, the paint may fail, leading to corrosion.

have the shortest lifespan due to the glue and/or plastic parts being unable to handle the harsh elements and total exposure expected on many roofs (i.e., UV, moisture, and temperature change, etc.).

How to Choose the Best Snow Retention System for Your Project

Numerous snow guard vendors have appeared in the market, each claiming to be the best, ultimate, first, or strongest. Understand, there are no industry standards or mandates for design, manufacture, use, or testing of snow guards—no “snow guard police”—this market space is *completely unregulated!* So, it is a “buyer beware” scenario as to the appropriateness and proof of testing and engineering performed by the vendor.

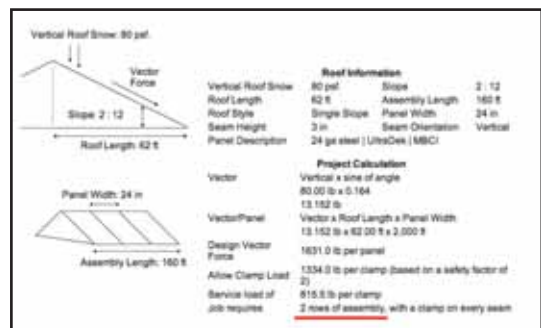
How do you discern prudent product selection from sales rhetoric? In addition to understanding the art and science behind snow retention systems, most importantly, you should vet the manufacturer and its product offerings.

- **Vet and Specify:** Manufacturer transparency is requisite to adequately vet a snow guard system. A vendor who lauds the capabilities of his system but fails to provide proof of those claims may be blowing smoke. The designer should scrutinize manufacturer qualifications/certifications to ensure a safe, engineered application and long-term service. This transparency should extend from raw material sourcing through manufacture and product hand-off. Scrutiny of vendor’s evidence provides credibility and assurance to the buyer. A qualified manufacturer should gladly provide proof of claims.
- **Proof of Testing:** Anchorage of clamps to the roof

specimen should be repetitiously tested on the specific material, gauge, and roof profile. A minimum of three test repetitions should be conducted (fewer are not a scientifically acceptable statistical average). Testing of all system components should be conducted by a third-party ISO 17025-accredited lab and specific to the exact roof and brand of manufacture used on the project.

It is also not scientifically acceptable to apply a test result from one set of test specimens to another similar-style roof product. Request test reports from the vendor, proving anchorage values of the appropriate testing used in engineering calculations. Ideally, panel-specific test results should be available to you and published on the vendor’s website.

- **Proof of Engineering:** Project-specific engineering should be provided by the vendor and incorporate the tested strength of the system with an appropriate factor of safety applied. Insist that calculations are provided prior to product selection. Ideally, the vendor should offer a web-based calculator with real-time output showing calculations and allowable loads specific to your project, including product names of snow guard systems and specific brand of roof manufacturer (see below). At a minimum, require these calculations with submittals. Better yet, why not have the vendor provide them stamped by a registered Professional Engineer?
- **Proof of Certified Manufacturing:** How can you know the product tested is truly the product purchased? Systems may look the same, but alloys, tensile strength,



Typical output sheet from valid calculation.

yield, and other mechanical properties should be verified through certified manufacturing with third-party audits in an ISO 9001-15-compliant facility, not because one looks the same as the other. Ask to see the current ISO Certificate (see top of following page). Ideally, it should be displayed on the vendor’s website.

- **Warranties:** Does the manufacturer offer meaningful *product defect* and *performance* warranties? Obtain copies prior to purchase—and read the fine print! Ideally, they should be displayed on the vendor’s website. Will the vendor be in business for the long-term to honor them

COVER STORY

if needed? Has the vendor substantiated its track record? How long the company has been in business is irrelevant. The question is, “How long and on how many projects has the system you are buying been in use?”



Proof of Certified Manufacturing

Why Use Snow Retention?

Metal roofs are known for their durability, sustainability and versatility. However, metal roofs are slippery and can pose potential of rooftop avalanches in the discharge areas below the eaves, causing property damage, personal injury, and even death.

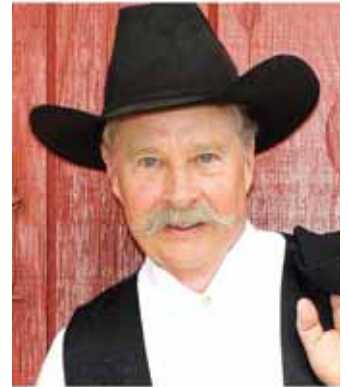
A scientifically tested and engineered snow retention system mechanically increases the friction between the roof and the snow, so the buildup of snow and ice on a roof evacuates in a predictable and controlled fashion rather than by a sudden release of sliding snow.

To determine the best snow guard system for your metal roof, you should understand the art and science behind snow retention systems, and most importantly, vet the manufacturer and

its product offerings.

A smart and rather low-cost investment in a snow retention system specific to your metal roof profile not only protects the roof and roof elements, but protects the rest of the building and its occupants in addition to pedestrians, vehicles, equipment, and landscaping below. It reduces short-term and long-term maintenance costs and most of all, reduces potential liability for building owners, designers, and contractors.

Rob Haddock, the inventor of S-5! attachment technology, is a former contractor, an award-winning roof-forensics expert, author, lecturer, and building envelope scientist. He has worked in various aspects of metal roofing for nearly five decades.



*For more information, videos, and webinars on the topic of snow retention systems and more, visit S-5!'s website at www.s-5.com or the Metal Construction Association's (MCA) website at www.metalconstruction.org. **MR***



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Instant Success (and Many Failures) for Seasoned Roll Forming Crew

By Dan Perkins

Our Beginning: Dan Perkins Construction started as a remodeling company in Massachusetts in 1986. A decade later, when I, Dan, and my wife Pam moved to Michigan, I changed the focus of my company to metal roofing. We settled in Ishpeming, Pam's hometown. The city is located in the heart of Michigan's Upper Peninsula (UP), the northernmost area of the state between Lake Michigan and Lake Superior. The UP holds a third of the state's land mass and a mere 3% of its population, yet yields most of its snow accumulation.

Awed by the effects of 200-300" of snow on the buildings of the UP—everything from car-size ice dams to collapsed roof structures to the spectacle of people coming home from work and shoveling their roofs, I decided to focus my business on metal roofing with the idea that we could slide the loads off of

the roofs before they became problematic.

This was the beginning of an adventure that included instant success and many failures. Our promise of a roof that "slid snow" was wildly popular and within a year of offering this product, we had 30 employees, slapping down pole barn panels over asphalt roofs as fast as we could cover them. There were some issues. When other contractors saw us taking a big share of the roofing market, a bunch jumped in to compete. But the real challenge came when many of our roofs failed.

Growing Pains

It is an eye-opening experience to see what a 10-ton glacier of ice is capable of destroying as it slides down a roof, especially when that roof is 29-gauge pole barn panels. The first things to go are the vent stacks and power masts, which snap like tooth-

PEAK PERFORMERS



(ABOVE) Crew member Nick Constantino carefully aligns a metal panel on a steep-pitch roof.

