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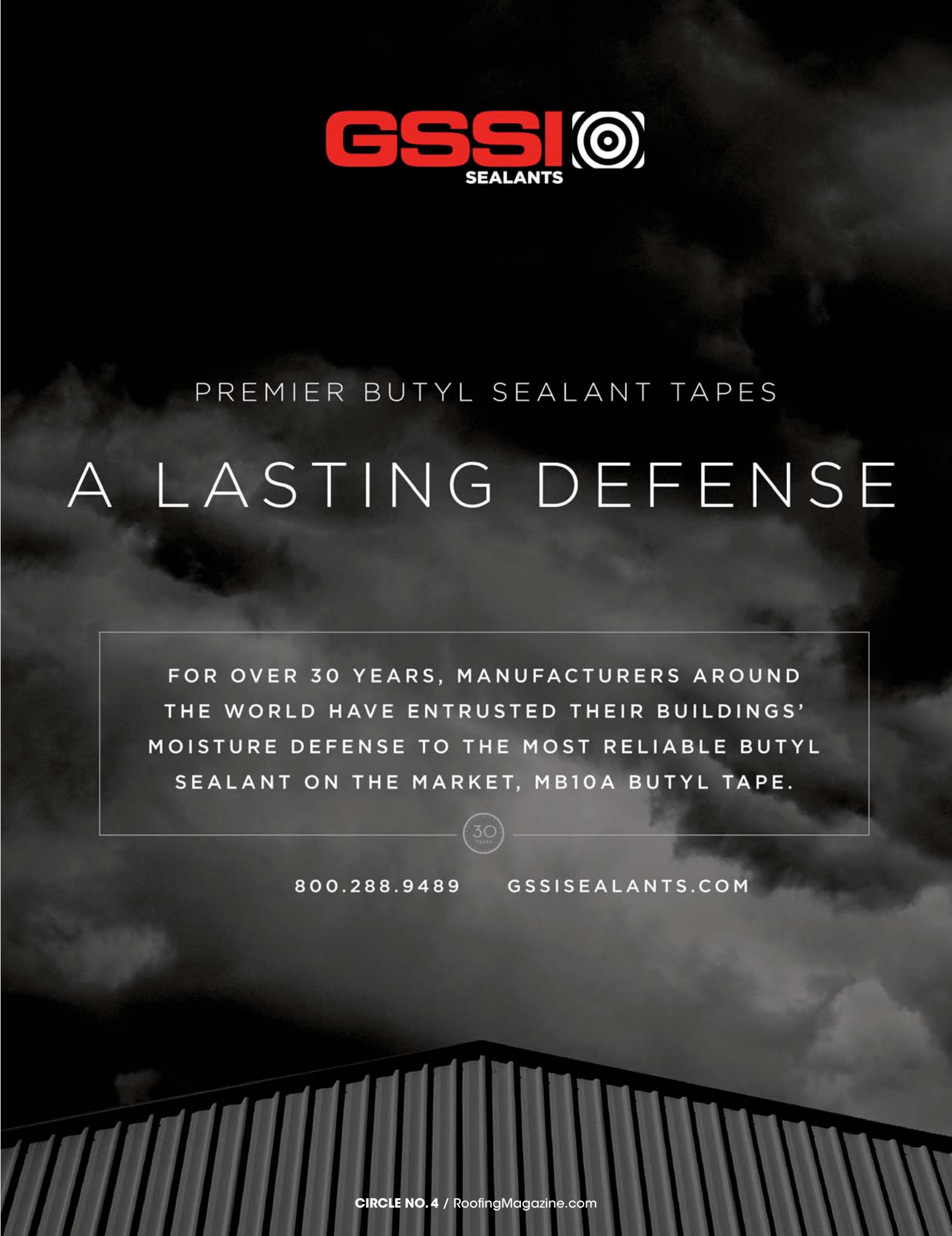
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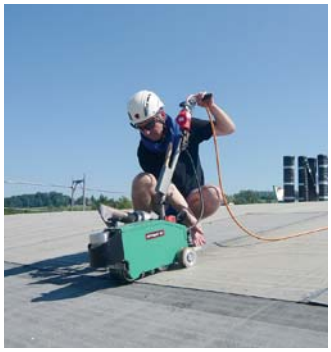

ON THE COVER

Village Hotel, Biltmore Estate, Asheville, N.C.

Photo: The Biltmore Company

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RAISE THE ROOF

WRITTEN BY **CHRIS KING**

The Beer That Saved My Life

Did I ever tell you about the beer that saved my life?

One day, the freezer motor in my refrigerator started to make a horrendous shrieking sound. I opened the freezer door, grabbed a pound of frozen ground round, and threw it at the back wall of the freezer. The noise stopped. Problem solved.

Unfortunately, the shrieking episodes continued and became more and more frequent. When I began dating Patti, the lovely woman who later became my wife, she was not impressed. "What are you going to do about that?" she said, hooking a thumb at my musical freezer. "What do you mean?" I replied. "I'm just never going to thaw that ground round."

I knew that wasn't a good long-term answer, but a new refrigerator was just not in my budget. However, Patti did some research and found out that a new freezer motor was relatively inexpensive and easy to install.

After purchasing the motor, I pulled out the refrigerator to install it. The galley kitchen was tight, so I had to reach around the refrigerator blindly to unplug it. I removed the back panel of the freezer and took out the old motor without too much difficulty. It was thirsty work, and remembered I had some beer in the refrigerator. I opened the door to pull one out, and realized that the refrigerator light was on. The unit was still plugged in!

Suddenly I wasn't very thirsty any more. I realized that I had unplugged the microwave instead of the refrigerator. I was lucky not to have been shocked. It probably wouldn't have been fatal, but I guess it possibly might have been, and it makes a better story to tell it that way. In any event, after unplugging the unit, I was able to complete the repair. We thawed the ground round and cooked up some hamburgers that night to celebrate.

What does this have to do with roofing? Unfortunately, too much. Many building owners think of their roofs much like I thought of my refrigerator. It is the job of roofing professionals to educate them so they can avoid these common mistakes:

- **Out of sight, out of mind:** Roofs are often overlooked by building owners unless a problem crops up. But that's often too late. Routine maintenance can be the key to spotting minor problems before they become major ones. It can also be a necessary component of the warranty.
- **Using stopgap measures:** If a problem does crop up, owners might try to repair it themselves and cause more harm than good. As the roof becomes a platform for not only HVAC equipment but solar arrays, cell towers and satellite dishes, damage to the roof becomes more and more likely.
- **Not consulting a professional:** Roofs face potential damage from extreme weather, debris, foot traffic, and a host of other problems. To get the most out of their investment, building owners need to get expert advice.

If you are a roofing professional with clients who might not be getting the most out of their roofing assets, stop by and talk to them about a roof inspection or a maintenance program. Invite them out for a beer to talk it over. Of course, drinking alcoholic beverages on the job is never advisable under any circumstances, but a beer after work never hurt anyone. Who knows, it just might save someone's life. R

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Roofing

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Roofing welcomes letters to the editor. Letters must be signed and include a return address/email and telephone number. *Roofing* reserves the right to edit letters for clarity and length. Send letters to Chris@RoofingMagazine.com.

If you enjoyed reading this issue, please consider submitting something for the next one. Let's talk about ideas! Call Chris King at (248) 376-5115; email him at chris@roofingmagazine.com; post a comment on our website; and/or Facebook and tweet us. This magazine—and your peers—are counting on you!

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CONTRIBUTORS

Lisa Crilley Mallis works with focused, successful business owners who still want to achieve more without giving up their nights and weekends. For more than 15 years, she has provided customized, practical solutions to everyday challenges as the owner of Impactive Strategies, located in Chagrin Falls, Ohio. In "Business Sense," page 26, she details a three-step process for overcoming procrastination.

Brad Dicks is the social media marketing manager for IKO North America. With more than eight years of experience in digital and social media marketing communications, he has offered training, coaching and guidance on digital marketing strategy to help clients in the United States and Canada. In "Business Sense," page 30, he explains how roroofing contractors can effectively promote their businesses on Facebook.

Dr. Ana-Maria Dabija is an architecture professor at the University of Architecture and Urbanism "Ion Mincu" in Bucharest, Romania. As a guest columnist substituting for Thomas Hutchinson in "From the Hutchinson Files," page 36, she explores the history and cultural influences of roofing in Romania, pointing to an array of historically significant buildings to illustrate her thesis that specific geographic conditions lead to specific building systems.

Louisa Hart is the director of communications for the Washington-based EPDM Roofing Association (ERA). In "Tech Point," page 46, she reports on the rising importance of resiliency as a concept in building design. She explores the evolving definition of the term, pointing to a hospital in Staten Island as an example of the concept in action.

Michael Russo is a consultant to various roofing manufacturers and industry associations. He was the editor of *Roofing/Siding/Insulation Magazine* from 1980 to 2005. Russo has been reporting on the low-slope roofing industry for more than 36 years. In "Details," page 50, he consults with an array of experts to offer strategies for welding thermoplastic seams under changing environmental conditions.

Kathleen Ziprik started Ziprik Consulting in Mills River, N.C., in 1996. The company provides all levels of public relations support, including media relations, writing, crisis communications and special events coordination. In "Retail & Mixed Use," page 62, she shares the story of a new hotel project in a mixed-use section of Biltmore Estate in Asheville, N.C.

Justin Koscher is president of the Arlington, Va.-based Polyisocyanurate Insulation Manufacturers Association (PIMA). He previously served as vice president of Public Policy at the Center for Environmental Innovation in Roofing. In "Special Report," page 68, he demonstrates how one retrofit roofing project showcases advancements in building materials and construction methods.

Bob Delaney is president of Safety Hoist Company, based in Exton, Pa. After 50 years, his company continues to pioneer new material hoists to increase worker safety and efficiency. In "Safety," page 76, he explains the benefits of natural-disaster-resistant roofing options and how a recent OSHA ruling can impact roofer safety when loading and unloading materials.

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GAF to Open New Manufacturing Facility in Pennsylvania

GAF's facility in New Columbia, Pa., is part of a more than $2 billion investment GAF has contributed to the roofing industry over the last 10 years.

GAF ANNOUNCED that it will open a manufacturing plant in New Columbia, Pa., about 20 miles south of Williamsport. Set to open in the fourth quarter of 2017, the new 34-acre facility will create more than 40 skilled manufacturing and office jobs in Pennsylvania and will serve as a regional training facility for contractors and roofing industry professionals. The plant will manufacture thermoplastic polyolefin (TPO) single-ply membrane for commercial roofing applications and Cobra brand injection molding components for residential roofing systems.

"We are proud to further our commitment to the roofing industry through this investment in New Columbia and to create new, skilled manufacturing jobs right here in the U.S.," said Jim Schnepper, president of GAF.

"This new plant will expand our production capabilities, allowing us to meet the needs of our customers with best-in-class solutions. Our innovative training programs will help new employees build critical competencies," said Dick Nowak, chief operating officer of GAF.

The opening of the New Columbia plant will mark an expansion of the GAF footprint, which currently includes a network of 30 manufacturing facilities and more than 3,400 total employees nationwide. GAF already has a presence in Pennsylvania through its Myerstown asphaltic shingle plant.

As part of the company's ongoing commitment to offering professional education programs to the roofing industry, the plant will be designated as a GAF Center for the Advancement of Roofing Excellence (CARE) regional training facility. Through its CARE program, GAF offers hands-on training to contractors and other roofing industry professionals in the region, equipping them with the latest skills and installation techniques. To date, more than 230,000 roofing professionals have participated in CARE training programs. For more information, visit GAF.com.

PHOTO: GAF

Boral Finalizes Acquisition of Headwaters Inc.

Boral Limited announced that it has completed its acquisition of Headwaters Inc., a building products manufacturer and fly ash marketer in North America. The closing of the transaction follows approval by Headwaters' shareholders and receipt of all required regulatory approvals.

With the closing of the acquisition, Headwaters becomes a wholly owned subsidiary of Boral Limited and no longer a publicly traded company. Boral's CEO and managing director, Mike Kane, said the acquisition was a transformative step for Boral, its employees, customers and for shareholders, positioning the Group to deliver more sustainable growth through the market cycles.

"To ensure that we seamlessly realize the benefits of this strategic acquisition for all of our stakeholders, teams from Boral and Headwaters are coming together to implement integration plans that leverage the talents and expertise of both companies," said Kane.

Boral USA and Headwaters combined will form a new division to be named Boral North America — a $1.8 billion revenue business — which will be headquartered in Atlanta, the location of Boral's current U.S. headquarters. Boral Limited is an international building and construction materials group headquartered in Sydney, Australia. For more information, visit BoralAmerica.com/roofing.

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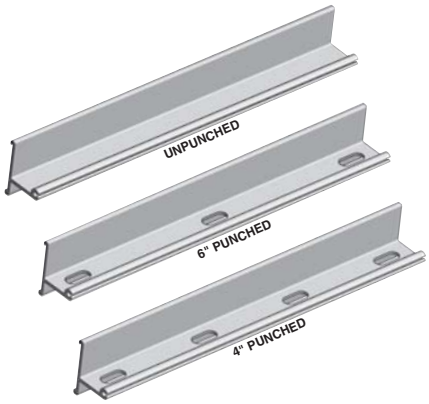

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SPFA Speaks Out Against California DTSC Decision on Spray Polyurethane Foam

THE SPRAY Polyurethane Foam Alliance (SPFA), the educational and technical voice of the spray polyurethane foam (SPF) industry, released a statement opposing the recent proposal by the California Department of Toxic Substances Control (DTSC) to designate spray polyurethane foam products containing unreacted methylene diphenyl diisocyanates (MDI) as a listed Priority Product under the department's controversial Safer Consumer Products Program.

"We are extremely disappointed with this decision to progress to the next stage of this regulatory debacle," said Kurt Riesenberg, executive director of the SPFA. "We know the DTSC's spotlight on our product has been problematic from the start. The department initially based its position on numerous, unsubstantiated inaccuracies about the product without consulting or verifying those details with our industry's leaders and through verifiable and adequate research. That resulted in a protracted, multi-year process marred by DTSC inconsistency, confusion, errors, faulty research and false application of interpretations gleaned from other technologies then applied to SPF. DTSC has failed to satisfy its own published regulatory requirements for listing under the SCP program, and failed at every stage to progress per published timelines, stretching this experimental process out years beyond their original vision."

"Furthermore," Riesenberg continued "MDI use in SPF has already been reviewed thoroughly by federal agencies that specifically address worker and public health including OSHA, NIOSH and EPA. We ultimately believe this product assessment and listing process is not only riddled with problems, but is redundant and misusing critical taxpayer dollars that are approaching a dangerous shortfall as demonstrated by the California state budget."

Riesenberg urged the DTSC to drop the proposed listing of SPF as a Priority Product. "SPFA stands ready to continue discussions with DTSC and other California state agencies around productive topics of product stewardship, health, safety, performance, installer certification or other topics beneficial to California and its constituents," said Riesenberg. "But instead we are faced with an advancing failed regulatory process, very significant associated costs to be forced upon the industry to support a long ill-defined alternative assessment process, and continued confusion throughout the state government agencies extending to customers that are relying upon the product's performance to hit California energy and climate targets." For more information, visit Sprayfoam.org.

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NEWSFROMNRCA

The Rosemont, Ill.-based National Roofing Contractors Association represents all segments of the roofing industry, including contractors; manufacturers; distributors; architects; consultants; engineers; building owners; and city, state and government agencies. NRCA's mission is to infoårm and assist the roofing industry, act as its principal advocate and help members in serving their customers. For information about NRCA and its services and offerings, visit NRCA.net.

NRCA
National Roofing Contractors Association

Roofing Industry Alliance for Progress Partners With Ronald McDonald House

THE ROOFING Industry Alliance for Progress has announced its formal partnership with Ronald McDonald House Charities (RMHC) to provide regular roof system inspections, repair and replacement for the 184 Ronald McDonald House locations in the United States. The Alliance also will provide a monetary donation to RMHC Global to help fund program services and infrastructure.

RONALD MCDONALD HOUSE CHARITIES®

RMHC helps families with sick children stay together and close to the medical care and resources their children need, when they need it most. The Roofing Industry Alliance for Progress will provide support to the Ronald McDonald House program that offers much more than a place to stay. The Houses provide meals and the support and resources families need when their child is hospitalized or being treated at a hospital far from home. The House program allows families to focus solely on their child's health and treatment, while RMHC takes care of the family.

"This collaboration will ensure the families staying at Ronald McDonald Houses will have a comfortable place to stay while their children are receiving the critical care that they need," said Bennett Judson, executive director of The Alliance.

This partnership is also a strategic fit with the Charity's commitment to environmental sustainability and the work they have done to ensure effective management of their Houses.

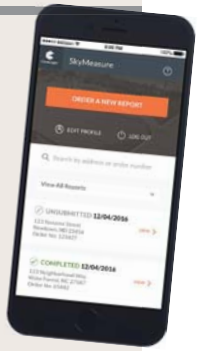
One or more members of The Alliance or National Roofing Contractors Association (NRCA) will be identified to partner with local RMHC Chapters to provide needed roof system services at each location. Roof system replacements will be managed as individual projects, and, if necessary, several roofing contractors and manufacturers may be asked to contribute.

The partnership between the two organizations became official April 2017 during The Alliance's member meeting in Coronado, Calif.

With work already begun with Chicago and Philadelphia area locations, The Alliance is looking forward to providing this critical piece of support to the RMHC System nationwide.

To learn more about this partnership or to connect with local Ronald McDonald Houses, please visit RoofingIndustryAlliance.net, call Bennett Judson at (800) 323-9545, ext. 7513, or email bjudson@roofingindustryalliance.net.

TECHTOOLS



CoreLogic launched its mobile application for SkyMeasure, a residential and commercial aerial roof measurement service. According to the company, the mobile application uses the same advanced geocoding technology as the desktop version, while also increasing access for roofing and insurance professionals to ParcelPoint, the CoreLogic proprietary property parcel database. The mobile extension of SkyMeasure is designed to further enhance the ease and convenience of accessing roofing data on a real-time basis for those in the industry who spend a majority of their time in the field. The mobile application is free with in-app purchase options, and is available for both Apple and Android devices. For more information, visit CoreLogic.com.