(ABOVE CENTER) This architectural home required the team to utilize every detail in the foreman's arsenal, including one that he had to invent specifically for this job.

(OPPOSITE) Several different rooflines converge in a single point—including a chimney!—requiring precise measurements and careful planning to avoid potential leaks.



picks or tear right through the eaves. The steel panels on dormers can roll up like the top of a sardine can, skylights can shear right off, leaving living rooms full of sliding snow, and valley panels can tear like paper.

I will never forget the day I sat across from my banker explaining that I had to borrow about \$100,000 to do repairs on my existing roofs. *And* explaining that I needed more money to go to a metal trade show with my crew to get them some training and to buy roll forming equipment to do these roofs properly. He kind of looked at me funny and said something about my debt-to-equity ratio, but somehow found a way to get us through this awkward stage of our growth. Bottom line is, we fixed our messes. We did not run away from the trade, as our competitors did when the technical challenges of this trade confronted us, and this left us as the only players in the metal roofing industry in the Upper Peninsula of Michigan and in a good portion of northeastern Wisconsin.

In the last 24 years, we have become exceptionally good at on-site metal roofing manufacturing and installation. We have learned how to move stacks to the peak, insulate, and ventilate roof structures to eliminate systemic ice prob-

PEAK PERFORMERS



lems, and make a myriad of blind fastened watertight roofing details. We have a solid culture in our crews that take great pride and accountability for our product, and we take incredibly good care of our customers.

Metal Craftsmanship

As metal roofing contractors with an on-site roll forming machine, we are both manufacturers and craftsmen. We are not only accountable for the proper installation of the metal roof, but also for the proper fabrication of its components. This means knowing many things most roofers don't need to know, like how to calculate nominal air flow in your ridge venting and how to spot defects in your steel coil (such as wavy-edge, coil set, and micro-cracking in the paint). We have to assume all of the responsibilities that any product manufacturer typically carries, and it takes time to learn these skills. When installing the product that we have manufactured, we are also responsible for our details and their ability to defend the home from water, ice, and snow.

Over time, we have developed master craftsmen in this trade and they in turn are teaching the next generation of craftsmen



what they have learned. Every year we put more emphasis on training so that our foremen can delegate more of the difficult work to crew members. A tear-off and ground clean-up guy is handy when you are doing that kind of work, but when the roof is going on, skilled craftsmen are required.

A Job in Presque Isle, Wisconsin

Recently we did a job on a small but highly designed home in Presque Isle, Wisconsin, that inspired us to submit this piece for *Metal Roofing Magazine*. My foreman, Matt Zumpf, noted that he had to use every detail in his library plus one that he had to invent specifically for this job. Here are some of our standard details that we utilized on this job:

1. **Drip edge and vented ridge cap:** All of our standard details are made from the same 20" 24-gauge coil that we order for fabricating our roof panels. Our drip edge and ridge caps are made in our shop from 10' blanks that we cut off a decoiler and feed through our shear and auto break. These pieces are carefully fit together on the job site as the panels are installed. Our ridge caps have seven components per section, including vented Z channels we

PEAK PERFORMERS



Author and Owner Dan Perkins of Dan Perkins Construction.



Crew member Dave Lancour uses snips to create a custom cut.

make from 20-gauge perforated steel, baffles, and $\frac{3}{4}$ " x 3" ridge hair we get from Blocksom & Co. to keep wind-driven snow and rain out.

2. **Panel Clips:** We make our own from our scraps of 24-gauge steel. We have a hand clip bender from ESE Machines and a hand shear for cutting the blanks from Swenson Shear.
3. **Valleys:** We have always made our valleys from our roofing panels. This allows us to have a continuous valley with no seams. We make them to length, straighten the legs, and fold them in for a hem for the incoming panels. The panel is then bent down the center with a heavy site break to fit the contour of the valley it will inhabit. We always install our panels from the bottom upward and make a custom double male panel at the peak of the opposing valleys to tie everything together.

Custom Work

Our jobs are very fluid. Everything is made to order. On this specific job, we had four valleys that served as diagonal pitch breaks and fed over the panels below. Zumpf designed a custom detail for this so that the valley was traditional on one side but had a reverse hem on the other side and could be cleated over the panels below. He lined up the panel ribs, which made the panels sit on a 45-degree angle to the plane, yet will allow the snow to shed in a continuous trajectory.

The beauty of this trade is the versatility and Old World craftsmanship that's possible when the crew develops its skills. We have been doing this work for 24 years now and we think we are good. There is always more to learn and there are always new people to train, and we are proud of our trade and what we represent to the American workforce. **MR**

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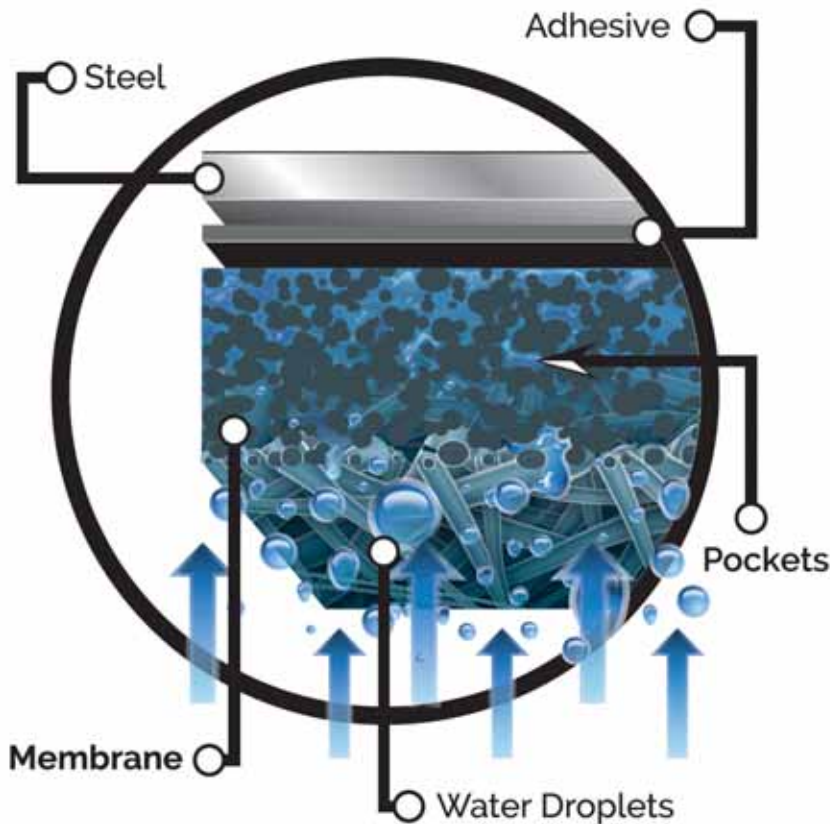
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For over 25 years DR!PSTOP has been the absolute best way of dealing with condensation on non-insulated metal roofs. It has been tried and tested in every climate condition across the globe and has proven to be a simpler and more economical way.

The membrane will absorb the water caused by condensation, thus prevent-

ing dripping from the roof. DR!PSTOP serves as an added layer of protection for the metal in corrosive environments while also improving inside and outside acoustic properties. Both impact and echo noises are reduced significantly.

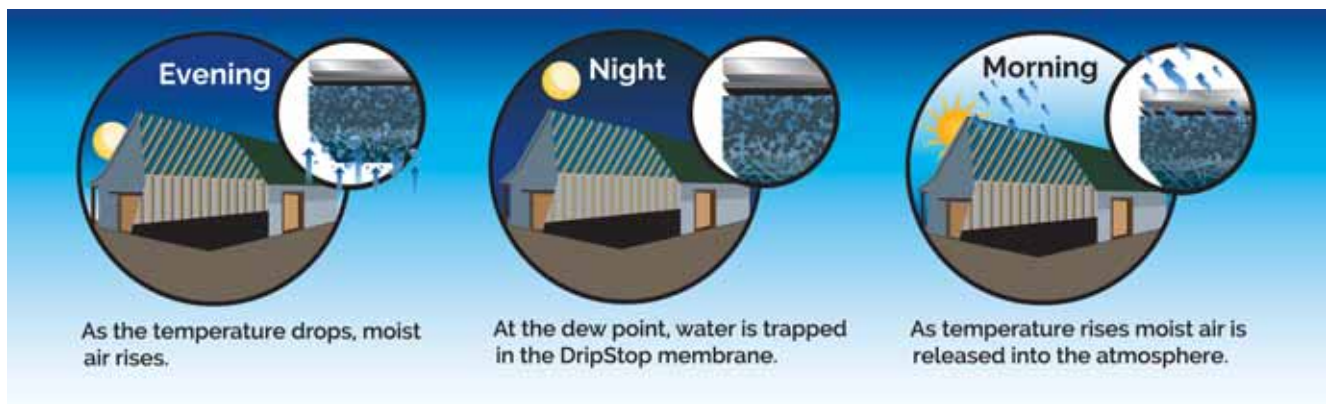
For homeowners, STEEL SHIELD is designed specifically to protect metal panels installed directly on shingles against

the abrasion caused by the expansion and contraction due to temperature changes.

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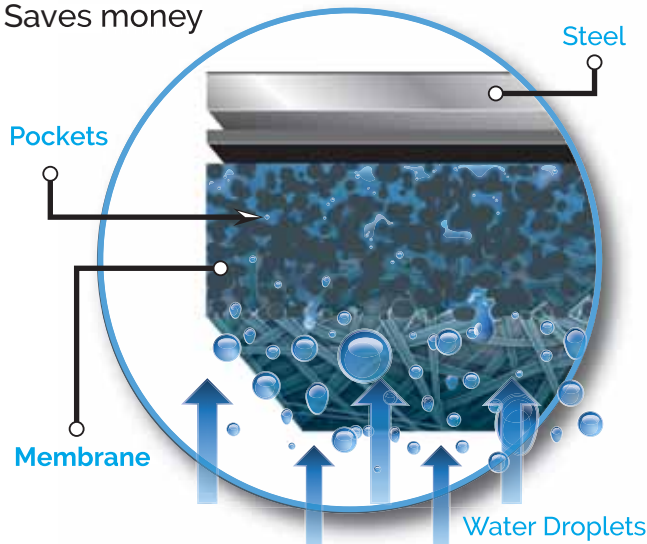
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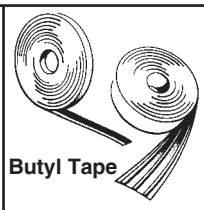


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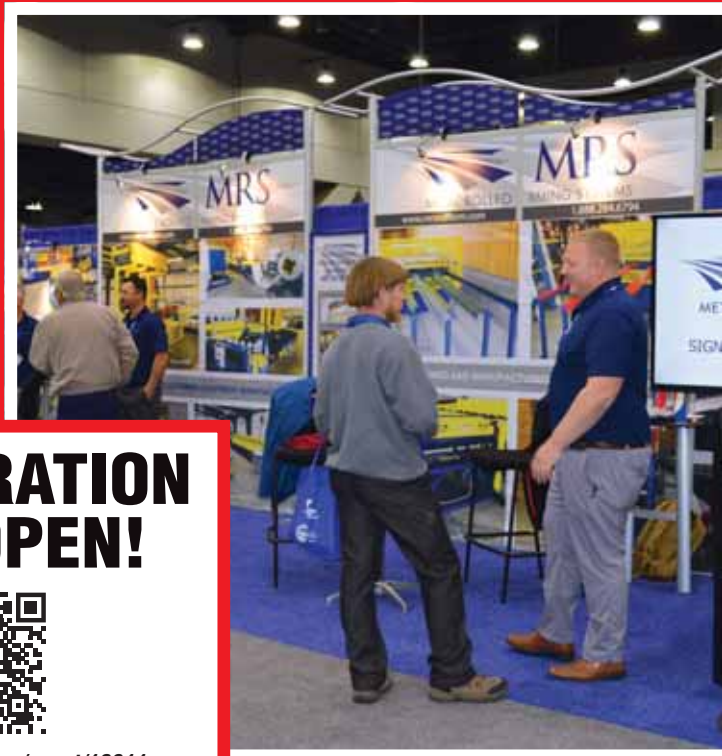
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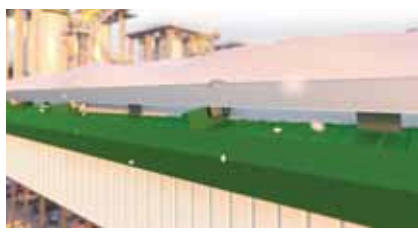
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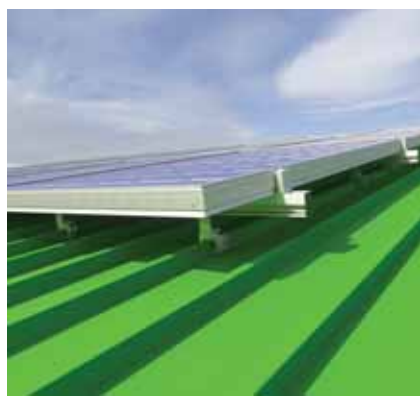


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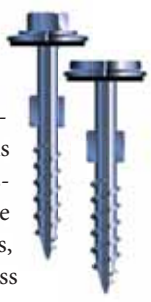
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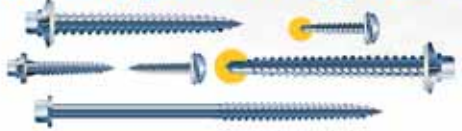


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All-Star Employees

Retaining the talent your company needs

By Phillip M. Perry

It's a nightmare scenario for any business: A star employee suddenly decides to jump ship for the competition. Out the door goes years of experience, in-depth knowledge of the company's plans, and probably a good number of hard-won customer connections.