McElroy Metal has announced the download availability of its updated company product catalog. The 36-page catalog features the McElroy Metal line of construction products and components for the architectural metal construction industry. The catalog includes detailed information on the 138T and 238T symmetrical standing seam roof re-cover systems as well as engineered retrofit systems that adapt an existing roof's structural support system, whether constructed of steel, concrete or wood. Among the other company offerings featured are insulated metal panels under the name of Green Span Profiles, a joint venture IMP manufacturing company. The catalog highlights the company's standing seam systems, concealed fastener wall panels, exposed fastener roof and wall panels, and more. For a hard copy of the catalog, email a request to info@mcelroymetal.com. To download a PDF, visit https://app.box.com/s/y9r4nz4z0jstrkswa0vnef7xzjxw161m.

I began working at Carlisle in 1985 as a Technical Representative. Since then, I have worked in the Technical, Sales, Training, and Warranty Services Departments. Today, as Vice President of Technical and Warranty Services, I am in charge of Carlisle's field services, warranty services, warranty administration, design and review, and contractor training.

Bob McNeill

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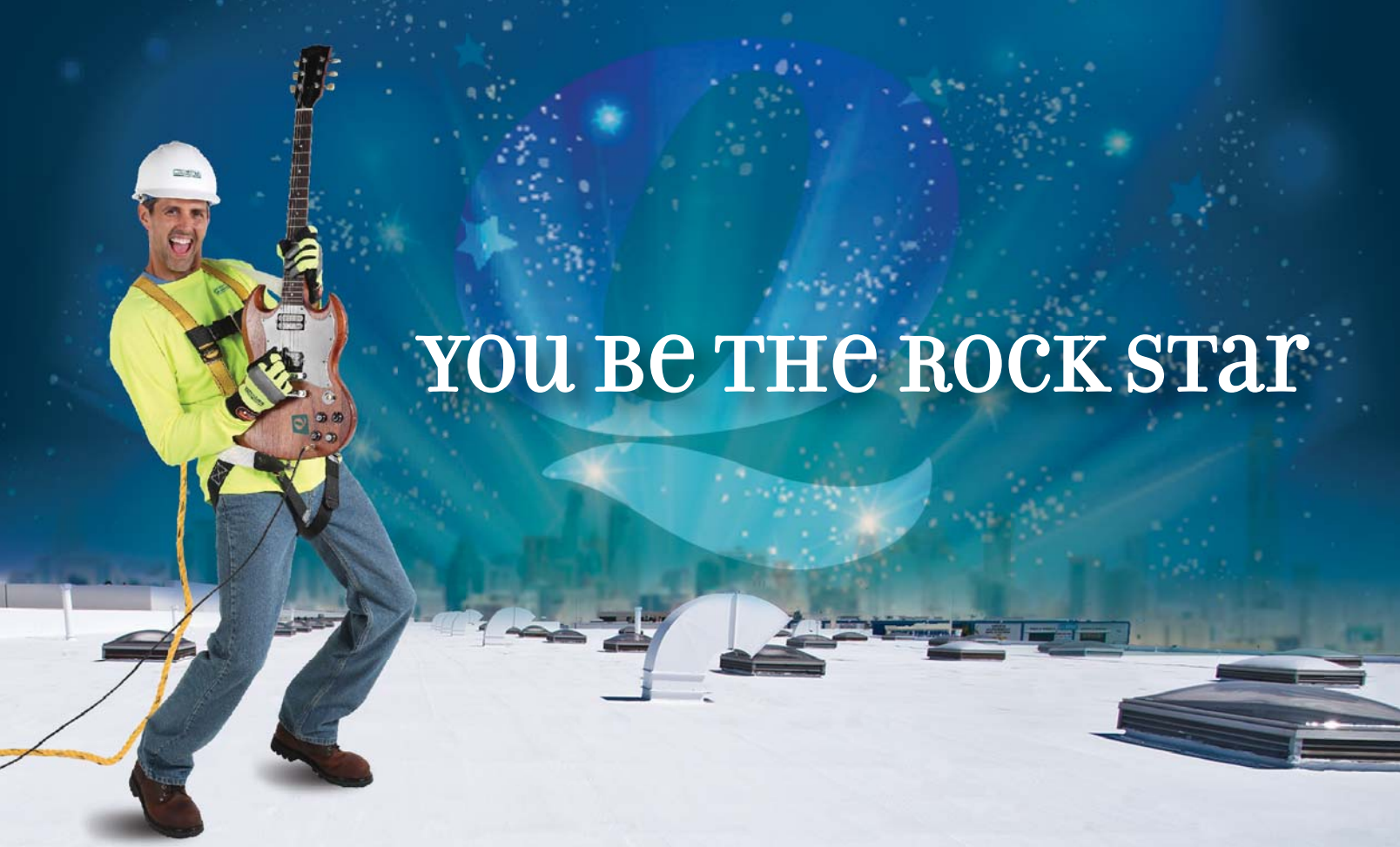

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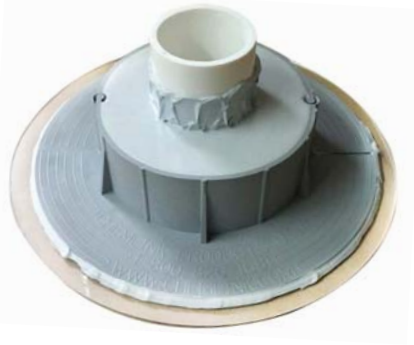
Certainteed.com/roofing | Circle No. 15

Tool Belt and Clip Offer Hands-Free Tablet Carrying Solutions

Runnur Mobile Tech Gear launches a new line of hands-free, wearable tablet belt clips. The clips are hip-mounted to either a person's belt or to a separate heavy-duty tool belt, providing users with immediate access to their tablet at all times. The Tablet Belt Clip allows the user to lock and carry any standard tablet on the hip, and then access it within one second when needed. The Heavy Duty Tablet Belt combines the Tablet Belt Clip with a heavy-duty belt made with a solid foam core. A security cord (included) prevents the tablet from dropping to the ground, avoiding costly delays in repair. OtterBox recently partnered with Runnur to offer these devices.

MobileTechGear.com, OtterBox.com | Circle No. 17

New Size Offered for Penetration Seal System Line



Chem Link now offers a 5-inch E-Curb penetration seal system, the newest size offering in the full E-Curb line of products. Designed to better fit contractor needs, lighter-weight E-Curbs feature interlocking "slip-fit technology," which is designed to allow for quick assembly and easy installation. E-Curbs are designed for use on granulated modified bitumen, asphalt and coal tar built-up roofing applications, as well as PVC, PIB and TPO single-ply roofing membranes. All E-Curb kits come with gloves, 1-Part Pourable Sealant and M-1 Adhesive/Sealant to complete the job. No flashing or mechanical attachment is required.

ChemLink.com | Circle No. 16

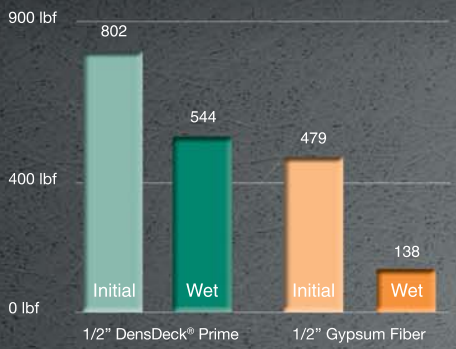
Coil Roofing Nailer Offers Improved Speed and Durability

PrimeSource Building Products' Grip-Rite offers a newly designed Grip-Rite Coil Roofing Nailer that boasts improved speed, power, balance and durability without raising the price from Grip-Rite's current industry-standard nailer. According to the manufacturer, the nailer features a lightweight and tough aluminum body and cap; a tar-resistant nose; and tool-free depth of drive. It also features a rotating metal belt hook. A vinyl siding attachment is sold separately.

Grip-rite.com | Circle No. 18

BEWARE OF MOISTURE'S HIDDEN DANGERS

Flexural Strength Comparison
Before & After 2-Hour Soak[2]



Including a cover board adds critical strength and durability that helps protect the roof from predators like wind uplift. When choosing the right cover board, it's important to consider how moisture can influence the board's ability to withstand these attacks. Of course moisture has a detrimental effect on all cover boards, including DensDeck Roof Boards[1] but to varying degrees. In Independent, third party testing, ½" DensDeck Prime Roof Boards tested 3.9 times stronger in flexural strength than ½" gypsum fiber after the standard 2-hour soak test[2].

GP Georgia-Pacific
DensDeck® Roof Board

(1) Every effort should be taken to avoid moisture before, during and after installation. Damage or reduction in performance resulting from exposure to more than an incidental amount of moisture is NOT covered by the limited warranty for DensDeck Roof Boards. Visit densdeck.com for additional information on installation guidelines and product warranty.
(2) Testing conducted by Trinity Laboratory in Columbia, South Carolina and concluded on June 27, 2016. Testing in accordance to ASTM C1177.

MATERIALS & GADGETS

Solar Bracket Designed to Fit Trapezoidal Roofing Profiles

S-5! announces the release of the RibBracket I-IV products, shaped to provide a perfect fit to most common trapezoidal roof shapes. According to the manufacturer, the bracket is thoroughly tested for strength, has no moving parts and is flexible enough to fit varying trapezoidal widths. A higher profile ensures more space between the roof and any devices attached to the roof, while the four attachment points offer greater holding strength. RibBracket I-IV is designed for convenient wire management and ease of installation for a solar system. With four different shapes, RibBracket I-IV can properly fit the vast majority of trapezoid profiles found globally.

S-5.com | Circle No. 20

Silicone Sealant Repairs Roofs, Masonry and Sheet Metal

Mule-Hide Products Co. adds 100 percent Silicone Sealant choices to its Silicone Roof Coating System, expanding the color offering to include clear and the packaging options to include 10-ounce tubes. 100 percent Silicone Sealant is a mastic version of the Mule-Hide 100 percent Silicone Roof Coating. It is a moisture-cure silicone sealant designed for use in sealing and repairing roofs, masonry, architectural sheet metal, and metal roof seams and fasteners. The addition of clear sealant allows contractors to complete projects that would otherwise require color matching. It is available packaged in tubes only. Its volatile organic compound (VOC) content of less than 10 grams per liter makes it acceptable for use in areas with VOC restrictions. It does not corrode metals.

MuleHide.com | Circle No. 21

Conversion Kit for PaceCart Provides Economical Option

OMG Roofing Products introduces a Conversion Kit for the PaceCart that enables contractors to use 15 gallon drums (30 gallon sets) of OlyBond500, rather than 10 gallon Bag-in-Box sets. The Pace Cart Conversion kit (patent pending) is designed for use on PaceCart 2B and PaceCart 3 equipment, and provides contractors with an economical option compared to purchasing new equipment or other retro kits on the market. Once installed, the Conversion Kit can help contractors dispense more OlyBond 500 Adhesive per hour. Assembly of the 15 Gallon Drum Conversion Kit onto a PaceCart can be completed by one person in about 10-15 minutes.

OMGroofing.com | Circle No. 22

Wrist Lanyard Systems Increase Safety, Productivity

Gear Keeper notes its wrist lanyard systems can safely handle tools weighting up to 5 pounds. Productivity is increased by the company's patented Quick Connect tool attachment. Users can change out and use many tools with one lanyard by fitting additional male connectors to all tools being used; simply unclick one tool and attach another. The wrist lanyards are valuable when the task involves climbing or working at heights or when a short drop distance is required. The two Gear Keeper wrist lanyard systems are models TL1-2007 and TL1-2008. Both models offer nylon webbing Velcro wrist attachment straps. They are available in safety orange with serial numbers to satisfy traceability standards

GearKeeper.com | Circle No. 23

Rich-E-Board

Groundbreaking Insulation Appeals to Owners, Architects

It's exceptionally thin and easy to install. It delivers an R-value of 50 to commercial, industrial and government buildings. Now, Rich-E-Board, the innovative new roofing insulation, is enjoying a groundswell of interest from building owners, contractors and architects seeking to drive down construction costs and boost energy efficiency.

Rich-E-Board recently received a patent for its proprietary Vacuum Insulated Panel—two polymeric foam cover boards that sandwich the panel—and the adhesive ribbons that bind the boards and panel together. This ultra-thin insulation offers a certified alternative to a huge commercial roofing market—billions of square feet in construction every year—challenged with meeting stringent standards for energy efficiency.

While conventional insulation requires a thickness of 15 inches to reach an R-value of 50, Rich-E-Board achieves the same result at just 1.5 inches thick. Rich-E-Board can be installed on most roof deck types, including ballasted roof systems, and can support all conventional low-slope roof systems.

Rich-E-Board's innovative design delivers significant advantages:

- **Lower energy bills:** Achieving an R-value of 50 can cut a building's heating and cooling costs by 8 to 10 percent, according to the GSA.
- **Simpler retrofits:** Rich-E-Board enables retrofitted structures to achieve required R-values in less time, with fewer materials, and without costly and destructive building modifications.
- **Reduced construction costs:** Because Rich-E-Board is light and easy to install, it lowers the cost of delivery and handling and can reduce labor costs by more than half.
- **Design flexibility:** With its slim profile—especially compared with multi-layer insulation—Rich-E-Board saves space, expanding the design options for architects.

Rich-E-Board is also fireproof and water and mold resistant, notes Joanne Collins, president and CEO of R-50 Systems, maker of Rich-E-Board. "Our team focused on creating a game-changing alternative," Collins says. "Rich-E-Board fills a significant void in the marketplace by providing an insulation system capable of meeting today's tougher energy standards."

SUCCESS IN THE FIELD

Rich-E-Board has made a successful transition from the drawing board to the marketplace. Owners and architects have taken advantage of the insulation's slim profile and high R-value on several building projects.

At a government building in Chicago, for example, owners chose to install 3,600 square-feet of Rich-E-Board as part of a roof retrofit aimed at lowering lifetime energy costs. Rich-E-Board's slim profile also cut construction costs by more than $20,000 by streamlining design and installation.

At the Cohen Courthouse in Camden, N.J., Rich-E-Board was selected for the roof retrofit, eliminating the need for expensive building modifications that would have been required for conventional insulation. The decision lowered the project cost by $200,000.

Earlier this year, Rich-E-Board was awarded a patent for its design. More recently, the insulation earned its first LEED 4 designation.

"We're seeing a huge increase in Rich-E-Board as the roofing market learns more about the benefits it brings to the commercial roofing," Collins says. "This product fills a significant void by providing an insulation system capable of meeting today's tougher energy standards."

Collins notes that, in addition to the $5 billion annual market for commercial roofing, Rich-E-Board can be used in walls and other building applications. Rich-E-Board is 99 percent recyclable and made entirely in the U.S.A.

LEARN MORE

Visit R-50.com
(888) 483-2880
Circle No. 24

PHOTOS: R-50 SYSTEMS

WRITTEN BY **LISA CRILLEY MALLIS**

Overcome Procrastination in 3 Easy Steps

You are a dedicated business owner. I know this because you are taking time to increase your professional development by reading this magazine and this article.

Because you are a business owner who is dedicated to success, it would make sense that you don't procrastinate—right? You can quickly and easily accomplish all the important tasks and projects that help move your business forward. Your taxes are completed ahead of time. You are never up late at night looking for data to complete an estimate. You never have to redo tasks because you made errors as you were trying to finish by the deadline.

Before you stop reading in frustration, know that according to Tim Pychyl, author of Solving the Procrastination Puzzle, everyone procrastinates. So, you are not alone!

The question really becomes, how do you overcome your procrastination?

There isn't a "one size fits all" solution to the procrastination challenge. However, there is a process you can follow to find your solution.

Use the acronym A.W.E.

A – Awareness. What are some of the tasks you procrastinate on most often?

W – Work. What are some strategies to help put yourself in motion?

E – Evaluation. What worked and how do you do more of it?

THE THREE-STEP PROCESS

Let's start with awareness. What are some of the tasks that typically cause you to procrastinate? Do you avoid invoicing clients? Or posting on social media? Or sending estimates? Or evaluating employees? Or doing customer service follow-up calls? Or meeting with your accountant? Or creating a marketing plan? Or creating a business plan?

Start to really think about the tasks you put off.

Now that you have a good idea about what those tasks are, it's time to create a strategy to overcome procrastination.

This is the work phase.

According to Pychyl, we procrastinate

continues on page 28

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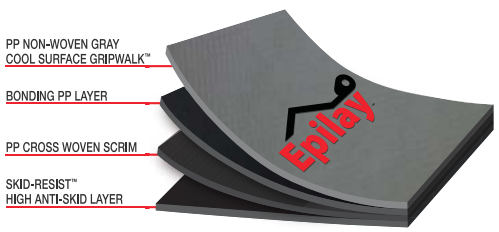
Featuring the **advanced engineering** of a mechanically-attached coated woven synthetic roofing underlayment designed for sloped roofs.

ProtecTite's™ unique design features **superior tear strength** and **light weight** that allows the contractor to easily carry rolls up & down the ladder.

Fewer laps, cuts and roll handling means you can do more jobs in less time resulting in **huge savings to the roofing contractor.**

Epilay™ Protectite™ Roofing Underlayment is a **100% synthetic composition** providing the following benefits to the roofing contractor:

EPILAY™ PROTECTITE™ 4-LAYER CONSTRUCTION



- **1 year UV protection**
- Water repellant , non-absorbent
- Strong and durable polymer construction impervious to mold growth
- Does not wrinkle , crack or become stiff in colder temperatures
- 100 % recyclable
- **W**ill not dry out or leach oil in high heat environments as saturated felts do
- Super low weight with 48" width and 250' run length means big savings in time and labor (over 30% faster to install than felt!)

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Epilay™ ProtecTite™ specific product features:

ProtecTite™ SUPERIOR

- Specifically manufactured to replace the 15# felt
- **7 mil thickness -** a 10 square roll weighs only 23 lbs!
- **Works best for use under Asphalt shingles**
- 5 times lighter and 25 times stronger than 15# felt
- **15 year limited warranty**

ProtecTite™ ULTRA

- Specifically manufactured to replace the 30# felt
- **11 mil thickness -** a10 square roll weighs only 29 lbs!
- **Works best for use under Metal, Shake and Asphalt shingles**
- 10 times lighter and 25 times stronger than 30# felt
- **30 Year limited warranty**

ProtecTite™ PLATINUM

- Specifically manufactured to replace the 30# felt
- **17 mil thickness -** a10 square roll weighs only 37 lbs!
- **Works best for use under Metal, Shake, Asphalt , Concrete, and Slate shingles**
- 8 times lighter and 35 times stronger than 30# felt
- **40 year limited warranty**

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when we find a task unattractive. The more unattractive, the more we procrastinate. Unattractive tasks have one or more of the following traits. They are:

- Boring
- Frustrating
- Difficult
- Unstructured or ambiguous
- Lacking in personal meaning
- Lacking in intrinsic rewards (not fun!)