It's that last part, with its costly ramifications, that can cause the most immediate damage. "Customers will often follow a departing employee out the door to his or her new employer," said Richard Avdoian, an employee development consultant in Metropolitan St. Louis. (www.midwestbusinessinstitute.com). "People like to stay with employees they trust."

Longer range, the ghosting of a top-performing employee obviates any plans for grooming that person for a foreman or management role. "When you lose your best employees,

you lose not only their skills but also their leadership potential," said David Dye, President of Let's Grow Leaders, a management consulting firm in Washington, D.C. (www.lets-growleaders.com). In rural areas especially, where employers reside far from large cities with concentrated pools of talent, quality workers come at a premium.

Spot the Stars

How about your own business? Do you think your top performers will hesitate to leave? Maybe so, but the fact remains that people who perform the best in the workplace tend to suffer the most from wandering eyes. A survey by SAP and Oxford Economics, published in *The Harvard Business Review (HBR)* ("What High Performers Want at Work" by Karie Willyerd) found less than half of high performers satisfied with their



COVER STORY

current duties. One in five is likely to seek a greener pasture in the next six months. “Top performers are often less than content with their jobs,” said Avdoian. “Many want to further their careers by moving on to more promising positions.”

You can take steps to keep your own best people from jumping ship. Begin by making sure you focus on the brightest stars. Avdoian suggested looking at your employment pool as a complex of three classes of workers on an escalating scale of value: slackers, foundationals, and high achievers. Slackers are easy to spot—they do the bare minimum to collect their paychecks. Foundational employees, in contrast, perform their duties in a conscientious and dependable manner, serving as reliable anchors to your business. The final category consists of people who outperform the norm. “High achievers are driven go-getters,” said Avdoian. “They are your most productive employees.” These individuals can deliver up to 400% more productivity to a job than other employees, according to the *HBR* report.

With this short list in hand, make sure you give your best people the specific things they need to keep them on board. And just what do they want more than anything else? The answer is probably not surprising: The *HBR* report found that

top performers care significantly more than average or low-performing ones about competitive compensation. You must offer them a wage commensurate with their skills and at least equal to what other employers in your region provide.

Pay for performance

High performers also care more than their slacker or foundational coworkers about the ability to earn bonus pay based on performance. “The opportunity to make more money through their achievements is an incentive for your top performers to stick around,” said Donna Cutting, CEO of Red Carpet Learning Systems, Asheville, North Carolina (www.redcarpetlearning.com). Top salespeople, for example, will expect additional compensation when they outperform their peers. The goal is to create a win-win situation for employer and worker: Fixed compensation costs remain low while employees have the chance to earn more when they excel.

A pay-for-performance system is a far cry from old familiar reward relics of the past, such as the annual seniority-based wage hike and the automatic year-end bonus. The problem was that the conventional system wasn’t getting the job done, basically because it did not incentivize better performance.





IMAGE COURTESY OF ISMAH INDUSTRIES

Identifying your top performers is key—they will become your next crew foreman or even your next salesperson.

Moreover, high performers resented the fact they were not rewarded for their superior productivity at a rate any higher than others. Meanwhile, ongoing increases bloated payrolls until the business risked becoming uncompetitive.

Besides its direct financial component, such pay serves to highlight the connection between employee actions and organizational success. “It’s important that people understand their overall part in the success of a business,” said Cutting. “Performance-based pay does that.” At some companies, performance compensation represents 20% or more of take-home pay.

Valuable as it is as a retention tool, performance-based pay carries the hazard of unwittingly rewarding the wrong behavior. “You need to be careful that the performance objectives you set are in alignment with your business values,” warned Cutting. She points to the recent experience at Wells Fargo, a bank that rewarded its employees for burdening customers with unwanted accounts, as a textbook illustration of a performance-based pay scheme gone bad. “You have to make sure the objectives you set are not just based on sales or revenue, but also on the way customers and colleagues are treated.”

The salesperson who is making a great number of sales may also have a rushed, impatient manner that irritates your customers. Gear your bonus plan to reward employees for quality

service. Use the telephone, a mailed survey, or the internet to assess customer satisfaction.

On the other side of that coin, performance-based pay won’t work if employees are unclear about how their actions directly contribute to the company’s bottom line, or lack sufficient know-how to perform to their maximum potential. “You need to make sure employees have a sufficient measure of control over meeting the described objectives,” said Cutting. “And they must be given the proper tools to do so.”

Include Everyone

One more hazard for performance-based pay: Employees left out of the program may resent their inability to earn bonus compensation. That’s why it’s important to include everyone, even those for whom it’s difficult to measure quantifiable workplace results.

“For people who are solely responsible for their work, and where their activities can be readily quantified, pay-for-performance plans are more straightforward,” said Dye. That’s why many organizations begin by measuring easily calculated achievements such as higher revenues by salespeople, accident reductions by those on the job site, and glowing reports for customer service representatives.

Designing an effective program is more difficult for some

members of the support staff who do not perform in quantifiable ways. However, it is not impossible. “You can make pay-for-performance work for receptionists, maintenance, or any kind of support staff, as long as they are given the necessary tools by management,” said Cutting.

The biggest challenge is finding a way to measure support staff performance that is fair and reasonable. One approach is to ask, “What is this person’s job and how well are they doing it?” Perhaps a receptionist answers the phone before three rings or greets customers in a cheerful and professional way. If you ask employees how they measure their own performance, you may hear good ideas that can be translated into a quantifiable system.

Assure success by continually expanding your plan’s scope. Include more people and develop more refined performance assessment parameters while soliciting feedback from participants.

A Healthy Environment

Vital as it is, performance pay is not the only tool for retaining top employees. You also need to cultivate a respectful and supportive work environment. “It’s important that people understand what the business wants, and that they feel valued when they meet the employer’s expectations,” said Cutting. “The ability to contribute and to feel involved with the success of the company can be its own motivation.”

Here are some additional factors that may keep your best people aboard:

- **Autonomy:** “High performers do not like to be micro-managed,” said Christina Eanes, a workforce management consultant in Alexandria, Virginia (www.christinaeanes.com). “They want the freedom to do their job in a creative way, along with the requisite responsibility and authority.” That serves the organization well. “Innovation happens when smart people find new and better ways to get their jobs done.”
- **Frequent feedback:** Top performers want to know where they stand, and want feedback more than once a year. A negative December surprise, especially if it affects their expected bonus pay, may well send them packing. The *HBR* report highlights the importance of monthly performance reviews.
- **Advancement pathways:** Top performers expect the employer to help them advance in their fields. “You need to create a culture where people want to work with you because of what they are going to learn and have a real clear-cut career ladder so they see how they can move up,” said Cutting.