Which trait corresponds to your task? Do you procrastinate when it comes to invoicing clients because you find paperwork boring and frustrating? Do you put off evaluating employees because you find conflict (or perceived conflict) difficult? Have you decided that you'll do a marketing plan next year (or the year after that) because the whole idea is ambiguous and you don't even know where to start?

Once you can identify the trait that's holding you back, you can create a strategy to help move yourself into action. If a task is boring, make it fun.

Once you can identify the trait that's holding you back, you can create a strategy to help move yourself into action. If a task is boring, make it fun. (OK, maybe paperwork won't ever be fun, but it can be less boring.) Play music loud, challenge yourself to finish the task in under 20 minutes, and reward yourself when it is done.

If creating a marketing plan seems ambiguous, add some structure to it. Talk it out with some colleagues. Consult with a marketing professional. Do some reading on marketing plans. Decide what your goals are for the plan. Figure out just one step. Once you've identified even one step, it becomes much easier to move into action.

Finally, evaluation. When you can do more of what works and less of what doesn't, life becomes much easier. Yet you seldom take the time to slow down long enough to think through what is working! Take 10 minutes to check back at the end of the week. Which strategies worked? Where are you procrastinating less? Where do you still need to problem solve?

By following the steps spelled out in A.W.E., you will be able to reduce the amount of time you procrastinate and increase your capacity to accomplish more in less time. Which leaves you with a lot more time to do all those things you love to do! R

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WRITTEN BY **BRAD DICKS**

Facebook Strategies for Roofing Contractors

Engage With Potential Customers on the Social Media Platform They Use Most

Social media can be an exciting territory for contractors looking to promote their businesses in a relatively inexpensive, but impactful, way. But it can be equally overwhelming with the abundance of social platforms available, as well as the nuances involved for marketing on each one.

If you're new to marketing your business socially, Facebook is a great place to start. It's an easy-to-use platform that provides several features for connecting with potential customers locally and nationally. Or, if your business is already active on the platform but not seeing much return, there are simple ways to begin improving your activity today.

Read on to learn simple tips and advice on how to effectively promote your roofing business on Facebook.

WHY FOCUS ON FACEBOOK?

It's important to note why it is relevant to establish and maintain a presence for your business on Facebook.

First and foremost, your customers are already active on the platform.

Facebook continues to be the most popular social media platform, as cited by the Pew Research Center, where 79 percent of online adults have a profile. In fact, the number of Facebook users is more than double the number of people who use other social platforms, such as Instagram (32 percent), LinkedIn (29 percent), Twitter (24 percent) or Pinterest (31 percent).

Plus, establishing and maintaining a Facebook page can also be beneficial in driving visitors to your website. In fact, search engines tend to reward businesses with a strong social following through higher organic rankings. In other words, the more people who are engaged with your company on Facebook, the better odds your business will show up sooner in a potential customer's search results for a local roofing contractor.

Further, the platform is also a great way to create a sense of connection with your internal team. For instance, Facebook can be used to showcase your company culture, share news and engage with your own employees—especially if you're a large contractor with multiple locations.

USEFUL STRATEGIES TO GROW YOUR PAGE

PROFILE SETUP: Building a solid foundation of followers begins with setting up your profile correctly. Be sure to set up a Business Page instead of a personal Facebook page. This way, current and future customers can "like" your page, or become a fan, and keep up-to-date on the latest news from your company.

Also, it's important to have a profile image and cover art (the large image at the top of the page), as well as complete details about your business on the "About" page, including a description of your business, location, contact information, services offered, hours, website and more.

TIP: If you already have an existing account that was set up as a personal profile, you can convert it into a business page at facebook.com/business.

CONTENT SHARING: Once your page is set up, it's time to start sharing content. Begin with one or two posts per week, and then gradually start increasing your posting schedule as you gain a more established following.

Think of Facebook as an extension of your website to tell customers more about your business in an inviting and personal, but still professional, atmosphere.

Looking for content ideas? Think about sharing your knowledge and expertise: your project work! Take before-and-after photos of projects that showcase a new roof installation or repair. Or if it's a long-term project, document it each day with photos or videos that explain the installation process you're undergoing, the products you're using and more. Make sure you have your customer's consent before posting details or pictures about any project.

Also, do you have a company blog on your website? If so, share out individual posts with a "teaser" on the details the article contains, along with a link back to the specific post. This helps to establish your credibility as a knowledgeable professional, but can

Think of Facebook as an extension of your website to tell customers more about your business in an inviting and personal, but still professional, atmosphere.

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also help to drive potential customers back to your website to learn more. If you're still working to set up your company blog, another option is to publish a "Note" from the left sidebar of your Facebook business page. This long-form Facebook post is a great alternative while you work toward setting up your blog online.

You can also consider sharing links to blog posts from a manufacturer whose products you use. They often provide helpful blog articles with tips and advice for both contractors and homeowners—so you may even find something of value to you in the process!

Lastly, you can use your page as a way to share positive customer testimonials in the form of photos and videos. Again, it's important to ensure you first have your customer's consent before sharing their testimonials. Be sure to also encourage your satisfied customers to submit their own Facebook reviews for a job well done. These reviews allow them to share their experiences and rate your performance directly on your Facebook page, which can help facilitate future business and leads.

TIP: Facebook can also be used as a means to share company promotions, special holiday or seasonal incentives, and events you may be hosting or attending.

PAGE PROMOTION: As you start to proactively post useful content, you'll begin to establish a following on your page. However, there are also several paid promotion tactics you can use to increase your page's reach and engagement.

One popular paid tactic is a pay-per-click (PPC) campaign, which is a form of advertising where you pay a set amount each time someone clicks on an ad you've produced.

Determine what you would ultimately like users to do, and create a post or simple ad that prompts them to take that action. For example, you can drive homeowners to visit your company website, provide their contact information for a free quote, like your Facebook page, download a coupon and more.

If you have a particularly interesting post that has been performing well on your page (maybe it has received a lot of positive comments, for example) and you'd like it to reach even more people, consider "boosting" or sponsoring that post. This means putting a set amount of money behind promoting a post, say $100, to expand its reach. Geo-targeting, or selecting a specific audience and geography you'd like to reach, helps amplify your message to the right people—your targeted customers.

TIP: Avoid using text in your images for paid posts or campaigns. Facebook guidelines reduce the reach of these images as the system considers them too "spammy" or ad-centric and cluttered. In many cases, image text could prevent your promotion from running entirely.

HIGHLIGHTED CONTRACTOR EXAMPLES

Wondering how to apply some of these strategies? Learn more from a couple of roofing contractors who are part of IKO's ShieldPRO plus+™ Contractor Program and are already successfully using them on Facebook:

Chad's Roofing
Gilroy, California
(www.facebook.com/ChadsRoofingInc/)

- Frequently posts project testimonials and before-and-after photos, along with job site videos that explain roofing processes to homeowners.
- Consistently responds to questions/comments posted on the page.
- Uses Facebook (and linked Instagram account) to promote business rather than a traditional website.

Able Roofing
Columbus, Ohio
(www.facebook.com/444roof):

- Collects and displays several homeowner reviews on its Facebook page (more than 50 at the time of writing).
- Shares links to blog posts on the Able Roofing website, which include helpful tips for homeowners related to home improvement, trends and renovation projects.
- Promotes company news and local events, as well as national holidays.

If you're looking to grow your leads and engage with future customers, using these strategies on Facebook is a great place to start. Also, be sure to check out the IKO blog (www.iko.com/na/blog) for even more helpful business tips and advice!

WRITTEN BY **DR. ANA-MARIA DABIJA**

Roofing in Romania: Lessons From the Past

Romania is somewhere in the Southeastern part of Europe, in a stunning landscape: an almost round-shaped country, with a crown of mountains—Carpathians—that close the Transylvanian highlands, with rivers that flow towards the plains, that merge into the Danube and flow to the Black Sea.

Conquered by the Romans in 106 A.D, crossed by the migrators between the fourth and the eighth centuries, split in three historic provinces—Walachia, Moldova and Transylvania—and squeezed between empires, Romania absorbed features from all the people and civilizations that passed through or stayed in its territories.

The language—Latin in its structure—has ancient Dacian words that blend in with words from languages from other countries that had influence in our history: Greek, French, Turkish, English, Slavonic, Serbian, German, Hungarian. Traditional foods vary by region; for instance, in Transylvania you won't find fish, while at the seaside, in the Danube Delta, on the banks of the rivers, fish is traditional. Each historic province uses different ingredients and developed recipes that can be found in Austria and Hungary, in Greece and Turkey, in Russia and Ukraine.

The same applies to buildings. In Transylvania, the Austrian Empire hallmarked the houses in the villages, the mansions, the palaces, the churches, the administrative buildings. One of the most popular sites for foreign tourists is the Bran Castle, infamous home of Dracula. In Walachia, the buildings have strong Balkan influences. Close to the Black Sea, the Turkish and the Greek communities that settled there brought the style of the countries they came from. Moldova was under the influence of the Russian Empire reaching back to Peter the Great.

Romania is situated in the Northern hemisphere, about halfway between the Equator and the North Pole. The climate features hot, dry summers with temperatures that can rise to 113 degrees Fahrenheit in the South, and cold winters, with temperatures that can drop to minus 22 degrees in the depressions of Transylvania, with heavy snow and strong winds. There are some spots with milder temperatures, close to the sea and in the western part of the country.

Why all this introduction? Because specific geographic conditions lead to specific building systems. People living in areas with abundant rain and snow need materials and systems that resist and shed water; after all, the steeper the slope, the faster the water is evacuated off the roof.

Cultural influences color the patrimony, but climatic conditions define the geometry and the materials that are used for roofs. As there are different climatic conditions as well as diverse cultural influences, the building typologies of the roofs are, in their turn, diverse.

ANCIENT SETTLEMENTS

Although these territories were inhabited for millennia, the roofs did not "travel" in time as long as the walls. The six ancient citadels of the Dacians, located almost in the center of Romania in the southwestern side of the Transylvanian highlands, still preserve ruins of the limestone, andesite or wooden columns

[Editor's Note: In May, Thomas W. Hutchinson presented a paper at the 2017 International Conference on Building Envelope Systems and Technologies (ICBEST) in Istanbul, Turkey, as did his good friend, Dr. Ana-Maria Dabija. After the conference, Hutchinson delivered a lecture to the architectural students at the University of Architecture in Bucharest, Romania, and spent several days touring Romania, exploring the country's historic buildings and new architecture. Convinced that readers in the United States would appreciate information on how other countries treat roofing, he asked Dr. Dabija to report on roof systems in Romania in the first of what is hoped to be a series of articles on roofing in foreign countries.]

PHOTO 1: OROLES. PUBLIC DOMAIN; PHOTO 2: ALEXANDRU BABOS, CREATIVE COMMON ATTRIBUTION
ALL OTHERS: ANA-MARIA DABIJA

1 Sanctuary in Sarmizegetusa Regia.

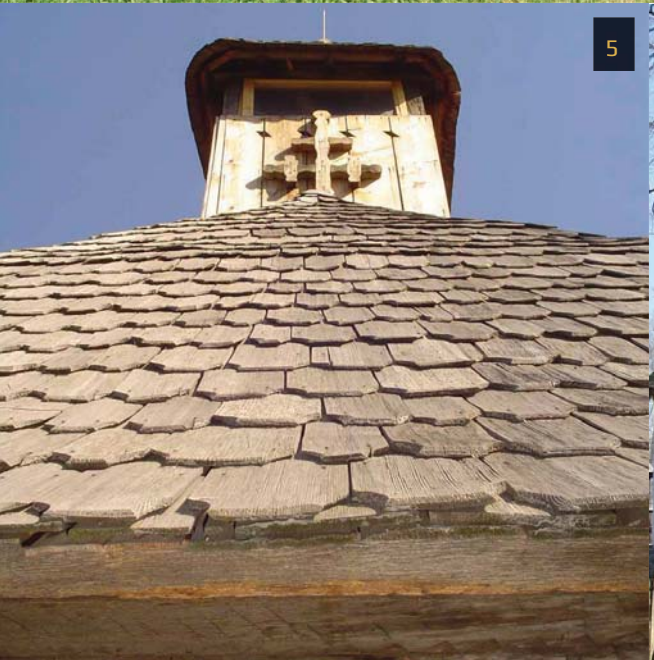
2 Densuș church, Hațeg County, has a roof made of stone plates.

3 Below-ground cottage in the Village Museum in Bucharest.

4 A view of the underside of a thatch roof. Village Museum in Bucharest.

5 The Village Museum, Bucharest.

6 A dwelling in Walachia showcases rounded roof edges. Village Museum in Bucharest.



of the shrines, altars, palaces and agoras. No roofs survived. (See Photo 1.) We can only presume that the materials that were used for the roofing were wood shingles or thatch, which would explain both why artefacts of the roofs could not be found and also why the deterioration is so advanced.

After Rome conquered Dacia, emperor Trajanus built a citadel that was supposed to represent continuity with the previous civilization: the Sarmizegetusa Ulpia Traiana. It seems to have had an active life, considering the temples, palaces and dwellings that we inherited, including an amphitheater for 5,000 people. Still, no roofing traces survived.

BUILDINGS IN THE MIGRATION PERIOD

The retreat of the Romans in the third century due to the attacks of the nomadic populations—Getaes, Germans, Huns and Avars, various Slavs, Turksans (such as the Pecenegians, the Cumanians and Bulgars), Hungarians—led to the desertion of these fortresses and to a change of the lifestyle of the population that continued to live in this area.

One of the most important monuments is the stone church of Densus, the oldest stone church of Romania. Situated close to the Dacic fortresses and built in the eighth century (or, according to other authors, in the 10th century) using as building materials the stone from the ancient fortresses. The roof is made of stone plates. (See Photo 2.)

People who lived outside the fortresses made sure their homes were well hidden, so that the invaders could not see them while riding whip and spur. Dwellings were therefore buried in the ground, with thick thatched roofs that could easily be concealed in the landscape. (See Photo 3.)

Today the principles according to which these houses were built are back in fashion: thermal loss is reduced as the houses are underground, and the thick thatched roof provide very good thermal performance. (See Photo 4.) A thousand years ago, they represented an affordable means of defense for the peasants in front of migrating warrior populations.

FROM THE MIDDLE AGES TO THE 19TH CENTURY

Romania is a country with forests, therefore wooden structures were always used for buildings. Wood shingles cover the houses, churches, and inns throughout the whole country. Pitched roofs provide a rapid drainage in the geographic areas where rain and snow are common.

Easy to manufacture, easy to install, easy to replace, the wooden shingles were a cheap and effective roofing system. The wood was cut with the pole-axe, through the length of the fiber, thus obtaining long shingles over which water flowed. Wood was cut in winter in the nights with a crescent moon, so that the sap would be scarce, or during a full moon when the sap is equally distributed and the wood would not be exposed to molds and rot. Sometimes shingles were boiled in oil to increase the protection against water penetration.

The shingles were sometimes shaped to provide a tongue-and-groove attachment—and a better sealing of the roof surface. Sometimes the artisans overlapped the shingles in both directions, horizontally and vertically, thus preventing water from penetrating behind the shingles. (See Image 1.)

For dwellings, the wood shingles would be set with a triple head lap, shifted by one-third in both directions to ensure that the water pushed by the wind against the roof would not get beyond the shingles and into the interior space. When the loft or attic was not used for a definite function, two shifted layers were considered enough, as the penetrating water dried out eventually. (See Photo 5.)

IMAGE 1

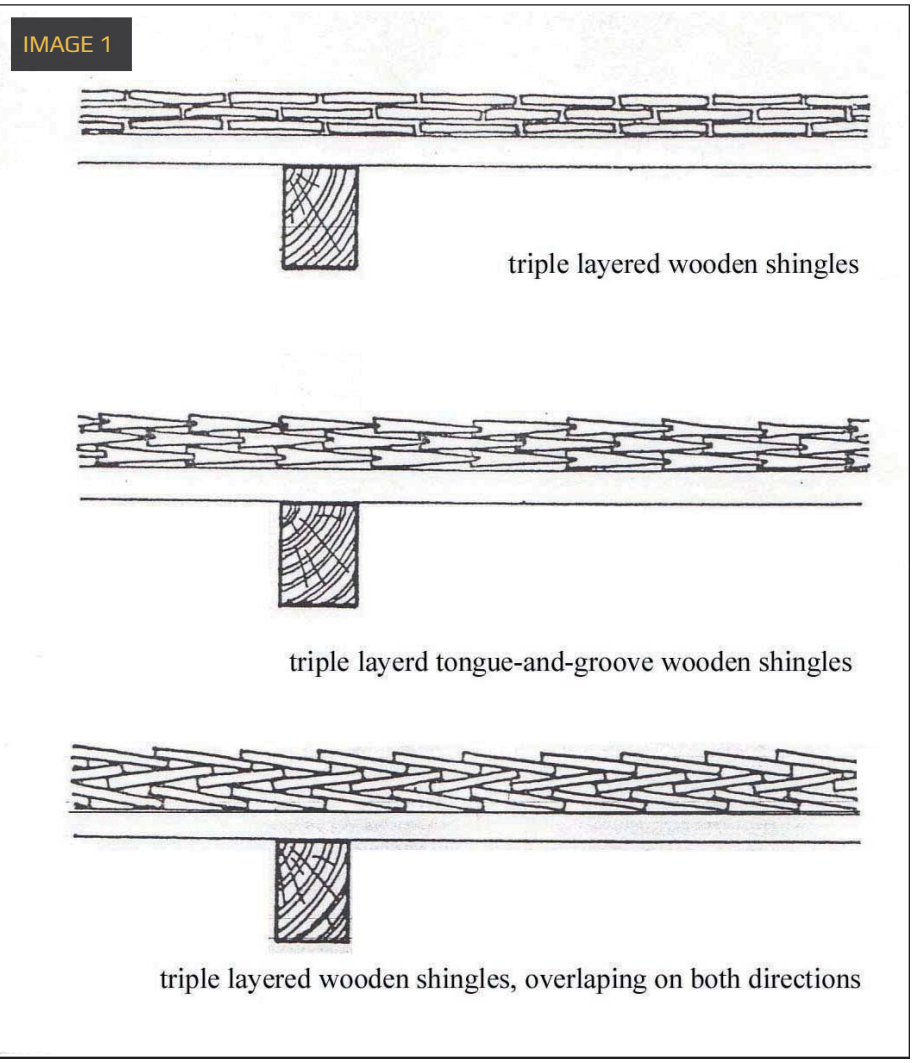


IMAGE 1. SOURCE: COURSE ON FINISHING SYSTEMS, 1989, ALEXANDRU STAN, PROFESSOR OF ARCHITECTURE.

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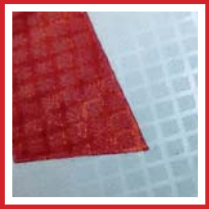

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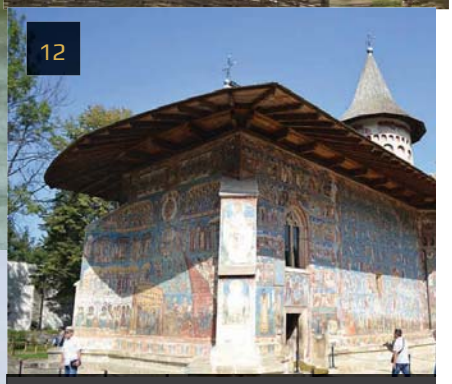

7 Village Museum in Bucharest.

8 This building in Moldova is covered with wooden shingles made of fir, affixed with wooden nails made of yew. Village Museum in Bucharest

9 Houses from the Northern county of Maramureș feature thick thatch roofs. Village Museum, Bucharest

10 A house in Jurilovca, Dobrogea county, with a thatch roof. Village Museum, Bucharest.

11 Wooden church in Șurdești, Maramureș.

12 The Voroneţ Monastery in Moldova has a wooden roof with eaves exteneded to protect the frescoes on its exterior walls.

In Walachia, Moldova and the Northern county of Maramures, the edges of the roof slopes are rounded (Photo 6), while in Transylvania they are straight (Photo 7). It is a matter of tradition, but it is more difficult to accomplish the fan-like distribution while ensuring a good protection against water leakage.

A very interesting solution is the use of wooden shingles made of fir tree, fixed on the laths with wooden nails made of yew. The two types of wood have different densities, so that they react differently to the environmental agents and therefore water does not penetrate behind the shingles. (See Photo 8.)

Straws and thatch are also abundant; therefore, traditionally they were used as roofing materials in the northern part of Romania, in Maramures (Photo 9) as well as in the South, in the Danube Delta (Photo 10). The thickness of the assembly—from 12 to 16 inches—provides not only protection against water leakage but also the thermal insulation of the space beneath the roof.

Speaking about Maramures, few people know that the county holds a record in construction technology: the world's highest wooden churches. Included in the UNESCO patrimony, the church in Surdesti was built in the 18th century. (See Photo 11.) On a stone base, with evergreen oak girders and wooden shingles, it is 236 feet high, with the spire measuring 177 feet. Currently the world record is held by a new wooden church, 246 feet high, in Săpânta, only a few miles away.

The monasteries of Moldova are also included in the UNESCO patrimony. Built between the second half of the 15th century and through the 16th century, they are famous for their painted exterior walls.

The Voronet monastery, built in 1488, is also known as the Eastern Sistine Chapel (although of course the frescoes in the chapel in Rome are on the interior). The 9-foot wooden eaves protected the exterior frescoes through the centuries (Photos 12 and 13). Wooden shingles cover the roof, with mild, rounded, fan-shaped edges.

PHOTO 11: TETCU MIRCEA RARES, CREATIVE COMMONS ATTRIBUTION; PHOTO 12: PHOTO: ROLLY00, CREATIVE COMMONS ATTRIBUTION
ALL OTHERS: ANA-MARIA DABIJA

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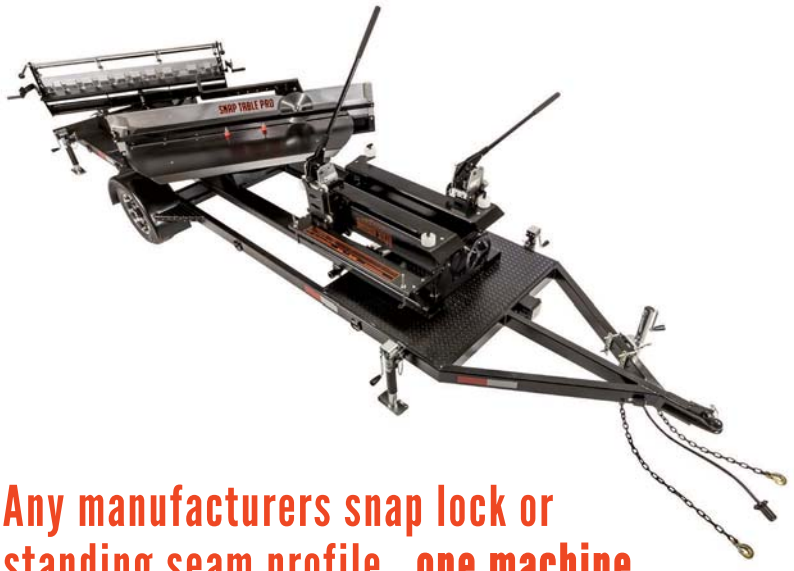

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CERAMIC TILES

Clay is also a common building material. There are several types of roof tiles that are spread throughout the whole territory of Romania.

More expensive than roof systems made from thatch/straw and wood shingles, clay tiles cover castles, fortifications, catholic or protestant churches and dwellings of Transylvania, as well as orthodox Christian churches and dwellings in Walachia and Dobrogea. The geometry of the tiles differs, as well as the pattern, the colors, and the installation procedures.

On the low slopes of the dwellings in Dobrogea, by the sea, a special system of tiles is specific: the barrel tiles. The principle implies a pair of elements: the "scoop" and the "lid."

The geometry of these tiles is of a truncated cone, giving them the possibility to fit one to another and due to the friction of the two, they stay put.

Friction between the tiles and the supporting system (a flat surface of wooden planks) is also the principle of the roof assembly. This is the reason why the slopes of these roofs must be low; otherwise gravity can pull the whole clay covering off.

Low slopes are familiar in parts of the country with less snow and rain, so Dobrogea, a county with milder climate, is fit for the use of these ceramic tiles with this specific installation. (See Photo 14.)

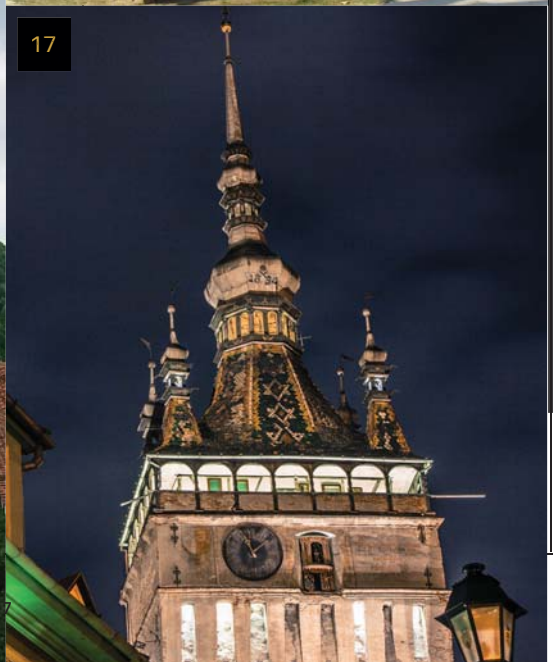
Similar barrel tiles are used in the Balkans to cover the domes of the orthodox churches. They need a continuous surface to be placed on and, due to the shape of the dome, the tiles are "stitched" with wires and fixed with nails onto the supporting surface, usually made of wood. In order to prevent the stagnation of water on the low slopes, a foil protects the wooden surface. This measure is not necessary in the case of the dome roofing.

One of the characteristic of these historic churches is the fact that they are small: genuine architectural jewels, the principle behind the buildings being that God is close to us and His house is at the human scale.

Fish scale roof tiles can be seen in most of the zones of the country where rain and snow are abundant. They represent a solution with a longer life-span than the wood or thatched roofs, providing a different architectural aspect. The clay tile solution is a more expensive roofing system, and it appears on the roofs of the castles, including the Bran Castle, at the gates of Transylvania.

A few words about Bran: it is one of the most visited castles in Romania, as it is attributed to Dracula. However, the historic character Prince Vlad the Impaler never lived here; his citadels were in Bucharest and Targoviste, with the famous (for us) Tower of the Sunset. (See Photo 15.)

Bran castle (Photo 16), as well as the Rasnov fortress, were built by the Teutons, to guard the passages in the mountains from Walachia to



13 The Voroneţ Monastery in Moldova is adorned with exterior frescoes..

14 This house in Dobrogea county features a ceramic tile roof. Village Museum, Bucharest

15 The Sunset (Chindia) Tower in Târgoviște, erected by Vlad the Impaler in the 15th century

16 A view of the inner courtyard of the Bran Castle, 14th century.

17 The Clock Tower in Sighișoara with enameled clay roof tiles

PHOTO 13: ADILENA, CREATIVE COMMONS ATTRIBUTION; PHOTO 15: PHOTO VVSSMMAANN, CREATIVE COMMONS ATTRIBUTION; PHOTO 17: MIHAI RADUCANU
ALL OTHERS: ANA-MARIA DABIJA

18

19

Transylvania.

A combination between the barrel tiles and the fish scales tiles can be found in the 15th century fortified churches of Transylvania: the "scoops" are hooked on the laths, while the "lids" cover two adjacent "scoops." Steeper slopes were carried out with these systems.

The representative buildings—churches and palaces—were provided with more sophisticated roof tiles: enameled and colored, forming patterns and decorations. Enameled clay tiles also adorn the Clock Tower in Sighisoara (Photo 17). Sighisoara is a medieval town in Transylvania, included in the UNESCO patrimony, where Vlad the Impaler was once imprisoned.

The lofts in the traditional Romanian architecture were not used as living spaces; they had utilitarian functions, such as for drying food or preserving materials, and the need to prevent water from penetrating accidentally and in very small quantities was not a preoccupation. It became, however, essential once the loft was transformed into a place to live. The original solution of clay tiles set on laths evolved into a more elaborate one, with a grid of laths disposed on a continuous surface of planks, which were also provided with a water protection barrier.

METAL ROOFING

The use of metal as a building material is rather new, compared to wood, stone and clay, but examples of lead shingles have been found dating back to the 17th century. Small metal shingles, flat metal sheets and corrugated sheets are the common products used in the roofing industry.

Metal shingles are efficient and elegant, as well as expensive. While more common in the early 20th century, they are considered now mostly for restoration of buildings with metal shingled roofs, in Romania as well as abroad, as the speed in execution is lower than in the case of corrugated steel panels, for instance.

In the case of the consolidation and restoration of a famous monument—the old church of Sinaia, built at the end of the 17th century, copper shingles were used, although the original roof seems to have been covered with ceramic tiles. (See Photo 18.)

The new church of the Sinaia monastery was built in the 19th century, between 1842–1846. The copper sheet roofs of the cupolas, as well as the one of the bell tower, have breathtaking decorations in metal. (See Photos 19–20.)

As for developments in the 20th century, maybe that's a story for another day. R

20

18 The old church of the Sinaia Monastery was adorned with a new copper roof.

19 Sinaia Monastery. The Holy Trinity church, built in the 19th century

20 Sinaia Monastery's 19th century Bell Tower

In Part Two of the series "Roofing in Romania: Past and Present," Dr. Ana-Maria Dabija will explore modern architecture and roofing practices in Romania.

PHOTOS: ANA-MARIA DABIJA

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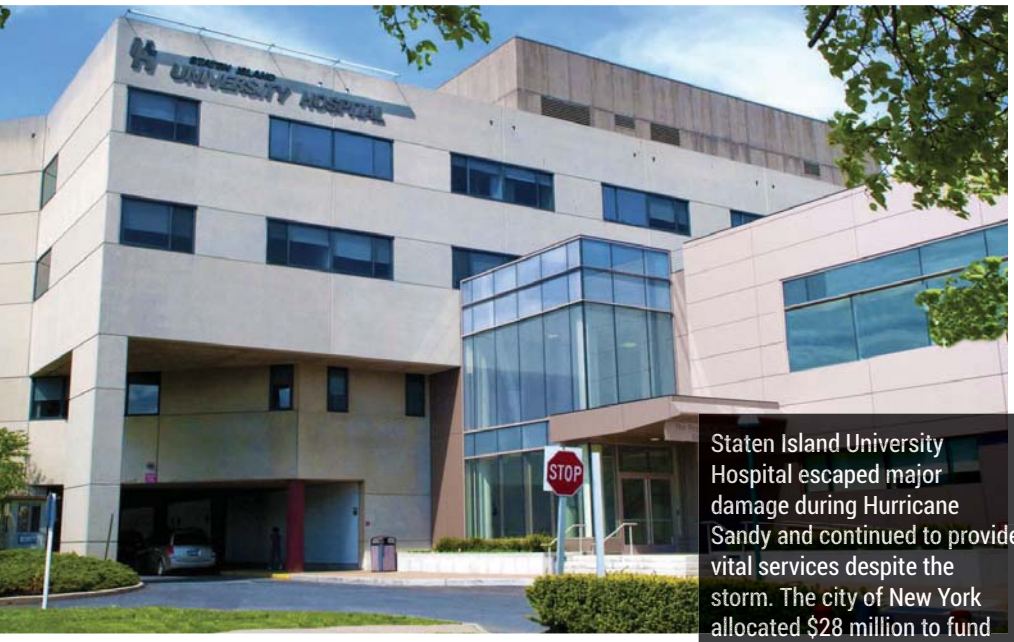


Staten Island University Hospital escaped major damage during Hurricane Sandy and continued to provide vital services despite the storm. The city of New York allocated $28 million to fund the hospital's resiliency plan, and the state contributed an additional $12 million.

Resilience, Resilience, Resilience

Staten Island Hospital Provides a Lesson in Preparing for Future Weather Events

Almost five years ago, Hurricane Sandy bore down on New York City with winds that reached gusts of 100 miles an hour and a storm surge 16 feet above normal that flooded huge parts of the city. Entire neighborhoods lost electricity for several days, the Stock Exchange closed during and immediately after the storm, and scuba divers were called in to assess damage in parts of the city's submerged subway system.

Staten Island, one of New York's five boroughs, was heavily damaged. Its position in New York Harbor, at the intersection of the coastlines of Long Island and New Jersey, leaves the island particularly exposed to storm surge during extreme weather events. A geologist from Woods Hole Oceanographic Institution in Massachusetts described Staten Island as being, "at the end of, basically, a big funnel between New Jersey and New York."

Staten Island University Hospital almost miraculously escaped major damage, despite flood waters coming within inches of it doors. The hospital stayed open during and after Hurricane Sandy, continuing to provide vital services despite the storm. The hospital is home to the largest emergency room on Staten Island, and houses more than one third of the borough's in-patient beds. New York Mayor DeBlasio has called the hospital, "a truly decisive healthcare facility—even more so in times of crisis."

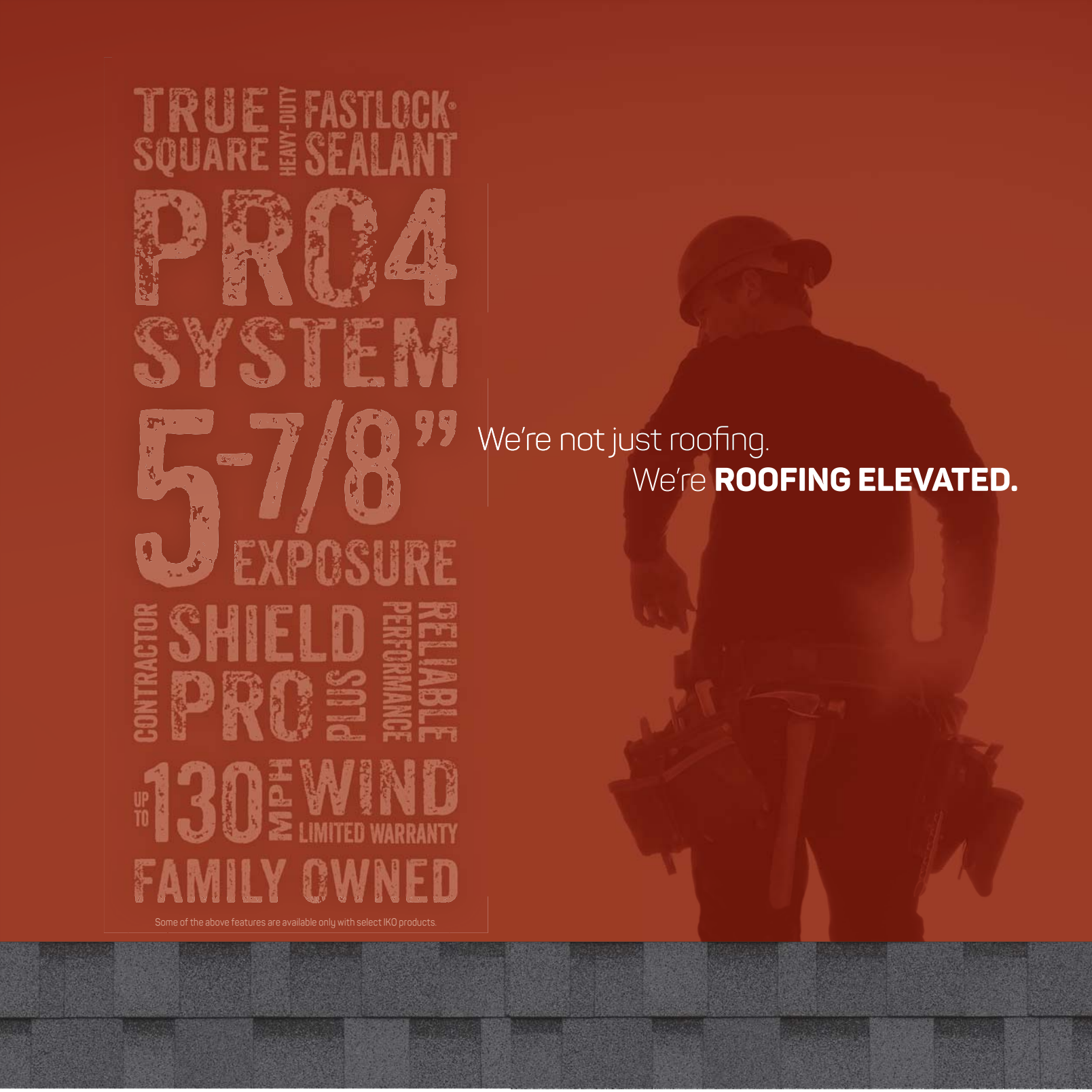
While both hospital and city officials were relieved that the facility had escaped Sandy largely unharmed, the lesson that Sandy delivered was taken to heart: major mitigation efforts were needed if the hospital expected to survive similar storms in the future. With this in mind, the city of New York allocated $28 million to fund the hospital's resiliency plan, with the state kicking in an additional $12 million.