Sometimes clearing a path for advancement is easier said than done. In a perfect world, a business would have enough open management positions to accommodate every deserving person. Reality is often much different. What can you do? “You need to create a growth path for top-performing people

that keeps them feeling challenged even though they are not advanced into management positions,” said Dye.

One solution is to feed the craving of top performers for new skills. “High achievers have an insatiable need for self-development,” said Eanes. “They have an ingrained need to develop themselves, so the more opportunities you can provide them to learn, the more loyal they will be.”

Those opportunities can be offered by thinking laterally. “Not every top performer expects that advancement means a higher-level position,” said Eanes. “Millennials, especially, often prefer to move laterally because it provides them with more learning opportunities and more challenges.” A high-performing individual in sales, for example, might welcome a move to an adjacent position in human resources with the chance to learn a new set of marketable skills.

Tailor Your Offer

Because not all top performers have the same motivations, you need to consult with each of them to better understand specific needs. “I suggest designing what I call an Individual Development Plan (IDP) with each person,” said Eanes. “Determine the next logical level of knowledge and expertise and what can you do to help them achieve it.”

“Begin by measuring easily calculated achievements such as higher revenues by salespeople or accident reductions by those on the job site.”

An IDP might include a planned pathway to advancement, or the acquisition of new skills. One individual might take on responsibility for larger projects. A second might share their knowledge by training other people. A third might cross-train in areas outside of their core competency. Think of these as “expertise promotions.”

These work environment modifications, combined with a robust pay-for-performance plan, should go a long way toward keeping your best people from jumping ship. Monitor how well you are doing by asking your staff for feedback. And observe how employees perform: Are they acting in more motivated ways and paying closer attention to things that are really important?

Creating a program to retain your top people takes time and effort. The payoff, though, can be considerable, and letting things slide is unacceptable. “Businesses which fail to retain their best people will be stuck with a majority of their employees being slackers and overtaxing the foundational employees whom they rely on for productivity,” said Avdoian. “And that will lead to a decline in employee morale, which will in turn impact productivity and devastate profitability.” **MR**



A-Frame Gets an Imaginative Dragon-Scale Roof

Inspired by the enduring, metal-paneled roof designs of Europe, homeowner Farhad Kazmian envisioned a curving, zinc-tiled roof to crown his custom-built 5,300-square-foot two-story residence. Known as “A-House” for its A-shaped soaring peak, the roof’s undulating, draping, fantastical “dragon scale” pattern was brought to reality through the collaborative team of developer and builder ABOND Inc., architecture firm Bortolotto, fabricator and installer Alpro Sheet Metal Ltd., and zinc material supplier RHEINZINK America, Inc.

“A-House arrays its program around the front courtyard and plunge pool, empowering a swooping curve to define massing. Subsequently, the front face of the house is split in plan, providing a strong sense of depth to the front elevation, reminiscent of the styles traditional to the site,”

described Kazmian.

In addition to being A-House’s owner, Kazmian also is the owner of ABOND. His goals in bringing this inventive residential design to life was both to enjoy it for himself and also to encourage prospective clients to be imaginative in creating their homes. Along with its unique presentation, the home’s roof also exemplifies practical performance; the resilient, sustainable zinc roof can last for decades with minimal maintenance.

A-House combines both modern and traditional styles for an eclectic mix favored in the Toronto area. A palette of natural tones and materials—glass, wood, brick, and zinc—entwine and complement each other into a seamless application. “The house pulls inspiration from materials that were found in the typologies of old within Lawrence Park,” said

Kazmian. “The house is comprised of wood construction, with moments of articulated heavy timber. To face the building, rift-cut ipe wood is reinterpreted from linear elements to a solid surface, expressing texture of the wood itself. The roof is skinned with zinc tiles perfectly suited to follow the curvaceous shape of structure and built to last.”

For A-House, RHEINZINK zinc roof tiles create a timeless aesthetic with a natural patina and time-tested performance that can last generations. RHEINZINK prePATINA® graphite-grey are specially processed to accelerate the desired appearance of a pre-weathered patina. The zinc material’s natural finish will continue to weather and patina over time.

With a life span of more than 80 years, zinc’s ability to create a protective patina through weathering contributes to RHEINZINK’s self-healing, low-maintenance, corrosion-resistant performance. At the end of its useful life on the building’s exterior, it remains 100% recyclable.

Arranging RHEINZINK’s diamond flat lock roof tiles into the complicated pattern and shape involved complex geometry. “This double-convex roof concaves 90%, while changing from a 28:12 pitch to a 5:12 pitch, which gives it that curving and twisting look,” explained Alex Prothmann, Alpro’s CEO and chief estimator.

For three years, Prothmann and his team worked with Kazmian to accomplish the precise look and functionality of A-House’s roof. He recounted, “ABOND originally sent us pictures of buildings in Europe asking if we could replicate the look of them. Farhad wanted to mimic the fish-scale pattern of their tiled roofs. It reminded us of the sort of roof pattern you might see on ‘Game of Thrones,’ so we started calling it ‘dragon scale.’”

He continued, “When Farhad came to me with the set of drawings in 2016, I could not wait to sink my teeth into it. There are not many roofs like it, not to mention contractors with the ability and know-how required to take on a project of this magnitude. I really enjoy my trade and have a knack for taking on jobs that other contractors won’t even consider. Farhad and I clearly have this trait in common.”

With more than 15 years of metal roofing experience, Prothmann began his career in the field and earned his certification of qualification as a journeyman roofer. After found-

ing Alpro in 2016, Prothmann and ABOND have partnered on two previous projects. This is their first together using RHEINZINK.

“For Farhad’s house, we worked on design and budget aspects for a about a year back and forth with ABOND. With RHEINZINK’s material, we were able to design and fabricate a tile to their satisfaction,” said Prothmann.

Even with premium zinc material, Alpro found fabrication to be one of its biggest challenges on A-House. Prothmann elaborated, “All of the tiles were custom sized and cut to achieve the radius look. They change in size as they go up the roof and turn 90 degrees as they go around the roof in a continuous pattern.

ABOND was insistent on all the tile edges being factory cut; nothing is hand cut. This provides a much cleaner, better quality edge.”

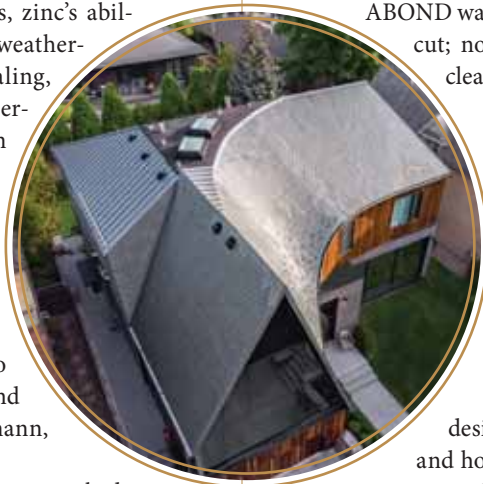
To deliver this exceptional quality, Alpro’s in-house fabrication staff used a jig system and foot shear to custom fabricate RHEINZINK’s 0.8mm prePATINA graphite-grey zinc. “Each tile has six cuts. There are approximately 20,000 tiles in the whole 3,500-square-foot roof. That’s 200 days in the fabrication shop,” calculated Prothmann.