The money is being spent on three major projects to better prepare the hospital for future storms: the elevation of critical building power and mechanical systems, the installation of sanitary holding tanks and backflow prevention, and the installation of major wind resiliency and roofing improvements.

RESILIENT DESIGN

The Staten Island experience, and the plan to upgrade its ability to withstand major weather events, is hardly unique. Nationwide, resilient design has become a major focus of the construction community. Hurricane Sandy certainly intensified the sense of urgency surrounding the need for resilience. But well before that, Hurricane Katrina, in 2005, provided a tragic case study on the fragility of seemingly stable structures, as the storm brought a small, poor southern city to the brink of chaos and devastated entire neighborhoods. While these two hurricanes drew national and international attention, communities throughout the country have also been dealing with frequent, erratic and intense weather

PHOTO: STATEN ISLAND UNIVERSITY HOSPITAL



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events that disrupted daily life, resulting in economic losses and, all too often, the loss of human life. These emergencies may include catastrophic natural disasters, such as hurricanes, earthquakes, sinkholes, fires, floods, tornadoes, hailstorms, and volcanic activity. They also refer to man-made events such as acts of terrorism, release of radioactive materials or other toxic waste, wildfires and hazardous material spills.

The focus, to a certain degree, is on upgrading structures that have been damaged in natural disasters. But even more, architects and building owners are focusing on building resilience into the fabric of a structure to mitigate the impact of future devastating weather events. And, as with the Staten Island Hospital, the roof is getting new attention as an important component of a truly resilient structure.

So, what is resilience, how is it defined, and why is it important to buildings in differing climates facing unique weather events? The Department of Homeland Security defines resilience as "the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies." The key words here are "adapt" and "rapidly recover." In other words, resilience is measured in a structure's ability to quickly return to normal after a damaging event. And the resilience of the roofing system, an essential element in protecting the integrity of a building, is a critical component in rebounding quickly. In addition, a robust roofing system can provide a critical evacuation path in an emergency, and can help maintain a habitable temperature in a building in case of loss of power.

According to a Resilience Task Force convened by the EPDM Roofing Association (ERA), two factors determine the resiliency of a roofing system: durable components and a robust design. Durable components are characterized by:

- Outstanding weathering characteristics in all climates (UV resistance, and the ability to withstand extreme heat and cold).
- Ease of maintenance and repair.
- Excellent impact resistance.
- Ability to withstand moderate movement cycles without fatigue.
- Good fire resistance (low combustibility) and basic chemical resistance.

A robust design that will enhance the resiliency of a roofing system should incorporate:

- Redundancy in the form of a back-up system and/or waterproofing layer.
- The ability to resist extreme weather events, climate change or change in building use.
- Excellent wind uplift resistance, but most importantly multiple cycling to the limits of its adhesion.
- Easily repaired with common tools and readily accessible materials.

MORE INFORMATION ON RESILIENT ROOFING

The Resilience Task Force, working with the ERA staff, is also responding to the heightened interest in and concern over the resilience of the built environment by launching EpdmTheResilientRoof.org. The new website adds context to the information about EPDM products by providing a clearinghouse of sources about resilience, as well as an up-to-date roster of recent articles, blog posts, statements of professional organizations and other pertinent information about resilience.

"This new website takes our commitment to the construction industry and to our customers to a new level. Our mission is to provide up-to-date science-based information about our products. Resilience is an emerging need, and we want to be the go-to source for architects, specifiers, building owners and contractors who want to ensure that their construction can withstand extreme events," said Mike DuCharme, Chairman of ERA.

EPDM and Resiliency

The Resilience Task Force also conducted extensive fact finding to itemize the specific attributes of EPDM membrane that make it a uniquely valuable component of a resilient of a roofing system:

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- EPDM offers excellent impact resistance to hail, particularly when aged.
- EPDM is resistant to extreme UV exposure and heat.
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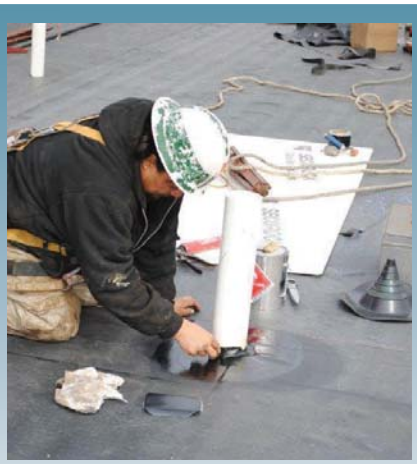
- EPDM can be configured in many roofing assemblies, including below-grade and between-slab applications.

For further information, visit EPDMTheResilientRoof.com.



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DETAILS

WRITTEN BY **MICHAEL RUSSO**

Hot-Air Welding Done Right

Welding Thermoplastic Seams Under Changing Environmental Conditions

The robotic welder's speed, heat output and pressure should be properly programmed before the welding process begins.

PHOTO:LEISTER

Today's most powerful hot-air welders for overlap welding of thermoplastic membranes are advertised to achieve speeds of up to 18 meters (59 feet) per minute. That's fast enough to quickly ruin a roofing contractor's day.

These robotic welders are digitally monitored to achieve consistent overlap welding performance, but they cannot adapt to changing environmental conditions automatically. It's the contractor's job to monitor and assess seam quality before the base seam is welded and when ambient temperatures or other factors potentially influence welding performance.

Successful hot-air welding requires the use of specialized, properly maintained and adjusted equipment operated by experienced personnel familiar with hot-air welding techniques. Achieving consistent welds is a function of ensuring that the roofing membrane surface is clean and prepared for heat welding, conducting test welds to determine proper equipment settings, and evaluating weld quality after welding has been completed.

Setting up hot-air robotic welders properly is the key to having a properly installed thermoplastic roof, and performing test welds is one of the most important steps. Making appropriate adjustments before the welding process begins ensures that the correct combination of welder speed, heat output and pressure is programmed into the robotic welder.

For most roofing professionals, these procedures have been firmly established in the minds of their crews and equipment operators through education and field training. But let's not forget that Murphy's Law often rules on both large and small low-slope roofing projects. The frightening reality about using robotic welders is if they are set-up incorrectly or environmental conditions change, the applicator may weld thousands of feet of non-spec seam before anyone even bothers to check. If you probe for voids at the end of the day, it is probably too late.

If serious problems are discovered, the applicator must strip in a new weld via adhesive, cover tape, or heat welding, depending on what the membrane manufacturer will allow. If seams must be re-welded, the operator has to create not one, but two robotic welds on each side of the cover strip. The sheet will also need to be cleaned and re-conditioned no matter what method is used.

Can these errors be corrected? Absolutely. Except now the crew is in a real hurry because the roofer is working on his own time, and application errors tend to snowball under these conditions.

REALITY CHECK

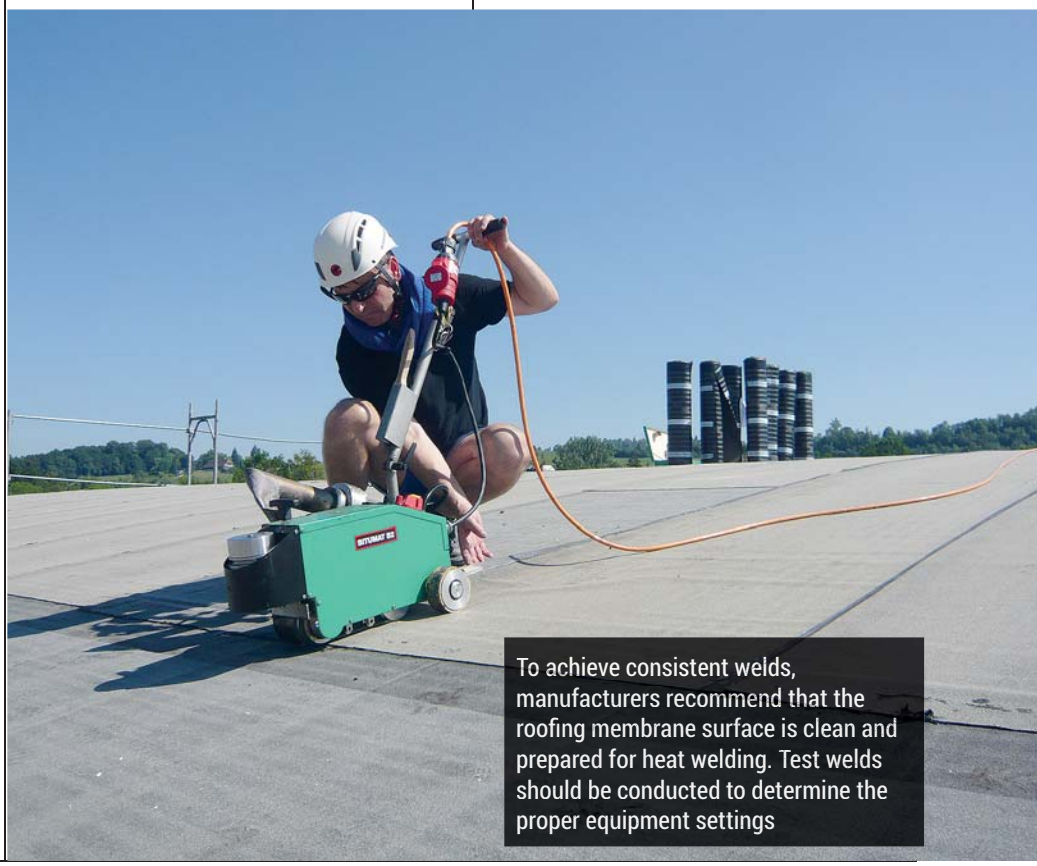
What goes on in the field is sometimes quite different than what one sees when hot-air welding thermoplastics under an expert's supervision.

To support this view, we asked four field service reps, each with a minimum of 35 years of roofing experience, to comment. The most senior "tech" has worked for six different thermoplastic membrane manufacturers in his career. Their names shall remain anonymous, but this writer will be happy to put readers in touch with them upon request.

So, let's welcome Christian, Dave, Mark and Walter, and get straight to the point: Is the average roofing crew diligent enough when it comes to properly testing welds using industry best practices?

"I would say 'probably not," exclaims Walter. Dave just shakes his head as his colleague Mark adds, "I would have to say 'no.'"

Considering the generally laudable performance of thermoplastic membranes over the last decade or so, we must interpret our experts' opinions as suggesting the need for further improvement in hot-air welding techniques. Hence, the purpose of this article.

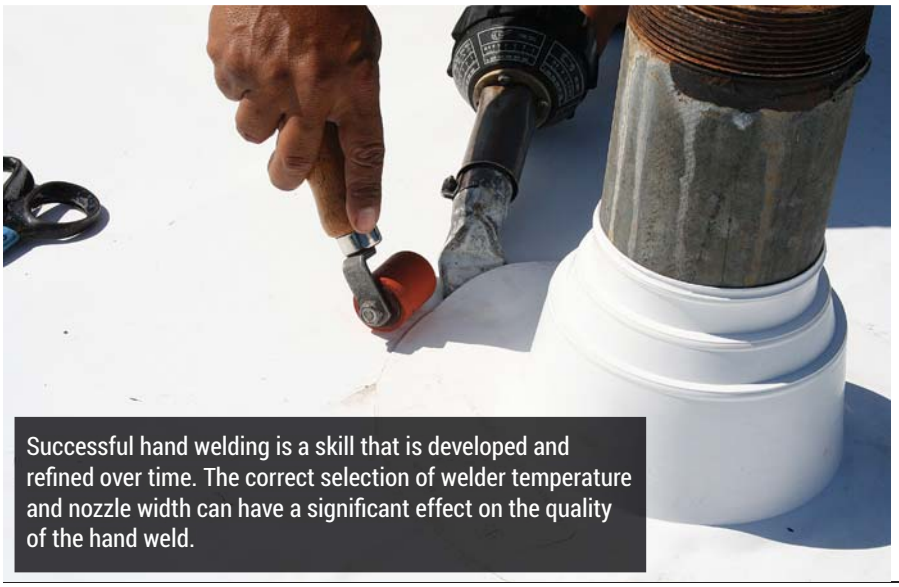


To achieve consistent welds, manufacturers recommend that the roofing membrane surface is clean and prepared for heat welding. Test welds should be conducted to determine the proper equipment settings

PHOTO:LEISTER

Highly experienced field service personnel generally agree that field welding performance has improved over the years and programmable robotic welders have helped.

The ability to achieve satisfactory welds at various angles and in tight spots depends mostly on experience and training. The problem for roofing contractors is finding and keeping this skilled labor.



Successful hand welding is a skill that is developed and refined over time. The correct selection of welder temperature and nozzle width can have a significant effect on the quality of the hand weld.

"There are a few outstanding issues causing bad welds," says Walter. "These include welding over dirty or contaminated membranes; improper equipment setup; using crews with inadequate training; and knowing the difference between the weldability of various manufacturers' membranes."

Welding equipment consists of three main components: the power supply, the hot air welder (either automatic or hand-held), and the extension cord. A stable power supply of adequate wattage and consistent voltage is critical to obtaining consistent hot air welds and to prevent damage to the welder.

The use of a contractor-supplied portable generator is recommended, although house-supplied power may be acceptable. Relying on power sources that are used for other equipment that cycle on and off is not recommended. Power surges and/or disruptions and insufficient power may also impact welding quality. Proper maintenance of welding equipment is also of obvious importance.

"Contractors seem to never have enough power on the roof," observes Mark. "The more consistent your power is, the more consistent your welds will be. Too many times, I've seen too many tools (hand guns, auto welder, screw guns and a RhinoBond machine) plugged into one generator."

Generator-induced challenges on the jobsite are going to arise, agrees Christian. "But at least today there is more experience in understanding, dealing with, and ultimately preventing these issues," he says.

Most TPO and PVC membrane suppliers also recommend using the latest automatic welding equipment, which provides improved control of speed, temperature and pressure. Our four experts generally agree that field welding performance has improved over the years and programmable robotic welders have helped. They also point to proper training and experience as crucial factors.

For Mark, it's all about the applicator being familiar with his or her equipment. "The fan motors on some of the newer welders are larger, which means your

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Setting up hot-air robotic welders properly is the key to having a properly installed thermoplastic roof, and performing test welds is one of the most important steps.

gun is hotter," he says. "Other hand-held welders don't blow as much air. This means if an applicator picks up a new hand gun, there will be a learning curve to deal with. Ideally, this is addressed before the real welding begins."

Education should always include safety training, notes Dave. "I feel that safety is job one and like the fact that there is a welder available that keeps you from having to walk backward and possibly off the roof," he says.

What's more, successful hand welding is a skill that involves individual technique, normally developed and refined over time. This means that operators should be proficient in different nozzle configurations, because the correct selection of welder temperature and nozzle width can have a significant effect on the quality of the hand weld.

"Not all guns run at the same temperature at the same heat setting, so I tell contractors to number their guns," adds Mark.

Christian agrees that education and communication between supervisors and crews can be vital because robotic welder performance varies by model and environmental conditions.

When welding in cold weather, the thermoplastic membrane needs to be "pre-heated" before the weld is compressed. While an automatic welder has holes in the nozzle that pre-heat the membrane, hand guns do not.

"When I watch most installers weld, they hold the roller too close to the nozzle, which does not allow the membrane to pre-heat," says Mark. "I suggest they

keep the roller at least 1 or 2 inches away from the tip."

The ability to achieve satisfactory welds with the hot-air welder being held in either hand facilitates welding at various angles and in tight spots. Because few installers are ambidextrous by nature, it's mostly experience with these types of details that counts. And therein lays a major problem for roofing contractors in general—finding and keeping qualified labor.

"Just putting a probe to a seam will not ensure against leaks, especially in colder weather where roofs do not 'probe out' as well," says Mark. "It's the training of installers that is most critical to the watertightness of the roofing system."

When hand-welding with a roller, finger pressure is often used to place and "tack" the upper piece of membrane into position. However, a hard silicone roller must always be used for final welding. Tack-welded field seams will not pass inspection.

The membrane is typically heat-welded together using the "two-pass" method. The installer welds from the interior of the seam on the first pass and finishes the weld with the second pass.

The nozzle is placed between the two layers of membrane, and the roller is used to compress the membrane and create the bond. Ideally, welds should be continuous, without voids or partial welds.

Sounds simple, doesn't it? It can be, unless your body is contorted around a raised pipeline, it's 100 degrees Fahrenheit in the shade, and a hot wind is picking up all kinds of potential seam contaminants and blowing them in your direction. Defects are usually corrected by heat welding another layer of reinforced membrane over the deficient weld area the same day, assuming the interior of the seam has not been contaminated.

EQUIPMENT SETUP AND TEST WELDING

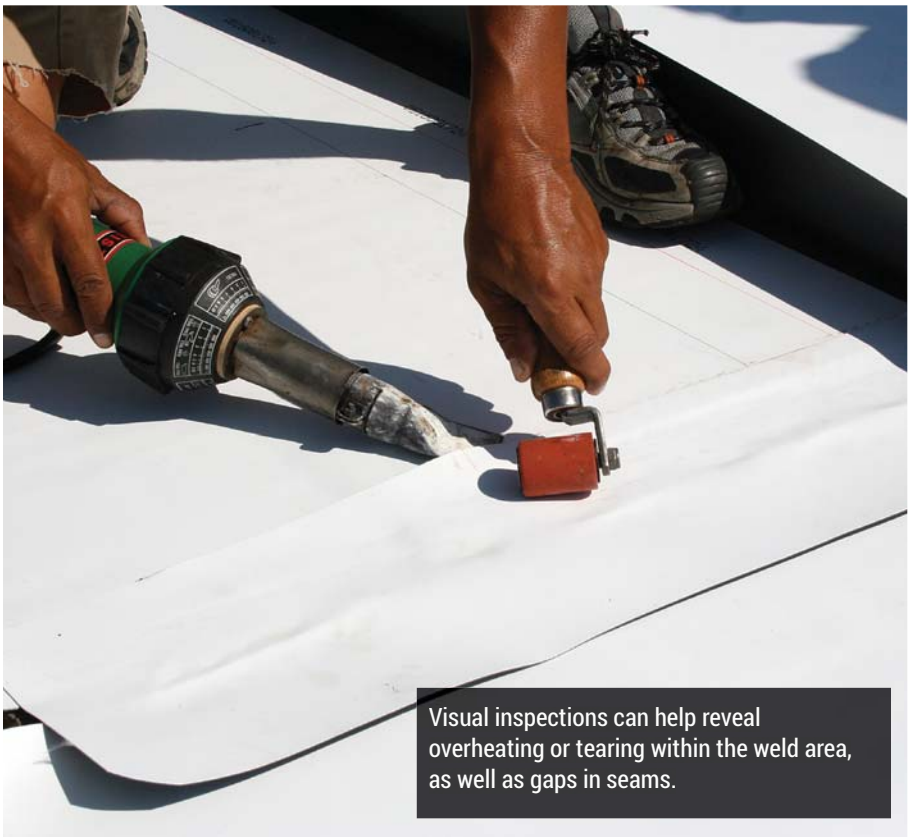
Roofing professionals know all about the importance of setting up robotic welders and performing test welds before going into action in the morning. However, membrane manufacturers would like to see crews test weld at the beginning of every work period, including when returning from lunch in the afternoon. They also recommend testing when there's a significant change in the weather, including changes in air temperature, wind speed, cloud cover, etc.

Lower air temperatures and overcast skies will generally require a slower speed than would be required with higher temperatures and sunny skies.

For initial automatic hot-air welder settings, one expert recommends the formula below. It is not foolproof, but

Experts recommend that crews test welds at the beginning of every work period and whenever there is a significant change in the weather.

PHOTOS: GAF



Visual inspections can help reveal overheating or tearing within the weld area, as well as gaps in seams.

is a good starting point under average weather conditions:

SPEED FORMULA:
ambient temp/10 + 2=FPM (feet per minute).
For example: 80/10 + 2=10 FPM.

"If an applicator anticipates a large swing in ambient temperature from hot to cold—think Chicago in fall—he can set the welder closer to the 1.5-inch weld setting," says Dave. "This way, as the temperature drops the weld will stay within the manufacturer's required seam width parameters."

Typically, membrane manufacturers want to see delamination of a test seam of a least 1 inch but not more than 1.5 inches.

Dave estimates that a conscientious contractor will perform at least two test welds per day. "In a worst-case scenario, they realize that what worked yesterday might not work today," he says.

Many factors will affect welder settings, including membrane type (TPO, PVC) and thickness.

"TPO and PVC weld differently," says Dave. "You want to be running the welder hotter with PVC and see smoke and bleed-out at the edge of the seam. If you smoke or bleed-out TPO, you've overheated the sheet and pretty much compromised the weld."

To avoid that situation, test welding is required using "bag fresh" membrane approximately 18 inches long. For full-size automatic welders, one membrane manufacturer suggests using the scenario below, keeping in mind Mark's comment that new equipment may run faster or hotter than anticipated.

EXAMPLE SCENARIO:

Begin by setting the welder speed at 10 FPM and the temperature at 600°F, and do a test weld. Bump the temperature up to 700°F while keeping the welder speed at 10 FPM and perform another test weld. Continue with this process in 100°F increments, keeping the speed the same until the machine is maxed out (typically 1,148°F) and find the weld window. Then set up the machine to the middle of that weld window.

Finally, weld the two 18-inch pieces of membrane together at the agreed-up setting and allow the membrane to cool for at least 10 minutes. Cut 1-inch-wide strips across the 18-inch welded membrane and test each weld by applying enough pressure to cause the seam to peel apart.

An acceptable weld will fail by exposing the scrim reinforcement, otherwise called a "film tearing bond." A partial weld will fail in a peel test by a partial separation between the two layers of the membrane. Finally, a "cold" or "false" weld will fail by a full separation between the two layers of membrane.

"You can put the sample on an Instron machine (in a test facility) for greater precision," says Dave, "but a properly-performed peel test conducted on the roof is usually satisfactory.

In addition, a visual inspection can determine adequacy of weld width; presence of fasteners and plates within the weld area; overheating or tearing within the weld area; indications of special sealing at T-joints; and, serious under-heating or skipping of seam areas.

Physical probing involves the use of a blunt pointed seam probe such as a dulled cotter pin puller. The weld must be allowed to cool before being probed. The probe tool is pressed with some force against the weld edge and drawn along the seam. The probe tool will enter into the heat weld area between the two layers of membrane at locations where the seams are partially welded and a "void" is found. The probe tool can then be used to follow the problematic seam area until a solid (spec) weld is encountered.

The roof inspector may also ask to see test welds and conduct probes and visual observation, but most manufacturers avoid destructive testing when monitoring seam strength on a roof install.

"Welding performance over the years has improved as a result of active communication and training," concludes Christian. "In particular, training on the welding window and machine set-up have been the drivers of improved welding performance." R

PHOTOS: GAF

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WRITTEN BY **CHRIS KING**

The Peach State Way

Planning and Teamwork Are Essential in Tackling Retail Project

The aerial view at left shows the five buildings of the Gaffney Premium Outlets mall. Peach State Roofing re-roofed the two buildings on the left this year, after completing work on the building at the far right last year.

Headquartered in Atlanta, Peach State Roofing Inc. has 15 branches and covers clients across the nation. The company specializes in commercial and industrial roofing, and excels at large-scale single-ply jobs. The goal of every branch is to provide the same level of service for clients no matter where they are in the country, as exemplified by a recent project at a large retail mall in South Carolina.

Peach State's Charlotte branch is located in Rock Hill, S.C. The company has re-roofed three of the five roofs at Gaffney Premium Outlets in Gaffney, S.C., including two roofs completed this year in just two weeks. Anthony Wilkerson, the branch manager, and Blake Wideman, strategic accounts, shared their insights on the project.

Peach State's Charlotte branch focuses primarily on re-roofing, service and maintenance work for existing customers and property managers. Most of the company's work involves TPO, EPDM and PVC, but crews have to be able to handle almost every type of system on the market. "If there is a hotel with some shingles or metal on it, we want to be able to complete every facet of the job, but most of our work revolves around single-ply roofing," Wilkerson states. "We are certified with every major single-ply manufacturer."

According to Wilkerson and Wideman, Peach State's strength lies in building relationships with its clients by providing quality workmanship and excellent customer service. "We do that through our project management, our expertise and our training," says Wilkerson. "We put a lot into training our employees so that they know how to do the technical details that the manufacturers are asking for."

Wilkerson believes Peach State offers the best of both worlds—flexibility at each branch and the depth of knowledge from the large corporate organization. "We're independent, but I work with the corporate office every day," says Wilkerson. "We have local representation around the country, but at the same time we have that teamwork, so you're still getting the same quality from each office that you're getting from the corporate office. We try to be as close to

PHOTOS: PEACH STATE ROOFING INC.

the way Atlanta does things—the Peach State Way—all across board, all over the country."

LANDING A BIG ONE

In the case of the recent project at Gaffney Premium Outlets, the work was an outgrowth of the company's previous successful projects, including a re-roofing job at the same complex last year. "Our bid was what they were looking for," Wideman says. "We gave them the price they were looking for and the quality they wanted. That's how we were awarded this project."

The mall is made up of five buildings, and the company re-roofed two this year totaling approximately 75,400 square feet. Peach State installed a mechanically attached TPO system from Firestone over the existing modified bitumen roof system. "We came up with a plan to cover the old roof with a half-inch high-density cover board," Wilkerson says. "Then we mechanically attached a Firestone 60-mil white TPO system over the cover board."

The system was chosen for its durability, according to Wilkerson. "They were looking for a long-term solution," he says. "We went with a re-cover because it was more cost-effective for their budget, but we could still offer them the same warranty and the same guarantee that the system would be just as effective if they had torn the old system off and started from scratch."

The company used 8-foot rolls of TPO on the project for several reasons. "We went with 8-foot rolls on this project because it was easier to apply the rolls," notes Wilkerson. "They are not as heavy as the 10-foot rolls. It's easier to let the rolls relax when you roll them out and easier to keep them tight when you are securing them to the deck."

Fasteners were installed every 12 inches on center at the edge of the TPO sheets, and the next sheet was heat welded over the top of the screws and plates, and then mechanically fastened at the other end.

Extra care had to be taken with the details, especially walls and curbs. "We tore all of the old membrane off the curbs and off the walls, and we used bonding adhesive to go up the walls," Wilkerson explains.

At the walls, the field sheets were run up the wall 12 inches and mechanically attached. "We adhere a sheet to the wall, and we heat weld that to the field sheet," explains Wilkerson, "At the top of that, we use a water cutoff behind the sheet, and we use a termination bar. The termination bar is installed 12 inches on center, and then we use a sealant at the top of the termination bar. We came back with a surface-mount counterflashing, which basically just goes over the top of the termination bar. It has a little kick-out on it, so once that's attached, it gives you double protection where your membrane is terminated."

Curbs were handled in a similar fashion. "With the curbs, you run the field sheet right up to the curb, and then you mechanically attach it 12 inches on center," Wilkerson notes. "Then we use bonding adhesive to install a piece of membrane on each side of the curb. We don't do one piece and wrap it all the way around. We use four separate pieces, and we adhere them to the curb. Then we heat weld those pieces to the field sheet. For the curbs, we use a flashing that goes underneath the curb itself, and we attach that 12 inches on center all the way around. That lets the water shed over the HVAC unit and then down onto the membrane past the flashing, so there's nowhere for the water to penetrate."

MEETING THE CHALLENGES

The sheer size of the project was a challenge, but Peach State is used to handling large-scale projects. Logistics and scheduling were also demanding due to customer activity at the mall. "It was a good project for us, but I'd say one of the biggest challenges was that the mall remained open the whole time we were doing the roof," Wilkerson says. "We had to check in with each tenant in every building to make sure everything was OK from the night before."

The project called for roofing specific sections each day to make sure the roof stayed watertight at all times. "We sealed the roof up every night 100 percent, so if it rained in the evening, it had to be like we had never been up there," Wilkerson recalls. "If we took three air conditioners apart in a section that we did one day, at night before those guys went home the air conditioners were wrapped back up, the flashing was put back around the air conditioner and all of the edges of the roof were sealed to the old roof so everything was watertight."

Safety was also a concern, especially with pedestrian traffic below. "We had to make sure all of our safety procedures were in place for our crews and for the members of the public going in and out of the doors," Wilkerson says.

The crews used safety lines at the perimeter, and anyone outside the safety lines had to be tied off at all times. "We had to make sure we had a man strictly watching out for the safety of the crews. You have to make sure any little pieces of membrane don't blow off the roof. You have to make sure all of that is being cleaned up steadily as the job is going on. You don't want the public to see anything except the flag stands on the roof."

Extra care had to be taken with the details at walls and curbs. Bonding adhesive was used to install a piece of membrane on each side of the curb. Then those pieces were heat welded to the field sheet.

Staging was complicated, but luckily the jobsite offered ample space for trucks and cranes to be moved between the buildings. The key was to tackle high-traffic areas early in the morning and move to less busy spots as the day wore on.

Proper staging is crucial to jobsite efficiency, notes Wilkerson. "We like to stage the material as we put it on so we're not dragging it across the roof," he says. "It's all right there for them, laid out as they go."

Support and teamwork are essential up and down the line. "We work really well as a team, so if anyone has any small questions, they can ask the superintendent and call me, so we can make sure we take care of it the Peach State Way."

FLEXING THEIR MUSCLES

The project went off without a hitch, says Wilkerson. The mall traffic was never disrupted. "Not one leak, not one complaint on this project," he says. "Our project management on this project was spot on. Our superintendents held their own out there. And our guys—it's the attention to quality and all the time we put into training our guys that allows them to do this and make it look almost seamless. It's one of those situations where you want it to look easy while you're doing it, but when you're in the mix of it and you're trying to get it all done, it's not as easy as it looks."

Customer service was crucial. It wasn't just the property management company that had to be kept informed—it was each individual retailer in the building. "There were so many people to deal with," notes Wideman. "Every manager of each of those units had to be kept informed of the process. Roofing is not as hard as people think, but keeping up with the owners, keeping people happy, letting people know ahead of time what's going on is a big challenge. We had to make friends with everyone ahead of time and let them know where to call with any questions."

"The project, as far as roofing goes, was pretty straightforward," concludes Wilkerson. "The key is to keep up with everyone on a daily basis and let them know what's going on so if there is a small problem, it doesn't keep brewing until it's a big problem." R

Peach State installed a mechanically attached TPO system from Firestone over the existing modified bitumen roof system on two buildings totaling approximately 75,400 square feet.

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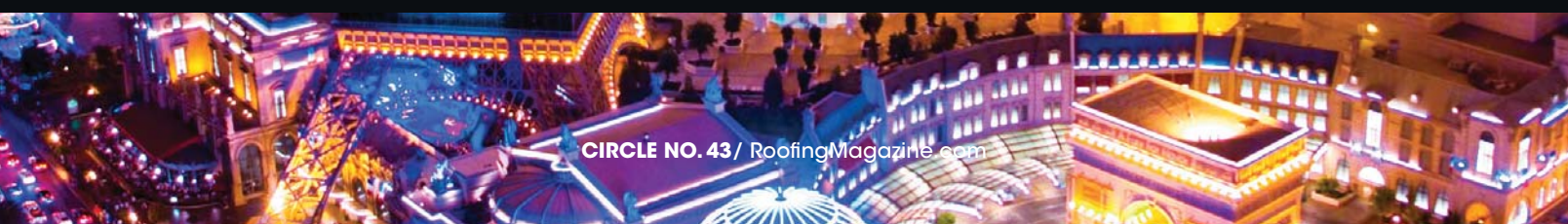


WRITTEN BY **KATHLEEN ZIPRIK**

Synthetic Shake Roof Helps Hotel Fit in Mixed-Use Area of Biltmore Estate

NESTLED ON 8,000 acres of pristine land in the mountains of western North Carolina, Biltmore welcomes more than a million visitors each year. Facing increased demand for additional on-site lodging, the new Village Hotel on Biltmore Estate was commissioned.

The task of designing the four-story, 130,000 square foot hotel to ensure it fit comfortably within the Antler Hill Village and Winery area of the estate fell to PGAV Destinations. Antler Hill Village was intended to look like a series of buildings that belonged together but maintain an individual identity through the use of different roofing materials and trim treatments, says Emily Pelcak, director of practice and innovation for PGAV Destinations. With the Village Hotel, we wanted to continue that story. We specified DaVinci Roofscapes synthetic shake roofing to complement the general aesthetics of the area but also to create a distinctive personality for the hotel.

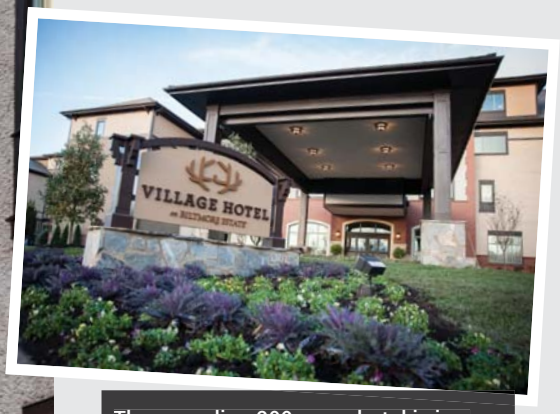
VILLAGE HOTEL
BILTMORE ESTATE
ASHEVILLE, N.C.

The sprawling 209-room hotel is tucked next to restaurants, shops and a winery that all have real or simulated shake roofing. Each of the structures has a natural, rustic feeling, inspired by the eclectic mix of cottages and farm homes original to the estate that opened in 1895 belonging to George Vanderbilt.

The look of the DaVinci shake roofing is convincing as a shake shingle, which is a traditional building material in western North Carolina, says Pelcak. Their ability to create unique blends so the hotel could have subtle color shifts across the building roof was a key

PHOTOS: THE BILTMORE COMPANY

The four-story, 130,000-square-foot hotel was designed to ensure it fit comfortably within the Antler Hill Village and Winery area of the Biltmore Estate.



The sprawling 209-room hotel is in a complex with restaurants, shops and a winery. Each of the structures has a natural, rustic feeling, complemented by real or synthetic shake roofing.

reason the DaVinci shake roofing was specified.

To ensure a distinctive look to the roof, Pelcak and her team worked with DaVinci to gain samples of multiple color blends of Bellaforté Shake tiles. The final decision was to create and install three unique color blends with the predominant colors including a range of Tahoe colors (Light, Medium Light, Medium and Dark), plus Dark Chesapeake.

The color selection was an arduous process since we wanted a subtle variation across the roof to blend with the adjacent existing structures and complement the main exterior facade treatment, says Pelcak. We're proud of this project and pleased that The Biltmore Company is happy with the look and performance of the DaVinci product. Based on their feedback, we may specify these tiles again on future projects throughout the estate.

ROOF REPORT

With the design work complete, the installation task for the massive roof system fell to Benton Roofing. From start to finish, the project took nine months to complete, with 45 days dedicated to installation of the synthetic Bellaforté Shake roof.

The multiple roof lines on the project give the hotel an appealing look, says Caleb Benton, president and owner of Benton Roofing. The project went smoothly and the roofing material was easy to install.

These roofing tiles are the perfect fit for this hotel since they're impact- and fire-resistant, plus they're basically maintenance-free. This was our first time installing DaVinci products and we were impressed.