Another challenge in A-House’s roof design was how to direct the water off the roof, and how to manage snow in the winter. “The gutter system is fairly typical, but the snow guard system is our own design. We used shorter pieces of zinc to follow the curve of the roof. It was approved almost instantly by ABOND because of its design and durability,” Prothmann said proudly. “We used the same zinc materials to avoid reactions between dissimilar metals, as well as to provide an exact color match between the roof, the gutters, and the snow guards.”

After nearly two years of designing, engineering, and planning the fabrication and installation, Prothmann said, “We got to the point of getting the zinc tiles on the roof. After all the upfront work, it was a pretty typical install.”

Alpro began installation in January 2019 with concurrent, ongoing fabrication delivering materials in phases. In July 2019, the custom zinc-tiled roof was fully completed. The interior finishes on A-House were finalized in early 2020. **MR**

For more information on RHEINZINK, visit www.rheinzink.us.



DETAILS

Location: North York, Toronto, Ontario, Canada
Developer, Builder, Interior, and Landscape Designer: ABOND Inc.
Architect: Bortolotto
Roof Fabricator and Installer: Alpro Sheet Metal Ltd.
Roof Zinc Material Supplier: RHEINZINK America
Photographer: Greg van Riel Photography





Custom Gutters for a Modern Lakeside Home

By Kelly Plummer/Keeney Home Services

Having moved into their new home in June of this year, Ann and Paul continue to marvel at the modern farmhouse they designed and built in Door County. This easternmost county in Wisconsin consists of a peninsula that juts out into Lake Michigan. The area draws crowds from all over the Midwest and is known for its lighthouses, sand dunes, wineries, boutiques, bicycle paths, and beaches. Paul and Ann's newly constructed home is carefully nestled beyond a steel sea wall, where it is shielded from Lake Michigan's rising waters.

Ann and Paul moved from Eagle River, Wisconsin, where

they spent 20 years and raised two children. The art, theatre, and cultural offerings of Door County enticed the couple, who were already familiar with the area. "Ann's parents rented a home in [nearby] Ephraim and we spent time here after we were married," Paul explained.

You would never know this window-covered four bedroom, four-and-a-half bath stunner was built atop a modest 1930s cottage. "We've built four homes in our lifetime and we really wanted something we don't have to maintain." That's why Paul said he and Ann took their time with this build. They chose a skilled tradesman and learned to be patient with the complicated construction and regulation that comes with building on the banks of Lake Michigan.

GUTTER OPPORTUNITIES

Paul credits his wife with the vision for the home, which is their primary residence. It features crisp white board-and-batten siding and a dark gray metal roof. The simple black-framed windows feature a cross bar design, adding to the home's contrast and visual interest.

It is a modern and contemporary take on the classic farmhouse style. Paul was particular when it came to the standing seam metal roof. "It's meant to last 100 years." In his homeowner past, Paul had dealt with many roofs, pitches, and shingle types. In one instance, the roof had only a slight pitch with wood shakes, which Paul recalled as being difficult. He ended up replacing the roof with concrete tiles. The choice of metal for his home in Door County was simple, as it yields aesthetic and performance results.

Ironically, the choice of a metal roof on a modern farmhouse design echoes the original intent of families that worked in the fields. "Originally, farmers were so attracted to the smart, utilitarian results of a metal roof on their barns and outbuildings, that they decided to put them on their homes," said Chet Wesenberg, AIA, of Wesenberg Architects. "Since taking off in the nineteenth century, metal roofs are now incorporated in all types of commercial and residential design, especially modern and contemporary, where clean, simple lines are preferred."

Paul reiterated the choice for simplicity when he opted for the standing seam metal roof design with its concealed fasteners. That's why it's no surprise that when it came time to choose gutters, Paul and Ann wanted something that worked well, but didn't stand out.

"Color was very important to them," said Chris Warecki, Sales Estimator at Keeney Home Services, a certified LeafGuard installer based in Neenah, Wisconsin. "Paul showed me a sample of the roof, which was charcoal gray. The windows were black, so we matched the gutters with the intention of blending in and keeping the architecture of the house, with its show-stopping windows, the focal point." The color combination is particularly striking. "We just love the contrast," Paul added.

Paul had already learned a bit about LeafGuard gutters, which is why he connected with Warecki and his company, which specializes in installation of LeafGuard gutters. "When it comes to metal roofs, LeafGuard is the only gutter that comes with a snow and ice lifetime warranty that is also transferable," explained Warecki.

Diverting rain and snow are known benefits of gutters. But one important and often forgotten function is prevention of soil erosion. Without gutters, rain heavily running off a metal roof will beat away at the soil and eventually cause the foundation of a home to settle, resulting in uneven floors, cracked walls, a flooded basement, mold growth, and more.

To better understand why choosing a gutter is key when you have a metal roof, you have to go back to the mechanics and basics of architecture. "With a metal roof, snow and ice often slide right off," said Wesenberg. "With a typical open gutter,



GUTTER OPPORTUNITIES

snow and ice pile right into the opening and the weight will rip the gutter right off the house. The metal roofing industry has come up with snow guards, bars, and cleats to hold the snow and ice, but it can still slide down.”

This is where the LeafGuard design comes into play. Because it has a metal cap that goes over the gutter opening, it acts like an extension of the roof and the snow and ice just slide right over it. Key to getting it right is the connection between the roofer and the gutter installer. “I like to talk to the metal roofer first to make sure we’re on the same page in terms of the overhang,” said Warecki. He and the installers at Keeney Home Services prefer ¾” to 1” overhang. Even 2” can be an issue, because it can prevent water from running into the gutter and instead it shoots over it. Paul and Ann have a 5” LeafGuard system on their home, which they say has been performing quite well.

“LeafGuard is the only clog-free gutter to earn the Good Housekeeping Seal of Approval,” Warecki shared. The Seal is special because there is nothing else like it in the world, according to *Good Housekeeping* Editor-in-Chief Jane Francisco, who also said the core promises behind the emblem resonate profoundly with consumers. Essentially, the seal offers a limited warranty in the form of a refund of up to \$2,000, repair, or replacement if the product is defective within two years of purchase. The product itself is also evaluated by scientists and engineers at the Good Housekeeping Institute.

It’s easy to see how LeafGuard earned the Good Housekeeping Seal when you consider its function and design. While LeafGuard isn’t the only gutter system to carry water away from the home, its unique, patented, one-piece, debris-shedding design is superior to other gutter systems on the market today. LeafGuard gutters work on the simple but powerful scientific principal known as liquid adhesion, which means rainwater travels around the hood or top of the gutter while deflecting leaves and other debris to never clog.