Although the Asheville area is not known for large amounts of snowfalls, the hotel designers took extra caution to specify snow guards be installed on the roof in key public areas. Manufactured by Rocky Mountain Snow Guards, the snow guards on the Village Hotel help prevent any collected snow from sliding off the roof in large pieces onto walkways.

Now open for more than a year, the Village Hotel provides easy access for visitors to the estate's gardens, 10 shops, 15 dining venues, winery, equestrian center and outdoor activities. The main feature of the estate, Biltmore House, has 250 rooms with tours available daily. R

The Whole Enchilada

ROOFING CONTRACTORS often find themselves tackling re-roofs at shopping centers in piece-meal fashion, doing sections over the years as the budget allows. When property manager Southern Management and Development decided to remodel the entire Southgate Shopping Center in Sebring, Fla., in conjunction with Publix Markets' replacement of their existing store at the location, they looked to Advanced Roofing to get the job done.

SOUTHGATE SHOPPING CENTER
SEBRING, FLORIDA

TEAM

ROOFING CONTRACTOR:
Advanced Roofing Inc.
Tampa, Fla.

CONSULTANT:
CBA Roof Consulting, LLC,
Lake Worth, Fla.

ROOF SYSTEM MANUFACTURER AND TECHNICAL SUPPORT:
Johns Manville,
Denver

The scope of work included re-roofing three large sections of the retail plaza and a drugstore on the property. The roofing portions totaled 79,556 square feet

ROOF SYSTEM

The roof specified was a two-ply modified bitumen system from Johns Manville. In the three large sections of the plaza, the existing built-up roof was completely torn off, while the drugstore was a re-cover project, notes Andrew Vik, estimator and project manager with Advanced Roofing's Tampa branch, which operates under branch manager Michael Landolfi.

Roofing work started in November 2016 and was completed in February 2017. After the existing roof was removed, crews installed 2-inch polyiso to the steel deck. "We mechanically fastened that with a half-inch USG SecuRock cover board through the steel deck," notes Vik. "The two plies of modified bitumen were then torch applied, a smooth base sheet and a white granulated cap sheet."

On the drugstore, the roof was vacuumed, and the cover board and two plies were installed over the top of the old roof system.

In addition to the roofing scope, Advanced Roofing's HVAC division installed and removed heating and air conditioning units and replaced some obstructive ductwork. "We had our own HVAC people working with our roofing crews, so it was easy to coordinate everything," notes Vik. "We had HVAC installations on three of the buildings, and we remounted existing units on two of the buildings. There was also a lot of demolition on the south building, as there were several derelict units that had been sitting there for quite some time. Those had to be hoisted off there and taken out."

A CHALLENGING PROJECT

Logistics are often a challenge with a shopping center that remains open to the public, notes Vik. "You have to load and unload multiple levels of the roof at different times," he says. "Customer relations is also a challenge; you have to keep everyone happy and ask a lot of questions. The construction manager has to do a lot of P.R. when he's there."

Demolition portions of the project were done at night and application during the day, so business at the mall was never disrupted. Traffic in the

PHOTOS: ADVANCED ROOFING INC.

parking area was also a key concern. "Setup areas had to be barricaded and marked off while we were loading and unloading," Vik says. "There was even a drive-under bridge connecting two buildings that had to be re-roofed, so we always had to be mindful of people below."

Parapet walls did not surround all portions of the roof, so safety precautions included a safety perimeter; employees outside the perimeter had to be harnessed and tied off to a portable fall protection anchor system by Raptor.

The project went off without a hitch, according to Vik. "The mall was 100 percent open during the entire project," he says. "Things went very smoothly—especially for everything that was involved. One of our mottoes is, 'The harder the job, the better.' We like a challenge. We take on a lot of projects other companies shy away from."

The keys to his company's success are coordination and versatility, states Vik. "We do it all," he says. "We didn't have to get anybody from outside the company to work on the project. We did all the roofing, all of the HVAC, and all of the hoisting was done in-house. We've also got lightning protection in-house, and we have a solar division. We have a great team. Everyone does their part to get the bids out and get the jobs done. It's the best team I've ever worked with." R

Flagship Store Is Topped with Award-Winning Metal Roof

MARK ANDOL is the owner and founder of General Welding and Fabricating, with locations in Elma and Rochester, N.Y. That business, which manufactured structural and decorative steel components for this store, has been operating since 1989. When the recession hit almost 10 years ago, Andol lost much of his business to companies located overseas, forcing him to cut his workforce to half its size. At that point, he began envisioning a store that would only carry products that are 100 percent American made, to help grow manufacturing within the United States. Andol's vision became a reality in 2010 when he opened the doors to the first Made in America store in Elma.

ROOF REPORT

The mission of the Made in America Store is to create and save jobs in the United States by increasing American manufacturing. By installing ATAS' Dutch Seam metal roofing panels, which are made in America, on this new flagship store, it only further reinforced this mission. Dutch Seam, a continuous standing seam metal roof panel, features an integral lock and seam which prevents "blow-off" or "creeping" of the seam. It also eliminates the need for separate seam caps and field seaming.

When ATAS International announced the company's 2016 Project of the Year winners at an awards banquet on May 8, the Made In America flagship store project took first place in the commercial roofs category. R

MADE IN AMERICA STORE
ELMA, N.Y.

TEAM

ARCHITECT:
Lydon Architectural Services
Buffalo, N.Y.

GENERAL CONTRACTOR:
Kulback's Construction Inc.
Lancaster, N.Y.

INSTALLING CONTRACTOR:
Bayford Construction
Lancaster, NY

ROOF SYSTEM MANUFACTURER:
ATAS International
Allentown, Pa.

SBS System Delivers Interesting Rooftop Design for the Brewery District

THE BREWERY District is a dynamic, progressive area in in Metro Vancouver offering a mix of residential high-rises, shops and office buildings. The Brewery District provides quick access to the area and is connected via a SkyTrain to public plazas, greenways, view decks, cycling paths, and a central community green gathering place. This master-planned community includes groceries, pharmacies, restaurants and other mixed-use retail outlets.

ROOF REPORT

The project included roof areas of varying heights totaling approximately 21,320 square feet. Owner Wesgroup Properties wanted an aesthetically pleasing pattern for their roof design as well as the option to expand and add additional stories. IKO was able to meet their expectations with an SBS system using IKO TP 180 Granular Cap in a pattern of multiple colors. The IKO SBS Roofing System was recommended by GRC Columbia Roofing Inc., based on the specific client requirements to create a colorful rooftop pattern. R

BREWERY DISTRICT BUILDING 3

NEW WESTMINSTER, B.C., CANADA

TEAM

CLIENT/OWNER:
Wesgroup Properties

ARCHITECT/DESIGNER
Henrizquez & Partners Architects

ROOFING CONTRACTOR
GRC Columbia Roofing Inc.

THE ROOF SYSTEM
IKO MVP Vapour Barrier
IKO MF 95 SF (Poly/Sand) Vapour Barrier
IKOTherm III Insulation
IKO 3/16-inch Protectoboard
IKO TP 180 FF Base Sheet
IKO TP 180 SF Base Sheet
IKO TP 180 Granular Cap Sheet

SPECIAL REPORT

WRITTEN BY **JUSTIN KOSCHER**

Advanced Roofing Materials for Advanced Technology Clients

Retrofit Roofing Project Highlights Advancements in Building Materials and Methods

Over the last few decades, computer and scientific innovations have evolved at a furious pace, with new technologies rapidly replacing only slightly older ones. In this race for the latest and greatest, it sometimes feels like the devices in our pockets and controlling our home stereos are from some virtual reality, while the brick and mortar of our homes and workplaces are relics of a bygone age. But, looks can be deceiving, and the polyiso insulation industry is playing a role in evolving our built environment.

For example, many commercial buildings seem only superficially different from those built a generation ago when seen from a distance. But, from behind the glass curtain walls and updated building amenities, we may not notice the disruptive technologies that have substantially improved building

PHOTOS: HUNTSMAN CORPORATION

The roof was replaced on Building 1, an L-shaped, 70,000-square–foot facility housing expensive equipment and research labs. A TPO membrane roof system was installed over high-density polyiso cover board.

The new roof is resistant to ultraviolet, ozone and chemical exposure, which contributes to a lifespan of more than 20 years, while being virtually maintenance-free.

systems in recent years. Informed by sophisticated research and utilizing advanced components, cutting-edge building materials are thinner, stronger and more resilient than traditional products. Adopting them in both new construction and renovation can appreciably improve building performance,

while also decreasing environmental impact. These products are particularly attractive to forward-looking companies interested in buildings that will prove cost-effective over the long term.

A CASE IN POINT

When the Huntsman Corporation began considering facility improvements for its Huntsman Advanced Technology Center (HATC) in The Woodlands, Texas, they decided to embrace the most innovative materials available. This four-building campus, located about 35 miles north of Houston, serves as the company's leading research and development facility in the Americas, so it is appropriate that it be built with products as advanced as the technology it houses. Replacing the aging PVC roof on Building 1 was a key element in this upgrade.

After more than two decades of exposure to the Texas heat, the roof was approaching the end of its useful life. With expensive equipment and valuable research in labs throughout the building, Huntsman didn't want to take any chances in modernizing the L-shaped, 70,000-square foot facility. With the added incentive of receiving the highest-level certification from its insurer, the company decided to remove and completely replace the existing roof with state-of-the-art materials.

Retrofitting an older building with updated roof systems can be a win-win for both clients and crews.

Commercial roofs in Texas are required to have an insulation R-value of 20 or higher, so simply replacing the existing membrane and lightweight insulating concrete on a metal deck that the building had used before with the same materials would not have sufficed. In addition, current codes which say that old roofs need to be brought up to current code when doing a tear-off job. After reviewing the options, they chose to install thermoplastic polyolefin (TPO) membrane roofing over high-density polyiso cover board.

The polyiso cover boards are lightweight and easy to cut, which reduces both time and labor costs for installation. They add strength and protection to a roofing system, enhancing the system's long-term performance. They can be shipped with approximately three times more square feet per truckload than gypsum products, so fewer trucks are needed, leading to fuel and transportation savings. Plus, they can be cut without specialized tools and workers don't have to worry about the dust that is created when sawing, as they would with other types of cover boards. And most importantly, these high-density

Workers who access the roof to remove debris from nearby trees can easily stay on the safety-taped walk pad areas.

boards are based on proven technology.

Drawn to polyiso for its high R-value per inch of thickness, compressive strength, impressive fire-, wind- and moisture-resistance, long-term durability, and low environmental impact, Huntsman partnered with roof mechanics experienced in working with these materials and committed to both safety and quality.

If the original installers of the previous roof 22-years earlier had witnessed this new project, they would have been amazed. Instead of hoisting heavy materials up ladders, pallets are deposited on the roof by crane. Boards are attached with fasteners and plates or foam adhesives to the deck, and robotic welders seal the seams in the TPO membrane.

The new roof is resistant to ultraviolet, ozone and chemical exposure, which contributes to a lifespan of more than 20 years, while being virtually maintenance-free. Workers who access the roof to remove debris from the tall trees on the HATC campus can easily stay on the safety-taped walk pad areas. The roof materials are all recyclable later, leading to a very low environmental impact.

Increasing the thermal resistance to an impressive R-21 for the combined roof system, the building now exceeds local, state and international building codes. This added insulation and the reflective white surface of the new roof are going to lower energy consumption and lead to greater indoor comfort and a decreased load on HVAC systems. The roof is much less susceptible to the mold, mildew, and will help prevent water from pooling and ponding as it did on the old roof.

A new commercial roof is a substantial investment. Luckily, with all the cost savings inherent in both the installation process and the whole-life use of high-density polyiso cover boards, companies don't have to forego state-of-the-art materials for financial reasons. Factoring in the ease of installation (from cutting to less dust) and weight of the cover boards, retrofitting an older building with updated roof systems can be a win-win for both clients and crews. R

CASE STUDY: STEEP SLOPE

WRITTEN BY **RON GUMUCIO**

Asphalt Shingles Provide Washington Fire Department an Award-Winning New Roof

When the Burlington Fire Department decided to replace its aging steep-slope system, the goals included finding a system that would look good, stand up to high winds and resist algae growth.

Key Priorities for Fire Station Project Included Visual Appeal, Resistance to Algae and Wind

The firemen and firewomen of the Burlington Fire Department, located in Burlington, Wash., reportedly respond to about 1,800 service calls a year. The members of the department are on call 24/7, handling a variety of emergencies, both big and small.

Whether it is fighting a fire, performing a search and rescue, or something as simple as retrieving a driver's keys from the car, the city's bravest are too busy to have roof issues make their days more difficult. When the fire station began to experience leaks that required countless repairs and patchwork solutions, the City of Burlington knew it was time to replace the entire roofing system and ensure that the firefighters were safe from the elements.

Over the last few years, leaks began to appear more frequently in the fire station's roof, with the worst leaks occurring in the paramedic's quarters and in the firehouse's workout room. The water would drip down on the firefighters and ceiling tiles became discolored, creating an unpleasant appearance throughout the firehouse. The intense winds in the area would also cause the shingles of the roof to become loose and fly off.

"The roof was patched several times over the years. We filled the voids as we went," says Brandon Bond, a lieutenant on the Burlington Fire Department for the last 10 years. "After a while, the patches and replacements weren't working and the leaks were getting harder to fix. At that point, we knew it was time to replace the whole roof."

For their new roof, the city wanted a material that was visually appealing and performed against algae and wind. Also, because this was a city project, they wanted to find a contractor who was nearby and a roofing material that was manufactured locally—all of which showed pride in their community. When they considered the criteria, along with the size of the roof—24,000 square feet—the city chose to go with asphalt shingles because they provided a high level of longevity and durability while keeping it affordable.

Asphalt shingles offered a heavyweight, wind-resistant roofing material with a number of color options, making it the optimal choice among the design team. Wind resistance was an important factor because the old roofing system sustained considerable wind damage. The winds in the area can reach 65-70 miles per hour.

SELECTING THE RIGHT SYSTEM

Cascade Roofing Company from Burlington was hired to install the new roof on the fire station. The company has been in business for nearly 30 years and works on both commercial and residential roofing projects. The owner of Cascade, Rick Steiner, explains that asphalt shingles were used on the fire station for a number of reasons.

"Shingles were used because of the different pitch heights of the roof, their affordability and their great look," Steiner says. "The algae-resistance was also a must. Algae grows like weeds in Washington, due to the moisture in the air and fluctuating temperatures."

Algae flourishes in humid climates and its spores can be carried by the wind. The temperate but rainy weather found in the Pacific Northwest of the United States produces an environment for algae to thrive in. While algae is not known to cause damage to roofs, the dark streaks are unsightly.

"Burlington is very wet, whether it's raining or if we're dealing with the humidity," says Lauren Wilkins, a firefighter at the Burlington Fire Department since 2012. "We wanted the new roof to provide some resistance to algae so that it looked good as compared to the other surrounding roofs in the area."

Cascade used shingle manufacturer PABCO Roofing Products, located in nearby Tacoma, Wash. PABCO's algae-resistant Paramount Signature Cut Shingle in Oakwood color was selected for the project because it provided

The roof system was installed by Cascade Roofing Company using shingles manufactured by PABCO Roofing Products.

PHOTOS: JAROD TROW PHOTOGRAPHY

The roof system covers 24,000 square feet. An aggressive modified sealant and a high-wind shingle application using six nails add resistance to wind uplift.

exceptional curb appeal. An aggressive modified sealant was used as well as high-wind shingle application—6 nails—to add resistance to wind uplift. PABCO Paramount starter shingles were applied over PABCO Universal Starter to provide a double-layer base. A synthetic underlayment along with an ice and water shield on the leading edges were also used. Shasta HD Ridge was applied to the ridge and hips of the roof to complement the roofline.

KEEPING IT LOCAL

The City of Burlington was thrilled to choose local companies for the project. The manufacturer, contractor and even the supplier were all located nearby. This provided Cascade an avenue for necessary materials to be delivered quickly, allowing them to stay under budget and ahead of schedule. The project took about two weeks and 230 squares of shingles to complete, which is equivalent to the number of shingles necessary for the company to roof six or seven regular-sized homes.

"It's easily the biggest shingle job I've ever done," Steiner says. "But the

"It's easily the biggest shingle job I've ever done, but the design of the building along with the high-profile look of the shingles made the project look incredible. The city has a roof that's going to last a very long time."

— Rick Steiner, Cascade Roofing Company

design of the building along with the high-profile look of the shingles made the project look incredible. The city has a roof that's going to last a very long time."

Steiner also points out how smooth operations were due to the local theme of the project. "Everything was on-time. The supplier was right across the street and very easy to work with," Steiner notes. "Even the weather cooperated – it made a potentially difficult project that much easier."

The firefighters felt the same way. "We thought the hardest thing about the renovation would be continuing our daily operations, but we didn't run into any problems," Wilkins says. "They were very friendly and easy to coordinate with when moving equipment. There were no horror stories here."

Since the renovation was completed, the firefighters are very happy with the new roof. The firemen and firewomen of the Burlington Fire Department can now focus on keeping the residents of Burlington safe.

The unique installation of the roof also earned Cascade Roofing and the fire station project the 2017 Bronze Award in the Asphalt Roofing Manufacturers Association (ARMA) Quality Asphalt Roofing Case-Study (QARC) Awards Program. Each year, ARMA seeks out the most beautiful, affordable and reliable asphalt roofing systems in North America.

Award-winning projects are selected based on innovation, performance and beauty, and recognize projects that lead the way in areas like weather protection, green roofing or unique utilization of asphalt shingles in a roofing system. ARMA is currently accepting submissions for both low- and steep-slope roofing project installations completed in 2017 for its 2018 awards program. Roofing contractors can submit multiple projects through Dec. 31, and there is no fee to enter.

For more information about asphalt roofing systems, the QARC awards program and more, visit asphaltroofing.org.

WRITTEN BY **BOB DELANEY**

Safe Roofing Materials, Safe Jobsites

Make Sure to Follow Proper Procedures When Loading Materials on the Roof

Architects, building owners, contractors, facility managers and other skilled professionals allied with the roofing industry rely on proven safety standards and procedures to keep workers safe. This attention to safety is even more important in areas where natural disasters like earthquakes, hurricanes and tornadoes are a frequent occurrence.