“Like all of our installs, we custom built the gutters on Paul and Ann’s home on-site,” said Warecki. For this process, the crew at Keeney Home Services uses an extrusion machine to create the gutter from 18”-wide flat metal pieces. “Another benefit of LeafGuard is that it is made from aluminum that is 20% thicker than industry standard. The strength and design is what allows it to stand up to snow and ice. If I had a metal roof, it’s the only gutter I would consider,” Warecki added.

Paul and Ann are pleased to enjoy the view (or views) from their new home and, though the process was not short and simple, they embrace the idea that good things take time. “Quality products and skilled craftsmen are what make a home enduring,” Paul shared. “These high-quality products have shown their durability.” Coupled with skilled craftsmen and installed according to manufacturer’s specifications, quality products not only look great, but stand the test of time. “And to do this on the west shore of Lake Michigan where the wind and waves rule, is really just amazing.” **MR**



NEW PRODUCTS



Boral Steel® Introduces Cool Roof System

The Boral Steel Cool Roof System, manufactured by Boral Roofing, is a high-performance roofing solution designed to keep the home warmer in winter and cooler in summer. The system consists of Boral Steel Stone Coated Steel roofing, a lightweight roofing material (just 1½ pounds per square foot), which boasts the structural strength of steel, along with three additional key components: Boral MetalSeal Underlayment, Boral Elevated Batten System (EBS), and a variety of hip and ridge ventilation products. Combined, these elements work in concert to greatly enhance the roof's energy efficiency performance, providing the homeowner with a lasting roof as well as meaningful return on investment.

Notably, the Boral Steel Cool Roof System incorporates Above Sheathing Ventilation (ASV). Hot air rises, creating a natural convection effect, and is then exhausted through ventilation with continuous airflow across the roof deck. The result is a cooler attic and living space in the home below. No matter what installation method—whether direct-to-deck or EBS battens, a Boral Steel Stone Coated Steel roof with ASV can help provide improved energy savings compared to asphalt shingles.*

www.boralroof.com

*The Oak Ridge National Laboratory conducted a 12-month study on the effects of high IR pigments versus metal roofs installed with airspace. The study showed that ASV can reduce heat flow into a building by nearly 30%, which can lead to an increase in year-round energy efficiency by reducing heat gains during the summer and heat losses during the winter. These dramatic results demonstrate Boral's Elevated Batten System is just as important to achieving energy efficiency as reflective roofs.

Massive Mouth™ Bags by ToughBuilt®

The ToughBuilt 26" Massive Mouth Fanatic does not compromise with extreme loads. It carries anything and everything. The patent-pending opening is wider than anything on the market for superior accessibility.

The bag comes with a padded shoulder strap; steel-reinforced handles for a strong, two-handed grip; and additional side handles to carry



WWW.CONSTRUCTIONMAGNET.COM

the heaviest loads. Its unique octagonal shape with rigid plastic HardBody™ lining protects everything inside and keeps its shape. Includes a lockable zipper for security and safety. Its 62 pockets and loops include a covered notebook pocket, durable zippered mesh pockets for visibility, and plastic-lined external pockets. Made with high-quality, rugged materials and components of uncompromising quality, this hard-working bag keeps up with the roofing professional's rigorous demands.

www.toughbuilt.com



Communication Headsets With Hearing Protection

On top of the heavy-duty design and Bluetooth communication features, the Tufftalk M provides Mesh Intercom, which is a self-optimizing and self-healing network, always looking for the best connection and seeking a new one when a device disconnects. Crews can split into separate groups using Multi-Channel Open Mesh, which offers nine communication channels powered by Mesh Networking technology. Each channel provides the benefits of hands-free conversation and near-unlimited connections. Available in two options: hard hat mount or over-the-head style.

www.senaindustrial.com



Six Colors of RHEINZINK-PRISMO® Architectural Zinc

RHEINZINK continues to expand its product portfolio and color palette with the introduction of RHEINZINK-PRISMO—color-coated, architectural-grade zinc options for roofing, façade cladding, and wall products. This new product offering showcases a colorful, semi-transparent, matte finish in a choice of red, gold, green, brown, blue, and black.

Suitable for both commercial and residential projects, the color-coated zinc is manufactured under factory-controlled conditions using state-of-the-art, environmentally responsible production technology. A protective fluoropolymer coating seals the metal and imparts the selected color. A minimum order quantity is required per color and per thickness. A variety of standard and special sizes are offered in both rolls and sheets.

www.rheinzink.us

MR

project of the month



Metal Roof/Siding Combo Provides School With Energy Savings

Hutterite School Chooses Rush River Steel & Trim and Hixwood Metal Panels

When a small Hutterite community in Henderson, Minnesota, set out to build their private school, they searched for economical building materials that would provide excellent longevity, value, and energy-efficiency, as well as great aesthetics. Burgundy Textured Steel PBR roof panels from local roll former Rush River Steel & Trim fit the bill, offering excellent long-lasting cover—plus

it looks awesome! Complementary Vertical 8" Board'n' Batten from Hixwood Metal in Stanley, Wisconsin, protects the exterior from the elements. The community said of the project's efficiency: "Extreme Panel Technologies gave us the most energy-efficient wall panel available, and geothermal in-floor heating and cooling systems provide the best options for efficiency and value." **MR**

Private School, Henderson, Minnesota

www.rushriversteel.com

Project Overview

Location: Henderson, Minnesota

Building Use: Private school

Architect: Earthen Concepts & Development, Inc.

Contractor/Installer: Altona Builders

Roofing Panels: Burgundy 26-Gauge Textured G-90 PBR Panel from Rush River Steel & Trim

Cladding Panels: Texture Clay Vertical 8" Board'n' Batten from Hixwood Metal

Fasteners: ST Fastening Systems

Insulation: Extreme Panel Technologies

Rain Management System: Rush River Steel





Face-to-face quote meetings with potential clients might be off the table for now, but that doesn't mean your business needs to be at a standstill.

Virtual Quoting

Positive business adjustments—adapting to COVID-19

By Pat Overson

The COVID-19 pandemic has had a dramatic effect on the way roofing contractors do business. Face-to-face interactions with prospective clients are less common, and keeping your employees safe during a job becomes even more of a priority. The adjustments contractors need to make can be difficult, but that does not mean they aren't beneficial to your business. Changing the way you do business can be stressful, but you can create new practices that have long-term benefits for your roofing business.

Emphasis on Virtual Quotes

One of the biggest challenges my company, Overson Roofing, had to overcome at the start of this pandemic was looking at the way we quote clients. We pride ourselves on being able to communicate every step of the quoting process to our clients and discussing in person how we are going to do a job. In a time of social distancing, doing in-person quotes at the kitchen table was not something our clients wanted us to do.

We wanted to continue to provide detailed quotes to our clients while respecting social distancing, so we cre-

ated a virtual quote system.

When a prospective client called us or asked for a quote online, we would have someone go to the property and take measurements and photos of the project to figure out what needed to be done.

We would then create a video discussing all the issues with the roof using the photos we took, and use this video to go over each issue point by point. The virtual system allowed us to create a personalized quote for our clients that consisted of detailed images and descriptions of the entire project. Our virtual quote system allowed us to continue to be personable with our clients while maintaining social distancing.

The program was so successful that it actually increased our closing rate. The pandemic forced us to change the way we did business and our ability to change with the times allowed us to create a new process that we didn't see any-

BUSINESS TIPS

body else using.

When the COVID-19 pandemic worries decrease, we will continue to use our virtual quote system when needed because it has proven useful for reasons unrelated to social distancing. We are already using our virtual quote system to communicate with out-of-state clients and owners of rental properties.

When shelter-at-home orders were put in place, we were concerned that our business would struggle as so many businesses have. Instead, we were able to adjust and create a system that allowed us to continue to pursue leads and keep a steady stream of business.

Improving Communication

Communicating with each other was another hurdle we had to overcome. For the first time, we allowed some of our sales associates and employees the option to work from home. This required us to implement software that allowed our sales reps to take phone calls away from the office.

The extra flexibility allowed our team to continue social distancing while still ensuring leads were not being missed. Any sales rep that wanted to work from home was allowed to do so and those who wanted to work in the office were given work stations in separate rooms and scattered hours for each rep to ensure the office didn't become too crowded.

We were initially concerned that some calls would be missed because not everyone was in the office, but we



Pat Overson (right) with his son Brett (left).

found that our calls remained steady and there was no problem answering the phone. Overson Roofing continued to get good reviews from customers and positive feedback from our staff on the new process. We were also able to conduct our team meetings via teleconference, allowing everyone to stay up-to-date on jobs and continue to communicate.

We have always been a company that likes to handle situations face-to-face. Switching to a less personable form of communication was a concern for us, but knowing we were able to continue a high level of production showed we are able to adjust to the challenges of a pandemic and continue to do so.

The COVID-19 pandemic has been a challenge to every industry and roofing contractors are not immune to the economic challenges the virus has cre-

ated. Adapting your business to the times can be incredibly challenging, but if you accept the challenge head-on, you will find new ways to conduct your business. Taking a creative and pragmatic approach to these challenges can even lead to new ideas you will continue to use in a post-pandemic world.

Pat Overson is the owner of Overson Roofing in Mesa, Arizona. Overson Roofing has served its clientele with respect and professionalism for over 30 years. The company won the Better Business Bureau Blue Torch Award for ethics in 2016. MR

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PRODUCT PROFILES

SNOW & ICE MANAGEMENT

AceClamp



The AceClamp Snow Titan is AceClamp's strongest and easiest snap-together snow-retention system on the market. The cantilever "gripping claw" offers the latest in clamping mechanisms for easy installs with confident gripping power. The triangular rail handles extreme snow loads with confidence. The patented "sliding-pin" design Ace clamps help protect the panel and warranty and come standard with any of A2 style Snow Titan snow-retention systems.

www.aceclamp.com

Chem Link Snowshoes



Chem Link SnowShoes are paintable polycarbonate snow guards able to withstand typical snow loads. Dangerous snow slides can occur when ice and snow build up on pitched roofs. Help reduce the possibility of personal injury or property damage by installing SnowShoes on sloped roof areas. Effective on all metals, including Kynar 500® PVDF coated metal. Also for use on slate, tile, EPDM rubber, and PVC membrane. Each pack contains 24 snowshoes. Installation is easy with the translucent DuraSil adhesive provided in every kit. No screws or mechanical fasteners are required.

www.chemlink.com

Dynamic Fastener



Dynamic Fastener's Dyna-Guard snow-retention system is designed to be used on virtually any style metal roof. Dyna-Guard is an 8'-long extruded aluminum rail with a T-shape profile. Dyna-Guard is installed by attaching non-ferrous clamps or mounts to a metal roof and bolting or screwing the system to clamps or mounts. Eight Dyna-Clamps with round-point stainless steel set screws and Sno-Dams are also offered. Sno-Dams attach to the back of Dyna-Guard and inhibit snow and ice from sliding underneath. Dyna-Clips are available as a Dyna-Guard to Dyna-Clamp connection device when using unpunched Dyna-Guard. A 2"-wide painted strip of metal from the same material as the roof is inserted into the Dyna-Guard for aesthetics.

www.dynamicfastener.com

Levi's Building Components



The Snow Defender series is your quality choice for "Made in the USA" snow retention, with more than 40 quick-ship color choices in four styles: 4500 (shown) and 1500 for exposed fastener panels, 6500 for standing seam roofing, and 55RF for vertical seam profiles using S-5! Clamps—all with 15-year warranties. Contact Levi's Building Components for quick service and expert advice. Levi's handy snow-guard calculator is available online.

www.levisbuildingcomponents.com

Marco Industries



YetiGuard removes the movement of snow and ice for safer roof loads and walkways down below. It uses the highest-quality polycarbonate for optimal strength and reinforced struts for additional holding power. YetiGuards are UV-resistant and fit most roof panels without rib straddling. In fact, the 1½" base fits 95%+ of all roof panels. In addition, YetiGuard's low-profile 3" x 5" design with clear material is virtually invisible, making them not only the practical, low-cost solution, but the aesthetically pleasing solution, too.

www.marcoindustries.com

Rocky Mountain Snow Guards



The Blizzard III+ bracket's bottom pipe is only 1/8" above the seam tops. These low-profile brackets eliminate the need for Ice Flags on most installs. The Blizzard III+ system is comprised of: Blizzard III+ Brackets (three pipe brackets with two S-5! standard clamps), 1" O/D Aluminum Tubing (with a swaged end that eliminates the need for couplers), End Caps and End Collars, Ice Flags (can be added to keep ice from sliding under the system when installed on taller seams), and Ice Screen (installs on the finished system and keeps even small amounts of ice or snow from getting past). Most of our Blizzard III+ systems are powder coated to match the color of the standing seam roof.

www.rockymountainsnowguards.com

PRODUCT PROFILES

SNOW & ICE MANAGEMENT

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www.s-5.com

SnoBlox-SnoJax



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www.snoblox-snojax.com

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Include a clear, high resolution image of the product (no logos or advertisements), along with a brief description of your product and the problems it solves.

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Rollforming Magazine: Sharon Thatcher – Sharon@shieldwallmedia.com

new products
BY RURAL BUILDER STAFF

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NEW PRODUCTS

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- Installer
- Other _____

PLEASE CHECK THE PRIMARY CATEGORY THAT DESCRIBES YOUR BUSINESS:

- Builder, Dealer, Remodeler or Installer
- Roofing Contractor
- Metal Roofing Contractor
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