EARTHQUAKE-RESISTANT ROOFING: After an earthquake, the collapse of poorly constructed concrete roofs and walls leads to significant injuries and death. This is especially true in economically disadvantaged countries where building codes are absent and financial resources are limited. Lighter roofing materials pose less risk for earthquake survivors, and disaster-resistant monolithic shells made of reinforced concrete show real promise.

HURRICANE-RESISTANT ROOFING: Clay tiles and concrete tiles hold up better than wood and other types of shingles in hurricane conditions. In Guam, monolithic domes made completely of reinforced concrete have withstood both earthquakes and hurricanes for 50 years.

TORNADO-RESISTANT ROOFING: Unlike earthquake zones and likely hurricane pathways, tornado-prone areas have no international code for building. Keeping the roof on a building may prevent the walls from collapsing and heavier materials like reinforced concrete seem to best suit this purpose. Insulating concrete forms (ICFs) are being used for roofing but serve

PHOTOS: SAFETY HOIST COMPANY AND VISUAL TECHNOLOGY

Ladder hoists can easily transport up to 400 pounds of materials to high rooftops. A variety of attachments can help handle bulkier loads and custom support braces can help stabilize the hoist to protect workers at greater heights.

more for insulation than for structural integrity in a storm. Once again, reinforced concrete building materials hold up the best. Kenneth Luttrell, PE/CE/SE, MACI, and Joseph Warnes, PE/CE, FACI, FPCI provide detailed analysis in their study titled "Hurricane and Tornado-Resistant Concrete Houses."

Of course, the very materials that make buildings resistant to natural disasters—especially the reinforced concrete and clay tiles that stand up to hurricanes and tornadoes—present a greater worker safety risk due to their size and weight. You can still get those bulky, heavy materials to the roof and safeguard worker well-being if you choose the right material hoist to prevent falls, decrease injuries, and minimize the chances of both non-fatal and fatal accidents.

MATERIAL TRANSPORT OPTIONS AND RISKS

Roofing jobs include inherent costs and risks. Transporting materials to the roof is labor-intensive, hazardous work when you must manually carry objects up a ladder. Bulky and/or heavy items increase the risk of accidents, including falls that can lead to death. If you violate the Occupational Safety and Health Administration's "three points of contact" regulation regarding ladders, you face stiff fines. Boom trucks and roofing conveyors may partially eliminate some of this risk, but they require operator training, rental fees and significant space. They can also potentially cause property damage to driveways, lawns and landscaping. These machines can fail to unload materials safely away from the edge of the roof, which is precisely where you want them. In many cases, an OSHA-approved material hoist is the better, safer alternative.

OSHA REGULATIONS

OSHA ruling 29 CFR §1910.28(a), which took effect in January 2017, puts the responsibility for worker safety—especially the testing and certification of fall-protection systems—on the building owners who hire roofing contractors. Employers must now provide fall protection for employees who will be walking or working on a surface with an edge that is four or more feet above the ground. Depending on the fall danger, employers are free to choose from guardrails, personal fall arrest (PFA) systems, safety nets, travel-restraining systems, or warning lines that mark a designated work area near a low drop-off.

This ruling revised previous industry rules regarding falling, slipping and tripping in the workplace so that the construction rules and the general industry rules are more closely aligned. Unfortunately, repair work—governed by OSHA's mandate 29 CFR §1926 for the construction industry—and maintenance work—regulated by 29 CFR §1910 for general industry—are still ambiguous.

A provision for ladders is also included in the new ruling. A cage, ladder safety system (a body harness and connectors, carrier, lanyard, or safety sleeve), a PFA system, or a well must be included on fixed ladders installed before November 19, 2018 that extend more than 24 feet from a lower level. On or after that date, fixed ladders must include a ladder safety system or a PFA to eliminate or reduce the likelihood of falls.

Under the new regulation, roofing contractors using these fixed ladders must ensure their workers' safety with a cage, ladder safety device, self-retracting lifeline or well. Rest platforms are also required, depending on the height of the fixed ladder. Rope descent systems (RDSs) and their anchorages must be tested and certified in writing by the building owners.

In addition to regulating how workers should be protected from falls, OSHA also monitors how objects are carried and loaded/unloaded. For those doing manual lifting, OSHA states that:

- Every person going up and/or down a ladder will grasp the ladder with at least one hand at all times, maintaining three points of contact with the ladder—either with two hands and one foot or one hand and two feet.
- Workers must not carry loads and objects that might cause them to slip or fall.
- All ladders, including portable extension ladders, fall under these OSHA rules.
- Ladders must support four times their intended load unless they are labeled "rugged use, extra-heavy-duty," in which case they are require to support a minimum of 3.3 times their 375-pound capacity.
- No load is allowed to exceed the published weight limit.
- Ladders may only be used for their intended purpose.
- Non-self-supporting ladders must be tilted at an angle so the base of the ladder is one-quarter of the

A platform hoist can decrease the risk of injuries, minimize OSHA infractions, prevent accidents and reduce worker fatigue.

working length of the ladder away from whatever is supporting the top of the ladder.

Choose an OSHA-approved ladder hoist to meet these safety standards.

MATERIAL HOISTS

For your workers' safety, choose a material hoist company committed to your safety and to excellence, quality and service. Their products should easily transport up to 400 pounds of materials to high rooftops, keeping your team off of ladders. By handling the bulky, unstable and heaviest objects, a platform hoist decreases the risk of injuries, minimizes OSHA infractions, prevents accidents and cuts workers compensation claims. It also reduces worker fatigue.

Look for a ladder hoist designed to accommodate all types of building materials. This includes the new, heavier shingle packages that increase efficiency by increasing the number of shingles (and therefore the weight) of each shingle package. Also take into account the heavier materials that have proven their worth in areas prone to earthquakes, hurricanes and tornadoes including:

- Clay tiles, which can weigh up to 2,000 pounds/100 square feet
- Concrete tiles, which can weigh up to 700 pounds /100 square feet
- Reinforced concrete, which varies in weight due to thickness
- Slate tiles, which can weigh up to 1300 pounds /100 square feet

PRODUCT ATTACHMENTS

Choose a ladder hoist with product attachments that can handle the bulkier materials required for natural-disaster-resistant construction. An unloading ramp automatically unloads away from the roof's edge, increasing safety and efficiency. Custom support braces stabilize your hoist or "ladder-vator," protecting workers at greater heights. A plywood carrier can transport bulky material like rolled goods, sheets of metal or plywood, skylights, and trusses, keeping workers safe from carrying unwieldy items up a ladder one-handed.

Don't let unwieldy, heavy objects or special materials that have proven their effectiveness in natural disaster zones keep you from a great safety record. Start with an OSHA-compliant platform hoist.

Learn more about this latest regulation at OSHA's fall protection page https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9720. R

WRITTEN BY **CHRIS KING**

Miami-Dade County and ARMA Team Up to Update High-Wind Codes

ARMA awarded the Miami-Dade Regulatory and Economic Resources Department the 2017 ARMA Public Partnership Award. Aaron R. Phillips, Corporate Director of Technical Services at TAMKO Building Products and chair of the ARMA Codes Steering Group, presented the award to Michael Goolsby and Miami-Dade team members who worked on the project. Pictured at the ceremony are (from left) Eduardo Fernandez, Gaspar Rodriguez, Michael Goolsby, Aaron Phillips, Alex Tigera and Jorge Acebo.

In the aftermath of 1992's Hurricane Andrew, the entire building code for South Florida was rebuilt from the ground up. When it was launched in 1994, the South Florida Building Code was a groundbreaking document that set new roofing application standards and testing protocols for every component and system in the building envelope. More than two decades later, it was clear the building code for Miami-Dade County's high-velocity hurricane zone (HVHZ) needed to be updated. Beginning in 2014, Miami-Dade County officials worked with the Asphalt Roofing Manufacturers Association (ARMA) and others in the roofing industry to ensure the current code language was clear and up to date.

Two-and-a-half years later, their work is complete. The 2017 Florida Building Code is scheduled for implementation on Jan. 1, 2018, and it will include every one of the proposals and public comments jointly submitted by ARMA and Miami-Dade. As a result of this successful collaboration, ARMA presented the Miami-Dade Regulatory and Economic Resources Department with the inaugural ARMA Public Partnership Award in 2017 for their work together in updating the building codes for the HVHZ.

Members of the joint task force on the project shared their thoughts on the experience with Roofing, including Mike Fischer, ARMA's Vice President of Codes & Regulatory Compliance; Michael Goolsby, Miami-Dade Board and Code Administration Division Director; Jorge Acebo, Roofing Product Control Examiner; Alex Tigera, Roofing Product Control Examiner; and Gaspar Rodriguez, Code Compliance and Training Officer, Roofing.

They all believe this collaboration between industry and government could serve as a successful model for other industry trade associations and other code bodies to follow. "This kind of cooperation between a public regulator and a private trade association is rare enough," says Fischer. "The overwhelmingly positive results are unprecedented."

THE PROBLEMS

Miami-Dade staff and ARMA representatives both saw shortcomings in the roofing requirements for HVHZ. There were outdated references that needed to be removed, including test standards that were out of date. This often resulted in questions that slowed down the product approval review process. Members of the roofing industry also wanted to explore coordinating the Miami-Dade HVHZ protocols with other national testing requirements to further streamline testing procedures.

Fischer summed up ARMA's goals this way: "ARMA is a responsible advocate for the asphalt roofing industry. We take that role seriously. We are an advocate. Our job is to represent the collective interests of the producers, but we try to be responsible about it. And it's that drive to be responsible which led us to this partnership with the Miami-Dade staff."

At the first meeting between ARMA and Miami-Dade, Fischer tried to break the ice. "The first thing we said when we came into that meeting was, 'Hi, we're from industry and we're here to help,'" Fischer recalls. "I will tell you that when we started that meeting in the morning, the Miami-Dade staff was probably skeptical of what we were there for. By the end of the day, we had laid out a project plan of how we were going to work together, and that set the tone for the rest of the project."

Fischer knew it would take the two

entities working together to get things done. "In the Florida process, we knew we had to work with Miami-Dade, as they are a key stakeholder. We brought in other roof covering manufacturers for some of the discussions, and we also talked to the FRSA, the Florida Roofing and Sheet Metal Association—the contractors—so they were at the table for quite a bit of this as well."

ARMA set up a special task group to focus on the Miami-Dade protocols. The task force went through documents one by one with members of Miami-Dade group, identifying problems and sections that were out of date. They hashed out compromises when they didn't agree.

PROTECTING THE PUBLIC

Goolsby worked on the project on behalf of Miami-Dade along with members of his team including Acebo, Tigera and Rodriguez. "We cover a lot of territory," notes Goolsby. "We maintain the building code and write the building code, but we also oversee all of the contractor licensing in Miami-Dade County. We have about 15,000 local licensed contractors. Of course, we handle product approvals, and we also service all of the boards here. We have a board of rules and appeals. We also oversee 35 building departments throughout Miami-Dade County. We try to make sure the code is uniformly enforced in all of those jurisdictions. So, we cover a lot of bases."

The top priority is protecting the public. "In a general sense, we provide for the health, safety and welfare of the public," Goolsby says, "But it's these issues of life safety that are the most critical."

Evacuating South Florida is difficult, so the residential portions of the code were written under the assumption that many people might have to ride out a storm in their homes. "We wanted their home to be just as strong as any commercial structure," says Goolsby.

Acebo notes that ensuring the code is properly followed is as crucial as the code itself. He believes the inspectors' role includes reassuring homeowners that systems are being installed correctly. "It's important to us to fulfill our role to provide independent corroboration that the work is being done and installed properly," he says. "The great thing about this particular effort is that it was truly collaborative. It was great to work with them and establish the language that was common with other jurisdictions or other certification agencies."

PROMISING RESULTS

Members of the joint task force agree that the changes make the code easier to understand. They also should streamline product approvals process.

"These updates definitely help the manufacturers get through the product approval process, specifically for Miami-Dade HVHZ requirements," Fischer states. "It also helps the roofing contractor because we made sure the documents have the installation language updated, so it gives better direction to the installers of the products. And that trickles up to the general contractors in new construction, as it speeds up their processes and takes out some burdens."

"At the end of the day, as a responsible advocate, one of ARMA's main motivators was to make sure their industry's products get installed the way they are intended to be installed," Fischer continues. "That benefits the end user—the building owner and building occupant."

Acebo agrees that the approvals process helps everyone—homeowners, contractors, manufacturers and inspectors. "If questions come out of the field from homeowners, manufacturers or contractors as to whether something is being applied or used properly, we can serve as that independent third party that doesn't really have a stake in it other than to serve as an arbitrator who can clearly indicate whether something is right or not according to what has been provided and tested."

The collaboration was so successful that the task force is already looking at other changes in the future. The Miami-Dade code is used as a model for other code bodies, and the joint task force could serve in that role as well, according to Fischer. "This is a model of collaboration between a governmental agency and private industry groups that will serve us well," he says. "We are going to continue to do this with other groups, and frankly we're going to continue doing it with Miami-Dade because this process isn't ever done. Things will always be changing and we always have to keep up to date."

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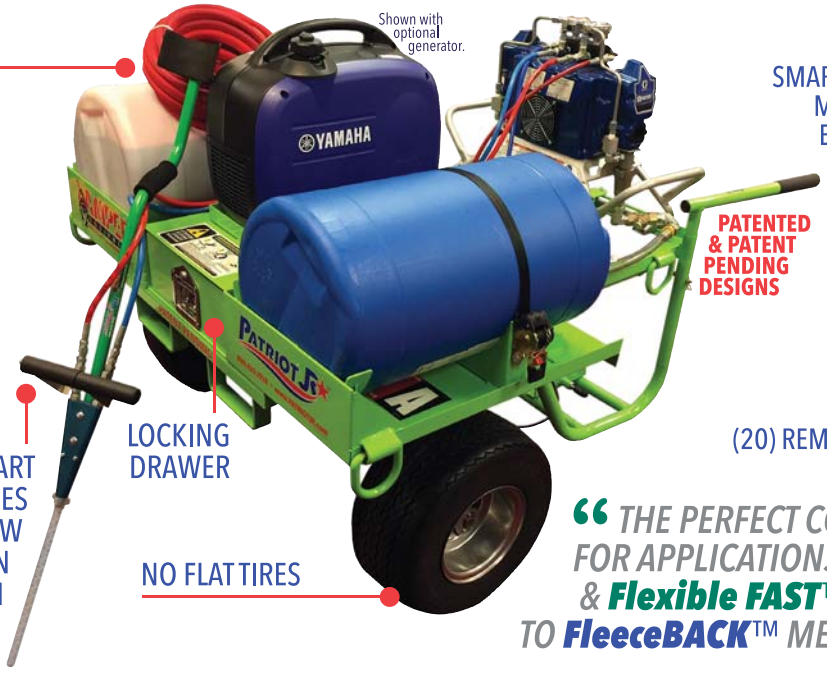

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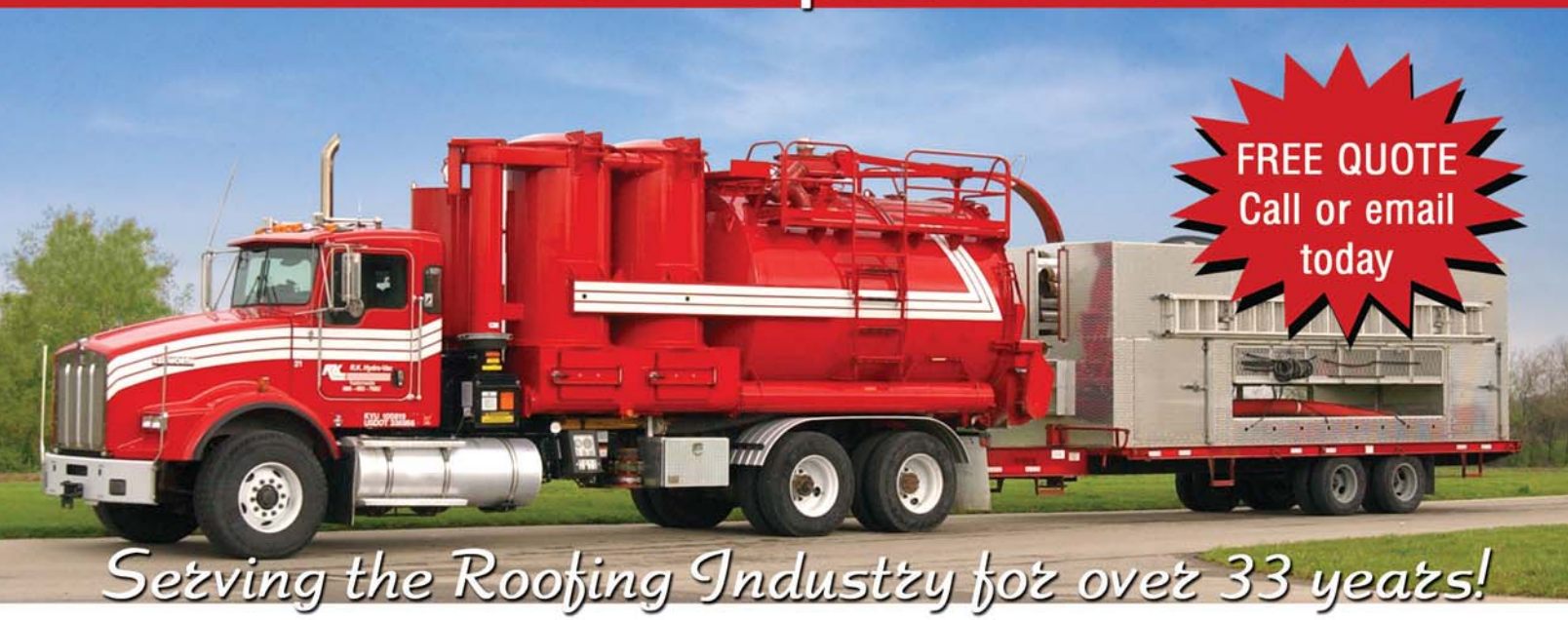

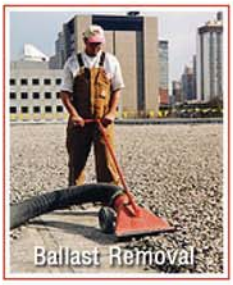

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